

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

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Definitions

Accountability – The process of accounting for individuals within the Protected Area and identifying any missing individuals within 30 minutes following initiation of accountability measures.

Activation – The process where an Emergency Response Facility is staffed with sufficient qualified personnel to perform assigned functions.

Alert and Notification System – A system of fixed outdoor warning devices, mobile warning devices, institutional warning devices, and other special alerting mechanisms used to alert the public within the plume exposure emergency planning zone in the event of a declared emergency requiring public response.

Annually – For periodic emergency planning requirements, annually is defined as once during a calendar year.

As-Built Drawings- Drawings that provide location, configuration or design of buildings, systems, and components throughout Comanche Peak Nuclear Power Plant Units 3 and 4.

Assembly Areas – Locations, on-site and off-site, where personnel assemble in the event of an emergency when the Emergency Coordinator calls for a building/Protected Area evacuation.

Biennial – For periodic emergency planning requirements, biennial is defined as once every two years.

Committed Dose Equivalent – As defined by 10 CFR 20.1003

Declared Emergency – Any event classified in one of the four emergency classes: Notification of Unusual Event, Alert, Site Area Emergency, General Emergency.

Dedicated Emergency Equipment – Any items which are staged primarily for use by the Emergency Response Organization.

Drill – A supervised instruction period aimed at testing, developing and maintaining emergency response skills.

Effective Date – Date of change; implementation date assigned by approval authority; date from which 30-day Nuclear Regulatory Commission submittals are required in accordance with 10 CFR 50, Appendix E.V.

Emergency – Any situation that may result in undue risk to the health and safety of the public and/or site personnel, or significant damage to property or equipment.

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Emergency Action Level – A pre-determined, site-specific, observable threshold for a plant initiating condition that places the plant in a given emergency class. An Emergency Action Level can be: an instrument reading; an equipment status indicator; a measurable parameter (on-site or off-site); a discrete observable event; results of analyses; entry into specific emergency operating procedures; or another phenomenon which, if it occurs, indicates entry into a particular emergency class.

Emergency Alert System – The national public warning system for all-hazards emergencies, administered by the Federal Communications Commission (FCC) in cooperation with the National Weather Service, the Federal Emergency Management Agency commercial broadcast stations and interconnecting facilities authorized by the FCC to operate in a controlled manner during emergencies. Formally the Emergency Broadcast System.

Emergency Coordinator – Designated on-site individual having the responsibility and authority for implementing the Comanche Peak Nuclear Power Plant Units 3 and 4 Combined License Application Emergency Plan.

Emergency Notification System – A dedicated telecommunications system that provides voice communications between the Nuclear Regulatory Commission and Comanche Peak Nuclear Power Plant.

Emergency Operating Centers – Facilities established by the State of Texas and Somervell and Hood County governments for managing resources in an emergency situation.

Emergency Operations Facility – The on-site emergency response facility from which management of the overall emergency response, including coordination with Federal, State of Texas and Somervell and Hood County officials, will occur. The Emergency Operations Facility is located in the Nuclear Operations Support Facility.

Emergency Plan Procedures – Emergency response procedures that implement the Emergency Plan.

Emergency Planning Zones – A generic area defined about a nuclear facility to facilitate off-site emergency planning and develop a significant response base. It is defined for the Plume and Ingestion Exposure Pathways. During an emergency response, best efforts are made making use of plan action criteria without regard to whether particular areas are inside or outside Emergency Planning Zones.

Ingestion Exposure Pathway Emergency Planning Zone – An area delineated by an approximate fifty-mile radius circle around the site. The principal exposure for this pathway would be from ingestion of contaminated water or foods such as milk or fresh vegetables. The duration of exposure could range in length from hours to months.

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Plume Exposure Pathway Emergency Planning Zone – An area delineated by an approximate ten-mile radius circle around the site. The principal exposure sources from this pathway are: (a) whole body external exposure to gamma radiation from the plume and from deposited materials and (b) inhalation exposure from the passing radioactive plume. The duration of principal potential exposures could range in length from hours to days.

Emergency Response Equipment – Any item which is identified or made available for emergency response.

Emergency Response Organization – The organization comprised of personnel assigned to perform selected emergency response tasks during a declared emergency.

Emergency Response Organization Roster – A listing of Emergency Response Organization personnel.

Emergency Repair and Damage Control Activities – Activities required to mitigate emergency conditions.

Exclusion Area – As defined in 10 CFR 50.2

Exercise – A test of the adequacy of timing and content of implementing procedures and methods; emergency equipment and communications networks; and the public notification system. An exercise permits the evaluation of training and response to ensure that emergency response organization personnel are familiar with their duties.

Hostile Action – An act toward a nuclear power plant or its personnel that includes the use of violent force to destroy equipment, take hostages, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, projectiles, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. Hostile Action should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the nuclear power plant. Non-terrorism based Emergency Action Levels should be used to address such activities (i.e. this may include violent acts between individuals in the owner controlled area).

Hostile Force – One or more individuals who are engaged in a determined assault, overtly or by stealth and deception, equipped with suitable weapons capable of killing, maiming, or causing destruction.

In-Plant – Buildings or structures, located inside the Protected Area, directly associated with plant primary, secondary, control, or fuel-handling system (e.g., Reactor Building, Power Source Buildings, Auxiliary Building, Access Control Building, and Turbine Building).

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Joint Information Center – The single point from which information regarding a declared emergency at the site will be disseminated to the public and news media.

Monthly - For periodic emergency planning requirements, monthly is defined as once during a calendar month.

Nuclear Operations Support Facility – A Luminant controlled building located 0.1 miles west of the exclusion area boundary on the Plant Road containing the off-site decontamination facility for use during an emergency, and the Emergency Operations Facility.

Off-site – Outside the Owner Controlled Area

On-site – Within the Owner Controlled Area

Operations Support Center – An on-site assembly area separate from the Control Room and Technical Support Center where Luminant operations support personnel report in an emergency.

Owner Controlled Area – The area, outside of the Protected Area but inside the property boundary, access to which can be controlled by Luminant for any reason.

Plant Personnel – Personnel employed or contracted by Luminant who are involved in the operation, construction or maintenance at the site.

Projected Dose – An estimated dose which affected population groups could potentially receive if no protective actions are taken.

Protected Area – An area encompassed by physical barriers and to which access is controlled. For the purposes of this Emergency Plan, the Protected Area refers to the area designated in the Security Plan.

Protective Action Guides – The projected dose to individuals from an accidental release of radioactive material at which a specific protective action to reduce or avoid that dose is warranted.

Protective Actions – Those emergency measures taken before or after a release of radioactive material has occurred for the purpose of preventing or minimizing radiological exposure.

Quarterly – For periodic emergency planning requirements, quarterly is defined as once every three months, with a maximum interval of 112 days.

Recovery Actions – Those actions taken after the emergency to restore the site as nearly as possible to its pre-emergency condition.

Rem (Roentgen Equivalent Man) – As defined by 10 CFR 20.1004

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Rumor Control – The process of monitoring communications and media broadcasts, identifying rumors, and making the appropriate contacts to disseminate accurate information.

Semi-annual – For periodic emergency planning requirements, semi-annual is defined as twice during a calendar year.

Shift Manager – A member of plant management assigned on each shift, holding a Senior Reactor Operator's License, in charge of Control Room functions.

Site – The site proper and the Owner Controlled Area surrounding the site.

Site Evacuation – Withdrawal of non-essential personnel from the Owner Controlled Area.

Squaw Creek Park – A Park, owned and controlled by Luminant, that provides restricted access to Squaw Creek Reservoir.

Technical Support Center – The on-site facility that provides plant management and technical support to reactor operating personnel located in the Control Room during an emergency.

Total Effective Dose Equivalent – As defined by 10 CFR 20.1003.

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Acronyms and Abbreviations

ALARA	As Low As Reasonably Achievable
ANI	American Nuclear Insurers
cc	Cubic Centimeter
CDE	Committed Dose Equivalent
CFR	Code of Federal Regulations
Ci	Curie
COL	Combined License
cpm	Counts Per Minute
CPNPP	Comanche Peak Nuclear Power Plant
CR	Control Room
DCBE	DeCordova Bend Estates
DCD	Design Control Document
DEM	(State of Texas) Governor's Division of Emergency Management
DHS	(U.S.) Department of Homeland Security
DOE	(U.S.) Department of Energy
dpm	Disintegrations Per Minute
DPS	(State of Texas) Department of Public Safety
EAL	Emergency Action Level
EAS	Emergency Alert System
ENS	(NRC) Emergency Notification System
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EPA	(U.S.) Environmental Protection Agency

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EPP	Emergency Plan Procedure
EPZ	Emergency Planning Zone
ERDC	Emergency Response and Damage Control
ERDS	Emergency Response Data System
ERF	Emergency Response Facility
ERO	Emergency Response Organization
ERZ	Emergency Response Zone
ETE	Evacuation Time Estimate
FEMA	(U.S.) Federal Emergency Management Agency
FRMAC	Federal Radiological Monitoring and Assessment Center
FSAR	Final Safety Analysis Report
ft	Feet
FTS	Federal Telecommunications System
GE	General Emergency
HAB	Hostile Action-Based
HPN	Health Physics Network (Communication System)
IC	Initiating Condition
INPO	Institute of Nuclear Power Operations
JIC	Joint Information Center
KI	Potassium Iodide
m	Meter
mph	Miles per hour
MWe	Megawatt electric
MWt	Megawatt thermal

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NOUE	Notification of Unusual Event
NOSF	Nuclear Operations Support Facility
NRC	(U.S.) Nuclear Regulatory Commission
NSSS	Nuclear Steam Supply System
NWS	(U.S.) National Weather Service
ODCM	Off-site Dose Calculation Manual
OFFRAC	Off-site Radiological Assessment Coordinator
ORC	Operations Review Committee
ORO	Off-Site Response Organization
OSC	Operations Support Center
PA	Protected Area
PAG	Protective Action Guide
PAR	Protective Action Recommendation
PABX	Private Automatic Branch Telephone Exchange
PCS	Plant Computer System
RAP	Radiological Assistance Program
RCA	Radiation Controlled Area
RCP	(State of Texas) Radiation Control Program
RMS	Radiation Monitoring System
RO	Reactor Operator
RPC	Radiation Protection Coordinator
RPP	Radiation Protection Program
RPT	Radiation Protection Technician
SAE	Site Area Emergency

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SCBA	Self-Contained Breathing Apparatus
SORC	Station Operations Review Committee
SPDS	Safety Parameter Display System
SPTS	Sound Powered Telephone System
SRO	Senior Reactor Operator
TDSHS	Texas Department of State Health Services
TEDE	Total Effective Dose Equivalent
TSC	Technical Support Center
U.S.	United States

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I. Introduction

This Emergency Plan describes the plans established by Luminant Generation Company LLC (Luminant) for responding to a radiological emergency at the Comanche Peak Nuclear Power Plant (CPNPP) Units 3 and 4. The CPNPP Units 3 and 4 Combined License (COL) Emergency Plan (the Plan) describes the organization, facilities, emergency response measures, and functional interfaces with off-site agencies that are used to respond to a broad range of emergencies. This Emergency Plan describes the responsibilities and specific authorities which provide for effective control and coordination of the emergency response, both on-site and off-site. The on-shift plant organization is augmented by an expanded Emergency Response Organization (ERO), as required, to address situations with serious potential consequences.

The format for this Plan directly follows the format of NUREG-0654/FEMA-REP-1, Rev.1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" (NUREG-0654) (Reference 1). Appendix 8 of this Plan provides a cross-reference between this Plan, the State of Texas Emergency Management Plan and Somervell and Hood Counties' Emergency Operations Plans, and the planning standards and evaluation criteria in NUREG-0654.

The Plan establishes an emergency response organization, defines specific duties and responsibilities, and designates points of contact between on-site and off-site supporting agencies. The on-shift plant organization is augmented by an expanded ERO, as required at "Alert" and higher emergency classification levels. Staff augmentation may occur at a Notification of Unusual Event (NOUE) at the discretion of the Emergency Coordinator. The expanded ERO includes activation of emergency response personnel, as appropriate. The Plan provides direction and coordination of the CPNPP ERO. Emergency Plan Procedures (EPPs) detail various job functions in support of the Plan and provide for a smooth transition from normal mode to emergency mode of operation. Assignment of CPNPP ERO personnel to job functions is discussed in this Plan. Provisions for prompt notification of Federal, State of Texas and local agencies are established and include information which may be required for off-site agency response. Additional assistance may be provided to the on-site ERO by off-site company personnel, Federal, State of Texas and local agencies, and contract personnel, as required.

A recovery and re-entry plan describes the management, technical, and administrative organization necessary to execute timely and effective recovery of the facility based on assessments of plant conditions and desired end states. The recovery plan provides guidance for relaxing protective measures that have been instituted and requires the periodic estimation of total population exposure.

The Plan is reviewed on a periodic basis. Periodic drills and exercises involving communications, firefighting, radiological monitoring and radiation protection activities are routinely conducted. Joint exercises involving participation by the

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State of Texas and local response agencies are held periodically within the State of Texas to test major elements of the Plan. Federal response agencies may also participate in these joint exercises. Critiques of each implementation of the Plan allow for critical reviews of technique, methods, and improvements. Changes are factored into the Plan and/or implementing procedures through controlled revisions.

A. Purpose

The objective of the Plan is to describe measures to protect the health and safety of the general public, persons visiting or temporarily assigned to the site, and CPNPP employees in the event of an emergency at the site.

To meet this objective, the Plan creates a high order of preparedness and provides for an orderly and timely decision-making process. Emphasis is placed on maintaining preparedness through training, drills, and exercises. Availability of equipment, supplies, and essential services is maintained by the Plan. This Plan also provides for coordination of on-site and off-site emergency response and establishes a unified approach to emergency preparedness, with consideration given to the incident command concepts incorporated into the State and local emergency plans.

This Plan describes the pre-planned facilities, equipment, response organizations, assessment and protective actions, and cooperative agreements established by Luminant to provide for adequate protection of life and property in the event of a radiological emergency at CPNPP Units 3 and 4. In this context, protection of life and property includes:

- Notifying and mobilizing affected members of the licensee staff, Federal agencies, the State of Texas, local, and private-sector response organizations, and the public;
- Limiting the radiological impact of the emergency on plant employees and affected members of the public; and
- Limiting the potential adverse impact of protective actions, such as evacuations or sheltering.

The impact of plant emergencies is limited through the implementation of pre-planned and controlled preparatory, assessment, and protective actions consistent with this Plan.

EPPs provide instructions for accomplishing certain provisions of the Plan. A list of topics covered by the EPPs is included in Appendix 5.

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B. Scope

This Plan applies to preparedness and response to any radiological emergency condition at CPNPP Units 3 and 4. Section II.D of this Plan describes the emergency classification system. Appendix 1 identifies radiological emergency conditions, their initiating conditions (IC), and Emergency Action Levels (EALs).

This Plan has been coordinated with the plans of affected government agencies and private sector support organizations as listed in Section II.A of this Plan. Ongoing coordination with affected Federal, State of Texas and local agencies and private sector support organizations is imperative to provide an effective emergency response capability. The Plan is designed to complement the Texas Emergency Management Plan and to interface with Somervell and Hood County Emergency Management Plans.

C. Planning Basis and Emergency Planning Zones

1. Planning Basis

CPNPP Units 3 and 4 are licensed under the requirements of Title 10, Code of Federal Regulations (CFR), Part 52, "Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants." The regulations in 10 CFR Part 52 invoke the emergency planning requirements in 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." Consistent with the requirements of both 10 CFR Part 50 and 10 CFR Part 52, this Plan is based on the requirements of 10 CFR Part 50, Section 50.47, "Emergency Plans," and Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities." This plan is also based on the guidance provided in NUREG-0654 and NSIR/DPR-ISG-01, Interim Staff Guidance (ISG) -01 "Emergency Planning for Nuclear Power Plants, Revision 0" (Reference 2). NUREG-0654 has been endorsed as an acceptable means of meeting the emergency planning requirements of 10 CFR Part 50 through NRC Regulatory Guide 1.101, Revision 3, "Emergency Planning and Preparedness for Nuclear Power Reactors" (Reference 3).

Two Westinghouse 4-loop pressurized water reactors (Units 1 and 2) are also located at CPNPP. The planning basis draws extensively on the existing Emergency Plan.

2. Emergency Planning Zones

NUREG-0654 establishes two Emergency Planning Zones (EPZs) for which planning for predetermined actions are implemented – the Plume Exposure Pathway EPZ, which has a radius of approximately ten miles, and the Ingestion Exposure Pathway EPZ, which has a radius of approximately fifty miles.

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The existing EPZs established around CPNPP Units 1 and 2 have been incorporated into this Plan and serve as the EPZs for Units 3 and 4.

Plume Exposure Pathway EPZ

The Plume Exposure Pathway EPZ is that area where the principal sources of incident-related radiation exposures are likely to be whole body gamma radiation exposures and inhalation exposures from the passing radioactive plume. As a result of this exposure scenario, any exposures resulting from a radiological incident at the facility are likely to have durations of less than one hour to a few days.

The Plume Exposure Pathway EPZ consists of an area about 10 miles in radius around CPNPP. Figure I-1 provides an illustration of the Plume Exposure Pathway EPZ.

Ingestion Exposure Pathway EPZ

The Ingestion Exposure Pathway EPZ is that area where the principal sources of incident-related radiation exposures are likely to result from ingestion of contaminated water and food; including milk, fresh vegetables, and foodstuffs. As a result of this exposure scenario, any exposures resulting from a radiological incident at the facility are likely to have durations of a few hours to months.

The Ingestion Exposure Pathway EPZ consists of an area about 50 miles in radius around CPNPP. Figure I-2 provides an illustration of the Ingestion Exposure Pathway EPZ.

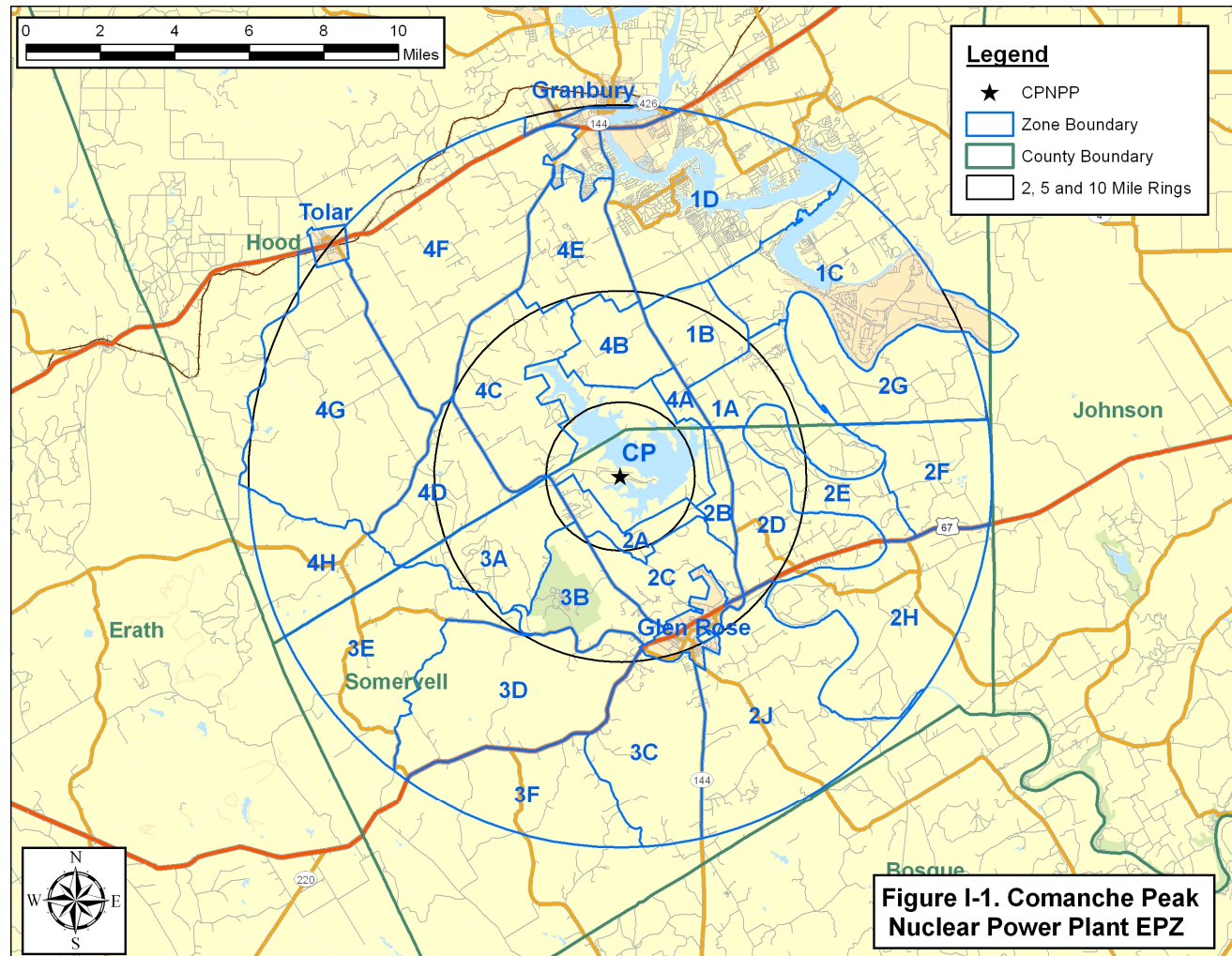
3. Site and Area Description

CPNPP Units 3 and 4 consist of two units, each of which includes a Mitsubishi US-APWR. Each reactor unit is designed for a core power output of 4451 Megawatt thermal (MWt). The net electrical power rating is approximately 1600 Megawatt electric (MWe), depending on site conditions.

The location of CPNPP Units 3 and 4 is described in Subsection 2.1.1.1 of the Final Safety Analysis Report (FSAR).

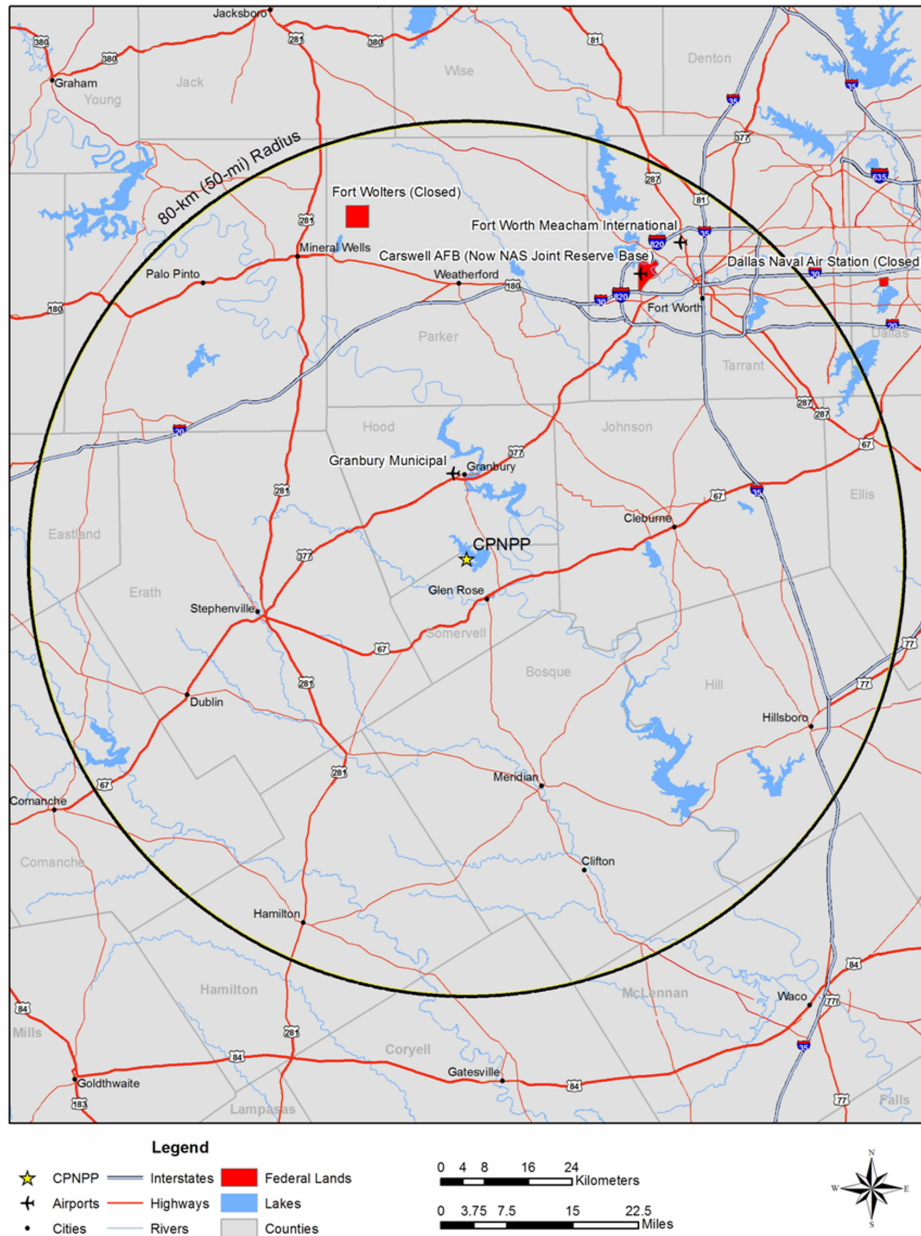
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Figure I-1 Plume Exposure Pathway Emergency Planning Zone



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Figure I-2 Ingestion Exposure Pathway Emergency Planning Zone



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II. Emergency Plan

A. Assignment of Responsibility (Organization Control)

This section of the Plan addresses primary responsibilities for emergency response by Luminant, Federal authorities, the State of Texas, and Somervell and Hood Counties. Emergency responsibilities for various supporting organizations are established and each principal organization is staffed to respond and augment its initial response on a continuous basis.

1. Emergency Organization

a. Participating Organizations

The principal organizations participating in emergency response activities at CPNPP Units 3 and 4 include:

- Luminant
- Texas Department of Public Safety (DPS), Governor's Division of Emergency Management (DEM)
- Texas Department of State Health Services (TDSHS), Radiation Control Program (RCP)
- Hood County Government
- Somervell County Government
- United States (U.S.) Nuclear Regulatory Commission (NRC)
- U.S. Department of Energy (DOE)
- U.S. Department of Homeland Security (DHS)/Federal Emergency Management Agency (FEMA)

b. Concept of Operations

Luminants' responsibilities during an emergency condition focus on taking actions to:

- Assess plant conditions.
- Classify emergency conditions.
- Notify off-site agencies of emergency conditions.
- Provide technical expertise to responsible agencies.
- Provide support for off-site assessment of radiological conditions.

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- Make protective action recommendations (PARs).
- Mitigate the consequences of adverse plant conditions by monitoring and controlling plant parameters.
- Terminate emergency conditions.

State and local agencies responsible for radiological emergency response coordinate their activities through the Somervell and Hood County Emergency Operating Centers (EOCs) and the State of Texas EOC. The Emergency Operations Facility (EOF) coordinates with the agencies necessary to support the emergency condition. Appendix 7 of this Plan contains Certification Letters with participating State of Texas and Somervell and Hood County agencies.

Appendix 8 of this Plan provides a cross-reference to these provisions regarding the State of Texas and Somervell and Hood County emergency response organization in State and local Plans, as applicable.

The Plan includes provisions for actions to be taken during the following phases of emergency management:

i. Preparedness

Actions and activities associated with this phase are described in various sections of this Plan, and include the development and maintenance of the following:

- Emergency Plan with supporting appendices, implementing procedures, facilities, and equipment.
- Training, drill, and exercise programs.
- Periodic review of the Plan

ii. Normal Operations

Normal operations at CPNPP Units 3 and 4 are conducted under the authority of the Shift Manager and are directed from the Control Room (CR). In the event of an abnormal condition, the Shift Manager directs the activities of the plant staff in performing initial assessment, corrective, and protective functions. Using approved emergency response procedures, including the EALs based on Appendix 1 of this Plan, the Shift Manager determines if an emergency condition exists and, if so, the proper emergency classification. Based on the classification and plant conditions, the Shift Manager:

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- Determines if activation of the Luminant emergency response facilities (ERFs) is desirable or required.^{1,2,3}
- Assumes the role of the Emergency Coordinator.
- Makes or directs initial notifications to affected plant staff and designated agencies as discussed in Section II.E of this Plan.

iii. Initial Emergency Operations

The CR is the initial center for coordination of emergency response during emergency conditions. For emergencies classified as Alert, Site Area Emergency (SAE) and General Emergency (GE), the Emergency Coordinator directs the activation of the ERO. Additionally, the Emergency Coordinator may direct the activation of the entire or a portion of the ERO for a NOUE, based on an assessment of plant conditions and support needs.

The response to an emergency begins with the personnel resources assigned on-shift. On-shift personnel are augmented as determined by the Emergency Coordinator and in accordance with this Plan and the emergency classification. Prior to declaring an Alert, the Shift Manager (Emergency Coordinator) has the authority to call in any portion of the augmentation staff as may be required for emergency response. The organized response of the on-shift and any augmented personnel resources identified in this Plan represents the ERO. Staffing of the entire ERO shall be initiated in the event of an Alert or higher classification. The ERO includes support as requested. Figure II-1 shows the interfaces between the various organizations.

iv. Augmented Response

1. Technical Support Center

The Technical Support Center (TSC) acts in support of the command and control function of the CR and provides an area for site personnel who have expertise in affected areas of plant operation to support the emergency

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1. If an event is transient in nature such that staffing of the ERO is not practical prior to termination of the event, then the ERO may not be staffed; however, notifications to affected authorities are completed consistent with the requirements of this Plan.
 2. Under some circumstances, such as unanticipated natural events or hostile action against the facility, the Emergency Coordinator may judge that movement of personnel as needed to staff the emergency response facilities may create undue personnel hazards. Under such circumstances, the Emergency Coordinator may elect to postpone staffing of the emergency response facilities and implement compensatory measures as needed to ensure ongoing personnel and facility safety.
 3. The ERO may be staffed prior to the declaration of an emergency situation, such as in anticipation of severe weather that is likely to result in the declaration of an emergency condition. This precautionary staffing of the ERO does not in and of itself constitute declaration of an emergency.

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response. This facility is equipped with communication equipment, computers, printers, off-site and on-site computer access, plant drawings, procedures and other materials and equipment necessary to support its function. Personnel in the TSC assess the emergency condition and make recommendations to the CR, the EOF and off-site agencies as necessary to provide for the safety of plant personnel and members of the general public. After the EOF is activated and operational, the EOF assumes many of the functions of the TSC and relies on the TSC as a vital link to the site.

Following activation of the ERFs and receipt of an adequate turnover, the TSC Manager or other designated member of the CPNPP management staff relieves the Shift Manager of Emergency Coordinator responsibilities and directs the activities of the on-site ERO from the TSC.

2. Emergency Operations Facility

The EOF assumes many of the functions of the TSC following turnover from the TSC. The EOF is staffed by Luminant personnel, including the EOF Manager, who directs the activities of this facility. The EOF Manager is responsible for ensuring the EOF communicates emergency status to the State and counties, directing the efforts of the off-site monitoring teams, making radiological assessments, recommending off-site protective actions to the State and counties, and arranging for dispatch of any special assistance or services requested by the TSC. Specific information relating to the staffing and reporting structure of the EOF organization is provided in EPPs.

3. Operations Support Center

The Operations Support Center (OSC) provides an operational center to provide support to the TSC and CR. The OSC dispatches Emergency Repair and Damage Control Teams as directed by the Emergency Coordinator and provides operational information, radiological assessment, and manpower for in-plant functions.

Table II-1 summarizes the responsibilities and activities of the ERFs under the various emergency classifications.

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v. Recovery

Recovery actions are actions taken to return the plant to an operational status or maintain long-term safe shutdown condition after the emergency response actions have been completed. If a recovery effort is deemed necessary, a Recovery Organization is established in accordance with Section II.M of this Plan.

Table II-1 Responsibility for Emergency Response Functions

Function	Emergency Classification			
	NOUE	Alert	Site Area Emergency	General Emergency
Supervision of reactor operations and manipulation of controls	CR	CR	CR	CR
Management of plant operations	CR (TSC)	TSC	TSC	TSC
Technical support for reactor operations	CR (TSC)	TSC	TSC	TSC
Management of corporate emergency response resources	CR (TSC) (EOF)	EOF	EOF	EOF
Monitoring of radioactive effluents and the environs; dose assessment and projection	CR (TSC) (EOF)	EOF	EOF	EOF
Provision of information to the State of Texas and Somervell and Hood County emergency response organizations, including Protective Action Recommendations	CR (TSC) (EOF)	EOF	EOF	EOF
Management of recovery operations	CR (TSC) (EOF)	TSC/EOF	TSC/EOF	TSC/EOF
Technical support for recovery operations	CR (TSC) (EOF)	TSC/EOF	TSC/EOF	TSC/EOF

Note: Listing of facilities in parentheses indicates that activation of these facilities or performance of these functions is optional, based on management assessment of plant conditions and emergency response needs.

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Coordination with CPNPP Units 1 and 2

Luminant has identified the need to coordinate emergency response actions taken at CPNPP Units 3 and 4 with CPNPP Units 1 and 2. The need to coordinate activities between TSCs and OSCs has also been identified. As noted previously in this section, the Emergency Coordinator is responsible for directing notifications to affected plant staff, which may include the unaffected units' CRs. This notification, and subsequent communications, will enable the unaffected units' staff to take action, if necessary.

In the unlikely event that an emergency is declared during operations at Units 3 and/or 4 concurrent with an emergency at Units 1 and/or 2, a single Emergency Coordinator is designated from on-site shift management in accordance with EPPs. The Emergency Coordinator discharges those duties described in this Emergency Plan, as well as those described in the Units 1 and 2 Emergency Plan, and provides for coordination of activities between the on-site TSCs and OSCs in accordance with EPPs.

Additionally, there is a potential for an emergency at Units 1 and/or 2 to affect personnel and activities at Units 3 and/or 4 while one or both of these units remain under construction. Emergency actions, including requirements for notification of construction site personnel, are stipulated in EPPs. Requirements for subsequent response actions by construction site personnel are stipulated in the Construction Site Health and Safety Plan or its supporting documents.

State Agencies

The State of Texas has developed the Radiological Emergency Management Plan which is incorporated in the Texas Emergency Management Plan as Annex D: Radiological Emergency Management. The fundamental legislation providing the basis for emergency response by civil authorities is the Texas Disaster Act of 1975, as amended. This act creates a DEM. The DEM is part of the Governor's office and is placed under the Director of the DPS by an Executive Order of the Governor. The duties and responsibilities of the principal and support agencies of the State of Texas are summarized below. The Commissioners of the Texas Department of Agriculture and the TDSHS are responsible for implementing protective actions within the Ingestion Exposure Pathway EPZ in accordance with the Texas Emergency Management Plan. This plan fulfills the necessary functions of planning for a radiological emergency at commercial nuclear power plants in the State of Texas. A detailed discussion of the State's response is contained in the Texas Emergency Management Plan. Letters of Agreement are provided in Appendix 7 of this Plan.

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• Governor's Division of Emergency Management

The DEM is the agency responsible for coordinating overall response to emergency situations in the State of Texas. As the Governor's authorized representative, the Chief, DEM assumes overall direction and control of the State's response to an emergency condition at CPNPP Units 3 and 4.

• Texas Department of Public Safety

The DPS serves as the primary communications contact and coordinates emergency communications between CPNPP Units 3 and 4, the State of Texas and Somervell and Hood Counties. The DPS coordinates with the local law enforcement officials and assists in maintaining traffic control, protecting life and property, establishing roadblocks, and alerting and warning persons in the affected area. The Highway Patrol Captain in District 1A Garland, Texas serves as Chairman of the Disaster District Committee. Requests for assistance from the local county EOCs are forwarded to District 1A. Requests that exceed the District's capability are forwarded to the State EOC in Austin. Response time for DPS personnel from the Disaster District Office in Garland to the site is approximately 2 hours.

• Texas Department of State Health Services

The TDSHS - RCP is the responsible agency for providing technical assistance and advice to local governments, the DPS, DEM and other State agencies during a radiological emergency at CPNPP Units 3 and 4. Once notified of a SAE or GE by DEM, the TDSHS will establish a communication link from their Austin office to the site. The TDSHS dispatches response teams to the site in accordance with provisions of the Texas Radiological Emergency Management Plan. The TDSHS response is directed by a designated member of TDSHS. The response team is capable of providing environmental sampling and radiological monitoring, including a mobile radiological laboratory. This laboratory serves to analyze low-level radiological environmental samples. Work space, telephone lines and electric hook-ups have been provided in the EOF for use by the TDSHS mobile radiological laboratory response team. It is expected that TDSHS personnel and the laboratory should arrive at pre-determined locations within approximately four hours of notification. The TDSHS also provides assessment of off-site hazards and PARs.

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County Governments

In an emergency situation at CPNPP Units 3 and 4, Somervell and Hood County governments are immediately notified of the event. They have the primary responsibility for the protection of the citizens within their county boundaries as described in their respective Emergency Management Plans. The principal Luminant contact with county government is through the County Judge or designee. Initially, this contact is maintained by the CR. Following activation, contact is maintained by the TSC until relieved by EOF Communicators. Luminant sends a representative to each county EOC when the EOC is activated for an emergency at CPNPP.

Local Agency Support Services

Agencies and private sector organizations that have agreed to provide support, as necessary to CPNPP Units 3 and 4 and surrounding areas are listed below.

Law Enforcement, Emergency Traffic Control, Related Police Matters

- Hood County Sheriff's Department
- Somervell County Sheriff's Department
- DPS

Early Warning or Evacuation of the Populace

- Hood County Sheriff's Department
- Somervell County Sheriff's Department
- DPS

Radiological Emergency Monitoring Assistance

- TDSHS - RCP
- South Texas Project Nuclear Operating Company
- U.S. Environmental Protection Agency (EPA)

Hospitals, Medical Support

- Lake Granbury Medical Center
- Walls Regional Hospital

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Ambulance Service

- Granbury/Hood County Emergency Medical Service, Inc.
- Somervell County Fire, Rescue, and EMS Service

Firefighting

- Somervell County Fire, Rescue, and EMS Service
- Granbury Volunteer Fire Department
- Indian Harbor Volunteer Fire Department
- DeCordova Bend Estates (DBCE)/Acton Volunteer Fire Department

Public Health and Safety, Evaluation of the Radiological Situation

- TDSHS - RCP
- Texas Department of Agriculture

Federal Government Emergency Response

The Emergency Coordinator is authorized to request Federal assistance on behalf of the site under provisions of the Federal Radiological Emergency Response Plan. The Emergency Coordinator requests Federal assistance by contacting the NRC. The emergency response roles of various Federal agencies are established in the National Response Framework and various agency-specific documents (e.g. NRC Incident Response Plan) supporting that plan.

CPNPP Units 3 and 4 also maintain close contact with the NRC Operations Center and/or the NRC Region IV Office in Arlington, Texas. This is an important function to provide accurate information and assessment of the emergency to the Federal Government. As a result of these communications, the NRC can best appraise their response to the emergency.

Nuclear Regulatory Commission

The response provided by the NRC is described in NUREG-0728, "NRC Incident Response Plan," Rev. 4 (Reference 4). The agency's response at the regional level is under the direction of the Region IV Administrator or designee. If an NRC site team is established and dispatched to the vicinity of CPNPP, the representative of the NRC who would provide input to the

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EOF Manager is the Site Team Director. A workspace and a telephone have been provided in the EOF for this NRC representative.

Methods of notifying the NRC are discussed in Section II.E of this Plan, Notification Methods and Procedures. The NRC may be expected to be on-site within four hours of receiving notification of the event.

Specific responsibilities assigned to the NRC include:

- Notification of FEMA whenever a radiological event occurs or when there is a high potential for such an event.
- Monitoring operational data and assuring that adequate information and recommendations are being provided to off-site agencies.
- As a back-up, providing technical assessment of on-site radiological and plant conditions to FEMA and other Federal agencies, and keeping the State of Texas and Somervell and Hood County agencies apprised of any operational discussions that may affect off-site protective actions.
- In coordination with CPNPP Units 3 and 4, disseminate on-site data to FEMA and Federal agencies, the news media, and the general public.

Department of Energy

The Federal Radiological Monitoring and Assessment Center (FRMAC) Operations Plan (Reference 5) provides for the coordinated management of Federal technical response activities related to a radiological emergency.

DOE is assigned responsibility to establish and manage the FRMAC. The FRMAC may be activated when a major radiological emergency exists, and the Federal government will respond when a State, other governmental entity with jurisdiction, or a regulated entity requests Federal support.

Further information concerning objectives and organization is provided in the FRMAC Operations Plan.

Environmental Protection Agency

The U.S. EPA may provide assistance in supporting environmental monitoring teams and mobile radioanalytical laboratories.

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Department of Homeland Security/Federal Emergency Management Agency

DHS/FEMA bears responsibility for coordinating off-site Federal agency response for non-technical aspects of the emergency. Such support would typically be requested by the State of Texas and Somervell and Hood County agencies.

Specific responsibilities assigned to the DHS/FEMA include:

- Coordination of Federal support to the State of Texas and Somervell and Hood County officials
- Dissemination of data on off-site support actions to the Federal agencies
- FEMA may send personnel to the EOF to coordinate activities with CPNPP Units 3 and 4, the NRC, and the State of Texas.

To support the Federal emergency response efforts, the following facilities are available:

Airports:	Granbury, Cleburne, Stephenville, Meacham in Fort Worth, Forth Worth Joint Reserve Base, Love Field in Dallas, and Dallas-Fort Worth International
Motels:	Granbury, Glen Rose, Cleburne, Stephenville, Dallas, and Fort Worth
CPNPP:	Working space within the CPNPP Units 3 and 4 ERFs has been allocated for co-location of NRC personnel. Phones are available for NRC personnel within the ERFs.

Appendix 7 of this Plan contains the certification letters established between Luminant and the State and local government agencies supporting this Plan. The responsibilities of many Federal agencies are established in the National Response Framework (Reference 6) and therefore no certification letters are required for these agencies.

c. Organizational Interrelationships

The interrelationships between CPNPP Units 3 and 4, CPNPP Units 1 and 2, Federal, State, local and any private agencies are shown on in Figure II-1.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

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d. Individual in Charge of Emergency Response

As discussed previously in this section, the Shift Manager assumes the role of Emergency Coordinator upon declaration of an emergency. Following activation of the ERFs and receipt of an adequate turnover, the TSC Manager or other designated member of the station management staff relieves the Shift Manager of Emergency Coordinator responsibilities. When the EOF is activated and operational, the EOF Manager assumes command and control after completing turnover from the Emergency Coordinator.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

e. 24 Hour Emergency Response Capability

Luminant maintains a response capability of 24 hours per day, including manning of communications links, through training of multiple responders for key emergency response positions, consistent with the training requirements established in Section II.O of this Plan.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

2. *Functions, Responsibilities, and Legal Basis*

The State of Texas and Somervell and Hood Counties' Plans establish the functions and responsibilities for major elements of the Plans and key individuals, by title, responsible for emergency response. Each Plan also contains reference to the legal basis for such authority. Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

3. *Written Agreements*

Appendix 7 of this Plan contains certification letters established between Luminant, the State of Texas and Somervell and Hood County government agencies certifying that:

- the Proposed Emergency Plans are practicable;
- these agencies are committed to participating in further development of the plans, including any required field demonstrations; and
- these agencies are committed to executing their responsibilities under the plans in the event of an emergency.

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Luminant has established relations with off-site response organizations (OROs) identified and described in section II.A.1 of this Plan to coordinate emergency response efforts should they be needed. The scope of ORO support includes the implementation of State and local emergency response plans to protect public health and safety in the event of a severe reactor accident and to provide sufficient fire, medical and local law enforcement support, as necessary, to CPNPP, including during an hostile-action based (HAB) event. The EPP addressing "Security Events" and the Safeguards Contingencies plan identified OROs and their expected integration into on-site activities during HAB events.

Letters of Agreement with private sector organizations, such as fire response, emergency medical transportation, and hospitals, are provided in Appendix 7.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

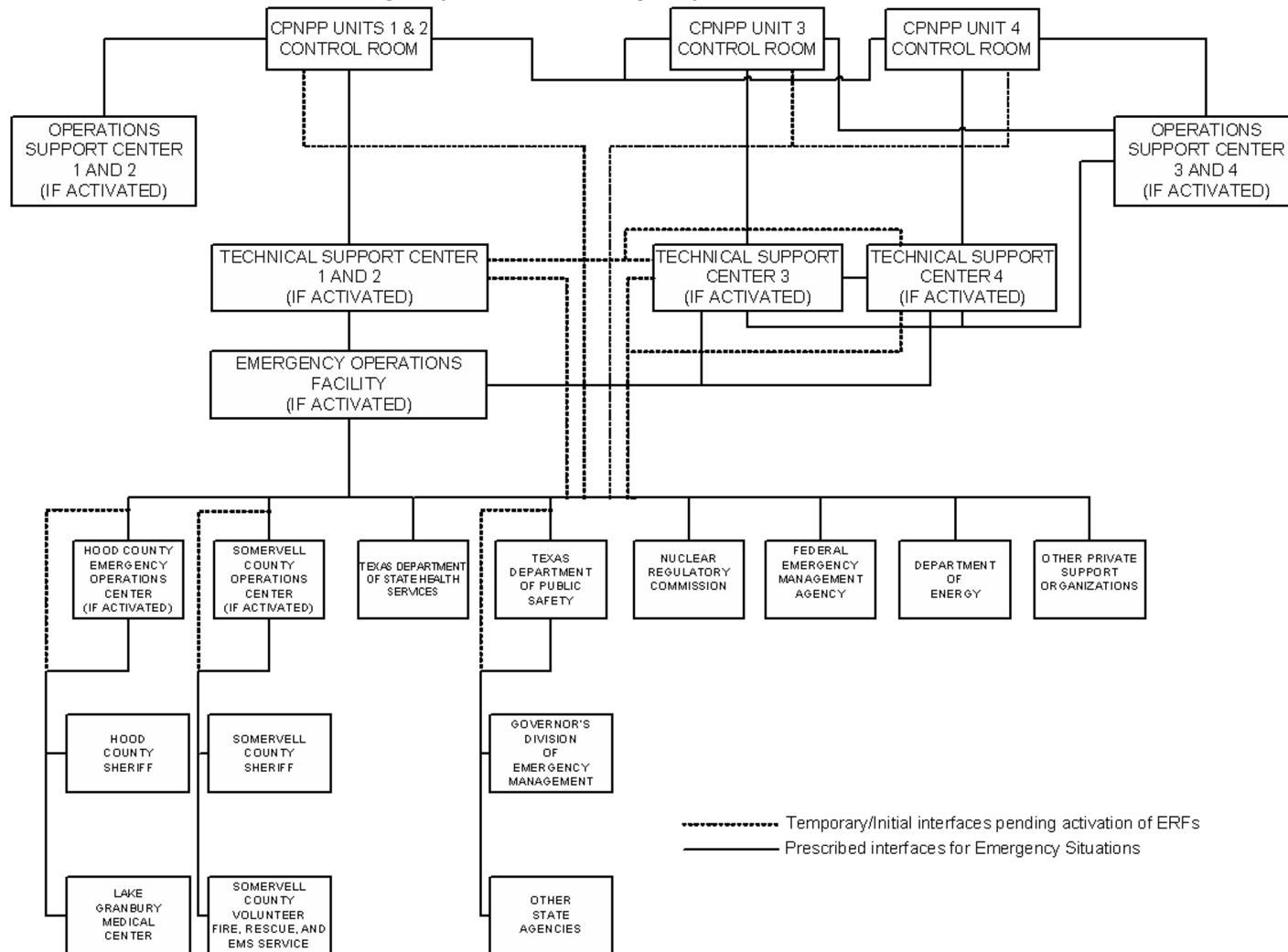
4. *Continuous Operations*

Luminant maintains capability for continuous operations through training of multiple responders for key emergency response positions, consistent with the training requirements established in Section II.O of this Plan. The Emergency Coordinator or EOF Manager, as appropriate, bears responsibility for ensuring continuity of technical, administrative, and material resources during emergency operations.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

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Figure II-1 Emergency Response Organization Interrelationships
 (Alert, Site Area Emergency, General Emergency)



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B. On-site Emergency Organization

On-shift responsibilities for Luminant emergency response are defined in this section of the Plan. Sufficient on-shift staffing for initial accident response in key functional areas is maintained continuously during the course of an emergency and assigned responsibilities do not inhibit the timely performance of emergency response functions. Timely augmentation of response capabilities is available, and the interfaces among various on-site response activities and off-site support and response activities are described.

1. On-site Emergency Organization

The initial response starts with the normal Operations Shift. The operating organization, along with minimum on-shift complement is discussed in the FSAR, Section 13.1.

Figure II-2 illustrates the CPNPP Units 3 and 4 ERO. EPPs provide details regarding ERO position functions.

The Operations Shift is responsible for the safe operation of the plant and provides for 24-hour per day emergency response. The Operations Shift responds to abnormal and emergency events and takes action as necessary to mitigate the consequences of an event. Details regarding these actions are specified in the EPPs.

The following principal responsibilities are assigned to the Operations Shift until relieved by members of the ERO.

Shift Manager

- At the onset of an event, assess, classify, and declare the emergency.
- Assume the duties and responsibilities of the Emergency Coordinator.
- Implement response actions based upon the emergency classification declared.
- Approve release of public information from Luminant.

Shift Technical Advisor

- Provide engineering expertise and advice regarding plant transient analysis, accident mitigation, core/thermal hydraulics, and other matters related to operational safety.
- Perform dose assessment.

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Control Room Communications

- Notify the ERO of the event.
- Notify the State of Texas and Somervell and Hood County agencies by initial and follow-up notifications.
- Notify the NRC of the event.
- Notify other selected personnel.

Radiation Protection Technicians

- Perform in-plant and on-site radiological surveys.
- Provide radiological control coverage for emergency repair, search and rescue, first aid, firefighting and other activities.
- Provide radiological support to ERFs.

Chemistry Technicians

- Perform in-plant chemistry sampling and analysis.
- Function as part of the First Aid Team.

Security Shift Supervisor

- Control access to site property.
- Assist with site evacuation.
- Perform personnel accountability.

Emergency Teams

- Emergency Repair & Damage Control
 - Perform maintenance activities associated with mechanical equipment, electrical equipment, and instrumentation and control systems.
- Fire Brigade
 - Perform firefighting activities in accordance with site procedures.
 - Perform rescue activities.

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- First Aid
 - Provide first aid services to injured personnel.
 - Provide transportation to local hospitals.

The Operations Shift is staffed to be self-reliant for a period of time to allow for the notification of other personnel and the staffing and activation of ERFs per Section II.H of this Plan. In addition to Operations Shift personnel, other personnel in the ERO assume roles in supporting the overall emergency response. Figures II.2 through II.6 provide illustrations of the ERO organization. ERO positions and principal responsibilities not discussed in this Section are discussed below.

Luminant maintains the minimum staff required to conduct routine and immediate emergency operations at the site consistent with Appendix E of 10 CFR Part 50. Section 13.1 of the FSAR discusses normal plant staffing. Site administrative procedures provide the details of the normal site organization, including reporting relationships.

2. Emergency Coordinator

The Shift Manager position is staffed continuously. Upon classifying an event, the Shift Manager assumes the role of the Emergency Coordinator until relieved by a qualified member of the management staff consistent with Section II.B.3 of this Plan or until termination of the emergency condition, whichever comes first.

The individual filling the Emergency Coordinator role has the responsibility and authority to initiate required emergency response actions, including notification of affected Federal, State, and local authorities and provision of PARs to off-site authorities.

3. Emergency Coordinator Line of Succession

If the Shift Manager is rendered unable to fulfill the duties and responsibilities of the Emergency Coordinator position (such as due to personal illness or injury) the Unit Supervisor (one per unit) present on shift (a position that is staffed continuously) assumes the Emergency Coordinator position until relieved by a qualified member of the site management staff.

The duties and responsibilities of the Emergency Coordinator are transferred after the successor has been briefed on current plant status and status of off-site and on-site emergency response activities.

The TSC Manager relieves the Shift Manager of Emergency Coordinator duties at an Alert or higher emergency classification. The TSC Manager

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may relieve the Shift Manager of Emergency Coordinator duties at a NOUE based on an assessment of plant conditions and support needs. After the EOF has been activated, the duties of the Emergency Coordinator may be transferred to the EOF Manager; however, the responsibilities to assess, classify, and declare the emergency shall remain with the TSC Manager unless the TSC and EOF Manager agree to transfer these functions.

A trained, higher level member of Luminant's management staff may assume Emergency Coordinator responsibilities from the Shift Manager after becoming fully familiar with the pertinent plant and radiological conditions, status of emergency response/accident mitigation efforts, and after determining that the ERFs are staffed to an extent necessary to allow him/her to perform the designated Emergency Coordinator functions.

4. *Emergency Coordinator Responsibilities*

The Emergency Coordinator has the responsibility and authority to immediately and unilaterally initiate provisions of this Plan and for evaluation, coordination and control of on-site activities related to the emergency response until the event is closed out or the Recovery Organization is formed. The responsibilities of the Emergency Coordinator include:

- Assessment, classification and declaration of an emergency.
- Ensuring notification of officials in Somervell and Hood Counties, DPS, the NRC, and other organizations as needed.
- Recommending protective actions to the State of Texas and Somervell and Hood County authorities.
- Approving shift schedules that support long-term emergency response to permit continuous operation.
- Authorizing on-site protective actions.
- Requesting support from Federal, State, and local emergency response agencies, as appropriate.
- Coordinating off-site emergency response activities with activities conducted on-site.

The Emergency Coordinator shall not delegate the decision-making authority for:

- recommending use of potassium iodide (KI)
- authorizing reentry into evacuated on-site areas

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- authorizing personnel exposures in excess of 10 CFR Part 20 limits
- making PARs to off-site authorities
- notification of Texas and Somervell and Hood County authorities responsible for off-site emergency response

The Emergency Coordinator has the authority to request assistance from any organization which the Emergency Coordinator deems necessary to mitigate the conditions causing the emergency. In addition, the Emergency Coordinator may request off-site assistance in firefighting, rescue services, law enforcement, and medical support prior to activation of the on-site emergency response organization (see Figure II-1).

Should the Emergency Coordinator determine that additional emergency response personnel are needed at NOUE or the emergency classification is upgraded to Alert or higher, the Emergency Coordinator shall initiate activation of the EOF and Joint Information Center (JIC) EROs and notification of additional on-site personnel, as necessary. The goal for activation of the full on-site ERO is 70 minutes following the decision to activate.

5. *Plant Emergency Response Positions*

Luminant maintains emergency response staffing capability consistent with Table II-2 of this Plan, which is based on the guidance provided in Table B-1 of NUREG-0654 and the provisions of the Emergency Plans of currently-licensed Luminant nuclear facilities.

The ERO, when fully activated, includes the positions described in Table II-2. Depending on the specific event, site management or the EOF Manager may determine that additional Corporate (off-site) support would be beneficial. On an ad hoc basis, additional support may be called upon to perform functions similar to those they routinely perform at CPNPP. Support personnel that may be called upon to assist in a protracted event are discussed in Section II.B.7 and below under the heading "Emergency Response Organization Support Staff."

The ERO consists of those positions and associated responsibilities described in Section II.B.1 and II.B.2 as well as the positions discussed further in this subsection. Further information regarding the duties and responsibilities of ERO positions are contained in EPPs addressing "Activation and Operation" of the various ERFs.

Control Room Operations Advisor

The CR Operations Advisor serves as the contact point between the operating crew and the TSC staff.

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Technical Support Center Manager

The TSC Manager relieves the Shift Manager of Emergency Coordinator duties. The TSC Manager is responsible for activation and control of emergency response activities conducted in the TSC. The TSC Manager relieves CR personnel of administrative functions and decisions and maintains direction and control of on-site emergency response activities conducted within the Protected Area which are required to place a plant in a safe, stable condition.

Technical Support Center Communications Coordinator

The TSC Communications Coordinator is responsible for coordinating communications activities in the TSC. Prior to EOF activation, the position is also responsible for administrative and logistical support.

Technical Support Center On-Site Radiological Assessment Coordinator

Once the TSC is activated, responsibilities for on-site and off-site radiological assessment and survey activities shall be assumed by the TSC On-Site Radiological Assessment Coordinator. The position provides backup dose assessment capabilities and is responsible for directing the on-site radiological assessment activities and ensuring the radiological safety of personnel on-site.

Once the EOF is activated, overall responsibility for off-site radiological assessment shall be assumed by the EOF Radiation Protection Coordinator (RPC).

Technical Support Center Operations Coordinator

The TSC Operations Coordinator serves as the Operations representative to the TSC staff and as the contact point between the TSC and the operating crew.

Emergency Planning Advisor

The Emergency Planning Advisor assists the ERO activation of the TSC and provides expertise to TSC personnel concerning: Comanche Peak and off-site supporting emergency facilities capabilities; communications capabilities; personnel and equipment resources; and procedural requirements.

Technical Support Center Engineering Team Coordinator

The TSC Engineering Team Coordinator is responsible for directing and coordinating activities of the TSC Engineering Team to assess plant status and severity of emergency conditions.

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Technical Support Center Engineering Team

The TSC Engineering Team is composed of at least four individuals with the experience and competence to provide technical support to the CR Staff in the following areas:

- Core reactivity monitoring and damage assessment
- Damage assessment (Mechanical/Electrical/I&C) and corrective action development
- Operations data and procedure interface
- Engineering data analysis, including core thermal hydraulics

With the location of the TSC being in close proximity to the CR (less than two minute transit time), contact is made with the CR staff for assistance and if necessary, or requested, an engineer(s) can promptly relocate to the CR.

Operations Support Center Manager

The OSC Manager is responsible for activation and control of emergency response activities conducted in the OSC. The OSC Manager is also responsible for dispatching and coordinating personnel to assist in emergency repair and damage control activities, performing radiological surveys, personnel rescue operations, establishing controlled areas, and implementing recovery actions.

Operations Support Center Radiation Protection Coordinator

The OSC Radiation Protection Coordinator directs the activities of the Radiation Protection Technicians and is responsible for providing radiological protective measures for teams dispatched from the OSC.

Operations Support Center Chemistry Coordinator

The OSC Chemistry Coordinator directs the activities of the Chemistry Technicians and is responsible for coordinating requests for chemical analysis and for coordinating medical response and spill control teams from the OSC.

Operations Support Center Emergency Response and Damage Control Coordinator

The OSC Emergency Response and Damage Control (ERDC) Coordinator directs the activities of the Maintenance personnel, and is responsible for coordinating emergency repair and damage control teams dispatched from the OSC.

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On-Site Survey Teams

As CPNPP Units 3 and 4 Emergency Organization personnel become available, on-site radiological survey teams shall be formed as required and dispatched from the OSC. On-site Survey Teams initially shall be composed of at least two members, at least one of which shall be a Radiation Protection Technician. The On-site Survey Team(s) perform required on-site and in-plant surveys in accordance with approved EPPs.

Company Spokesperson

The Company Spokesperson is responsible for coordinating with the Emergency Coordinator and approving public information releases issued by Luminant from the JIC.

Joint Information Center Director

The JIC Director schedules, coordinates, and hosts press briefings and approves access to the JIC.

Joint Information Center Support Staff

The JIC Support Staff:

- gathers current technical event related information from the Emergency Coordinator and forwards to the Company Spokesperson and/or JIC Director
- informs corporate communications, government sources, and media news services of event developments and obtains emergency-related information from outside sources
- prepares press releases from approved information for dissemination to the media
- reviews received rumors and media broadcasts for consistency with approved information and reports findings to the Company Spokesperson
- host media representatives
- set up and monitor audio and visual equipment
- record press briefings
- monitor media broadcasts for event related information
- answer telephone requests for information from the public and the media

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Emergency Operations Facility Manager

After the EOF has been activated, the duties of the Emergency Coordinator may be transferred to the EOF Manager. The EOF Manager is responsible for activation and control of emergency response activities in the EOF, ensuring the EOF communicates emergency status to the State and counties, directing the efforts of the off-site monitoring teams, making radiological assessments, recommending off-site protective actions to the State and counties, and arranging for dispatch of any special assistance or services.

Emergency Operations Facility Communications Coordinator

The EOF Communications Coordinator is responsible for coordinating communications activities in the EOF.

Emergency Operations Facility Radiation Protection Coordinator

The EOF RPC and staff (see Figure II-5) are responsible for coordinating Luminant's off-site radiological monitoring efforts. The EOF RPC is also responsible for coordinating Luminant's off-site radiological assessment activities with those of Federal, State of Texas and Somervell and Hood County agencies.

- The EOF Off-Site Radiological Assessment Coordinator (OFFRAC), who reports to the EOF RPC, is responsible for coordinating the efforts of the off-site radiological assessment team in performing activities such as:
 - Nuclear Operations Support Facility (NOSF) habitability
 - Dose projections and assessment
- The Off-site Monitoring Team Director, who reports to the EOF RPC, is responsible for coordinating the efforts of the off-site radiological monitoring team(s) in performing activities such as:
 - Locating and tracking the off-site plume
 - Off-site monitoring team direction and control

Emergency Operations Facility Logistical Support Coordinator

The EOF Logistical Support Coordinator and his staff (see Figure II-5) coordinate requests from the ERO for administrative and logistical assistance. These requests include such items as meals, parts and supplies, transportation, and manpower issues (such as shift relief schedules).

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Emergency Operations Facility/Technical Support Center Liaison

The EOF/TSC Liaison provides technical support (which includes classification input if required) to the EOF Management team and serves as a liaison between the EOF personnel and the TSC Engineering team.

Emergency Operations Facility Security Coordinator

The EOF Security Coordinator is responsible for coordinating on-site security force activities.

Emergency Response Organization Support Staff

- assist the ERO with facility activation and provide expertise and information to ERO personnel concerning both utility and off-site supporting agency facilities, communication capabilities, personnel and equipment resources, and procedural requirements
- augment and advise State/county emergency organizations
- provide an interface between the emergency facilities, accident assessment teams, and Federal, State of Texas and Somervell and Hood County authorities
- duties such as maintaining logs, answering phones, transmitting faxes, and distributing information.
- post and update status boards within the emergency response facilities.

6. Interfaces Between Functional Areas

Figure II-1 illustrates the interfaces among ERFs of CPNPP Units 3 and 4 emergency response activity, Luminant corporate support, and State of Texas and Somervell and Hood County government response organizations.

7. Corporate (Off-site) Support for the Plant Staff

Luminant maintains sufficient management and personnel resources to effectively staff (24 hours) the ERO and its intended emergency mitigation functions. This arrangement preempts the need for a separate organization of off-site corporate personnel to be identified for, and incorporated in, the ERO; however, in the event of an emergency requiring assistance from off-site organizations, Luminant is fully committed to providing other resources to assist the ERO. Corporate capabilities that exist within Luminant include:

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- f. Public information services
- g. Materials Procurement Services
- h. Contract manpower and construction services
- i. Legal and insurance services
- j. Additional technical support

8. Support from Contractor and Private Organizations

Support from private sector organizations may be obtained through direct notification to the individual organization. The following organizations provide services, if requested:

Mitsubishi

Luminant may request that the reactor vendor, Mitsubishi Nuclear Energy Systems, Inc., provide technical support for emergency response activities. Mitsubishi Nuclear Energy Systems, Inc. will operate from its corporate offices, with a small contingent at the plant, if requested.

Institute of Nuclear Power Operations

The Institute of Nuclear Power Operations (INPO) serves as a clearinghouse for industry-wide support during an emergency. When notified of an emergency situation, INPO provides emergency response as requested. INPO provides the following emergency support functions:

- Assistance to the affected utility in locating sources of emergency manpower and equipment
- Analysis of the operational aspects of the incident
- Dissemination to member utilities of information concerning the incident
- Organization of industry experts who could advise on technical matters

If requested, one or more suitably qualified members of the INPO staff will report to the EOF Manager and assist in coordinating INPO's response to the emergency.

South Texas Project

The South Texas Project provides a backup service for analyzing Post-Accident Samples.

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American Nuclear Insurers

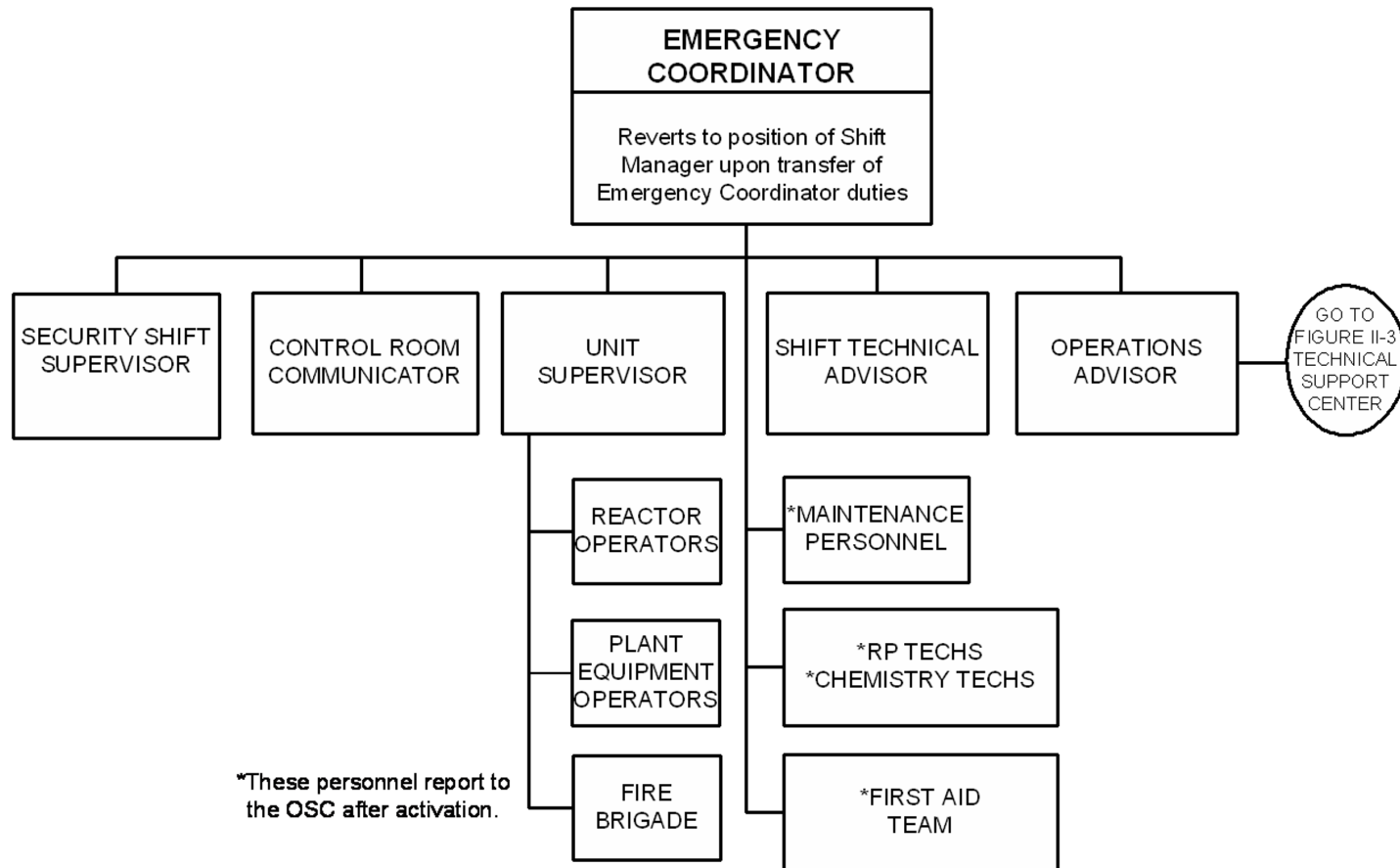
Luminant maintains a policy with American Nuclear Insurers (ANI). ANI has agreed to assume responsibility for promptly assisting members of the public who may be adversely affected by an event at CPNPP Units 3 or 4. This insurance policy alleviates the immediate financial burden that may be incurred by members of the public due to evacuation and relocation associated with an incident. ANI will have their representatives on the scene, prepared to commence the distribution of emergency funding at the earliest possible time, on a 24-hour per day basis.

9. Local Emergency Response Support

Luminant has established and maintains agreements for local emergency response support services, including firefighting, rescue squad, medical and hospital services. The local response organizations involved with emergencies at CPNPP Units 3 and 4 are the Hood County and Somervell County Emergency Organizations. Appendix 7 of this Plan contains certification letters for organizations providing the respective services.

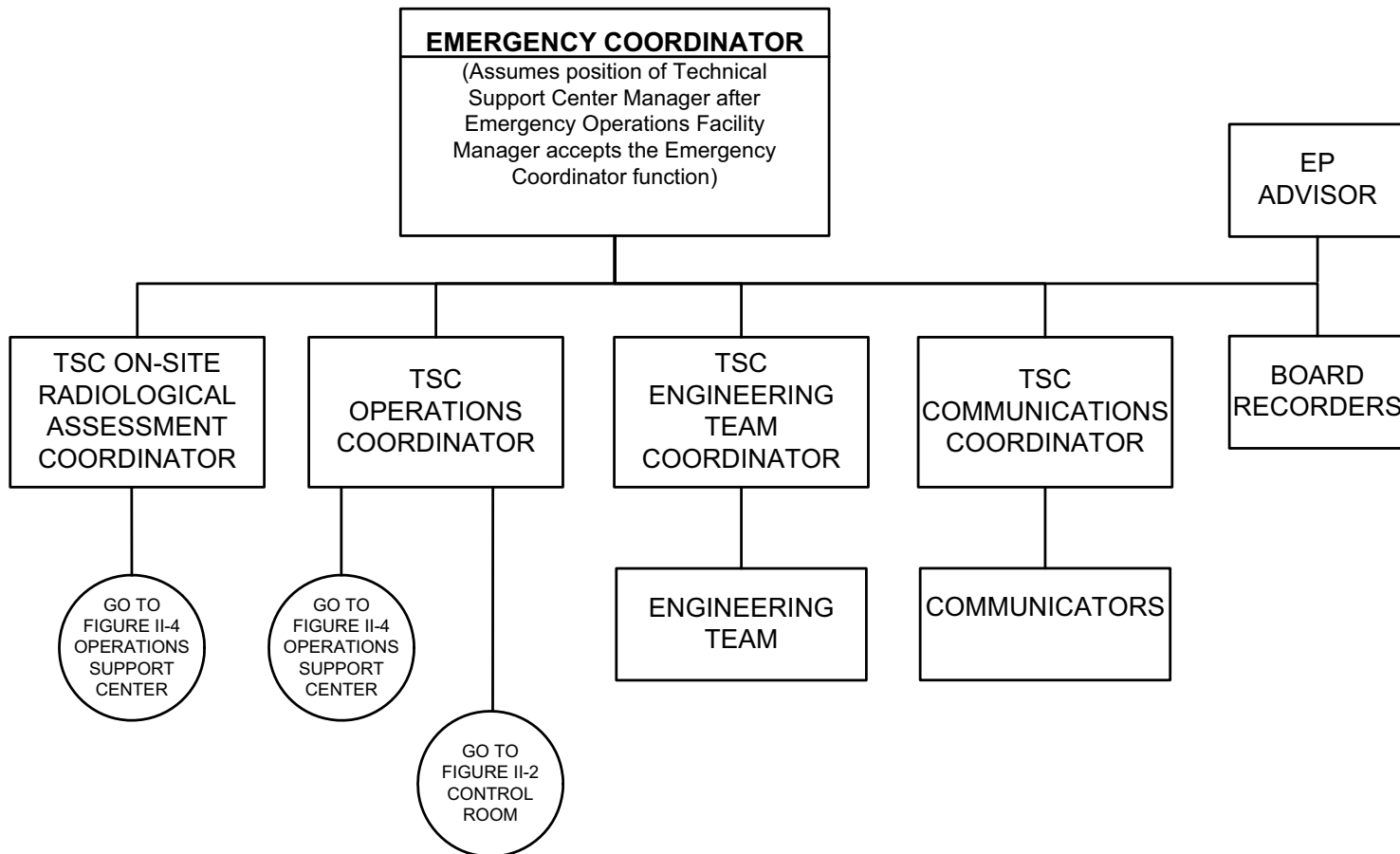
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Figure II-2 Emergency Response Organization – Shift Manager as Emergency Coordinator



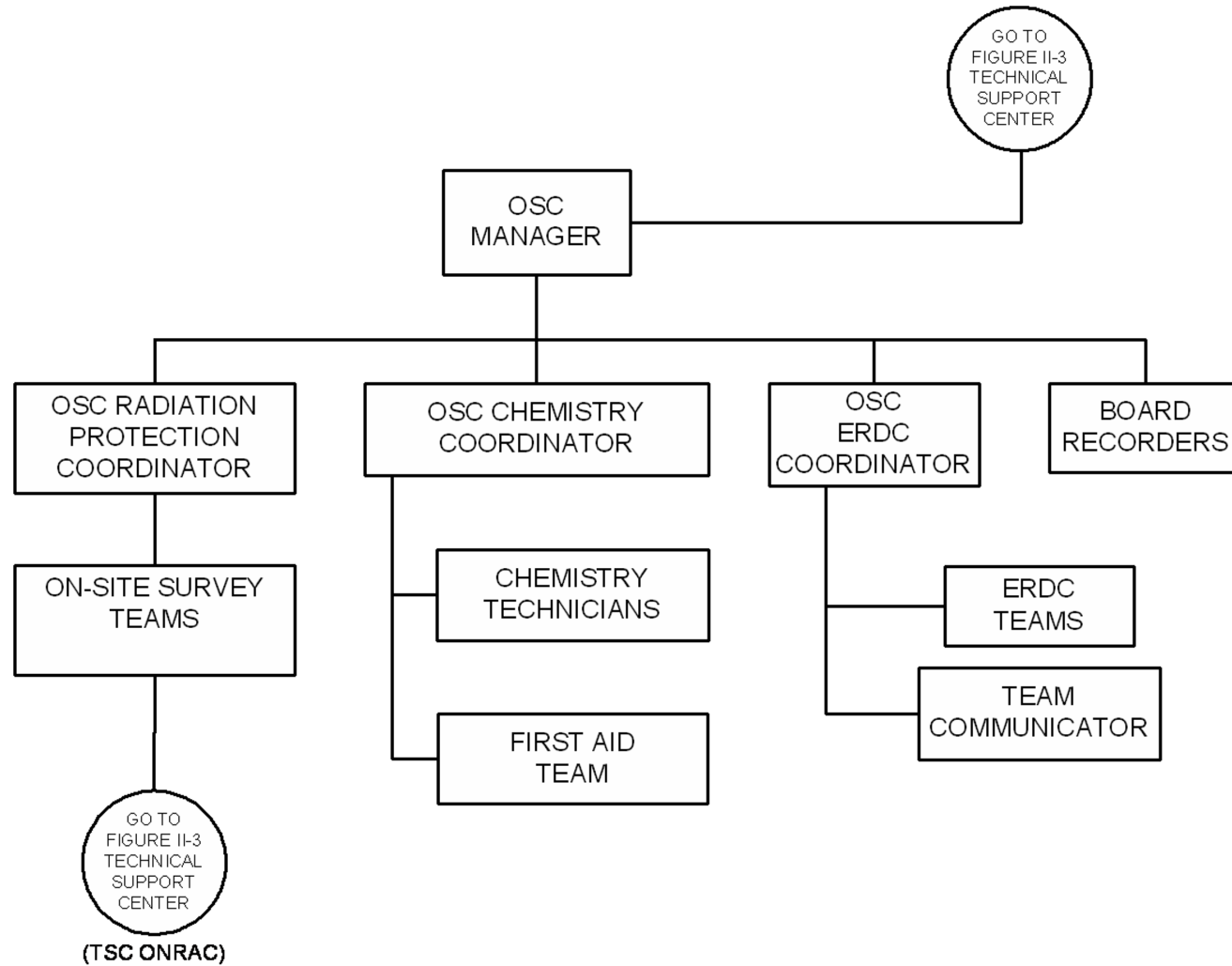
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Figure II-3 Emergency Response Organization – Technical Support Center Manager as Emergency Coordinator



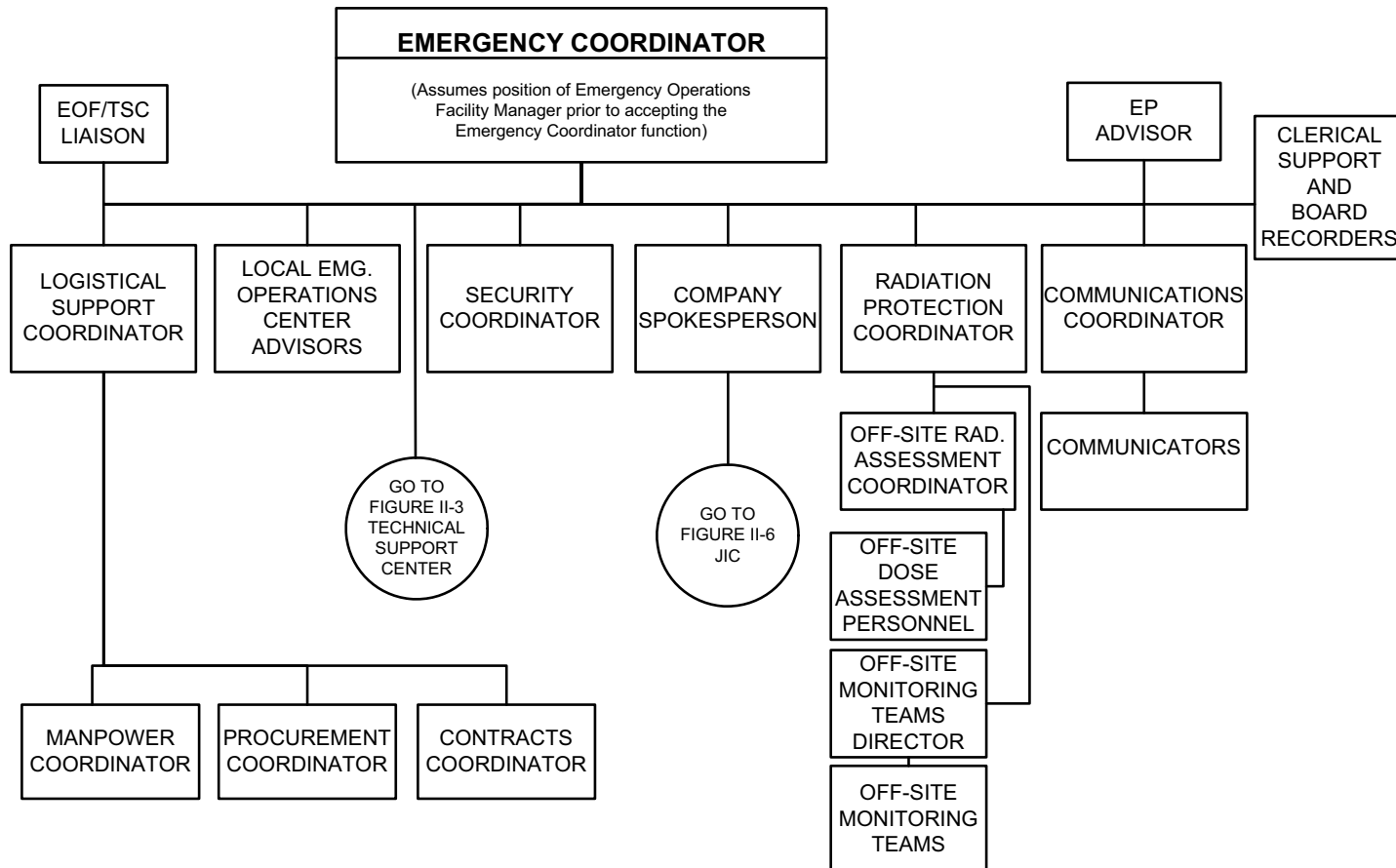
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Figure II-4 Emergency Response Organization – Operations Support Center



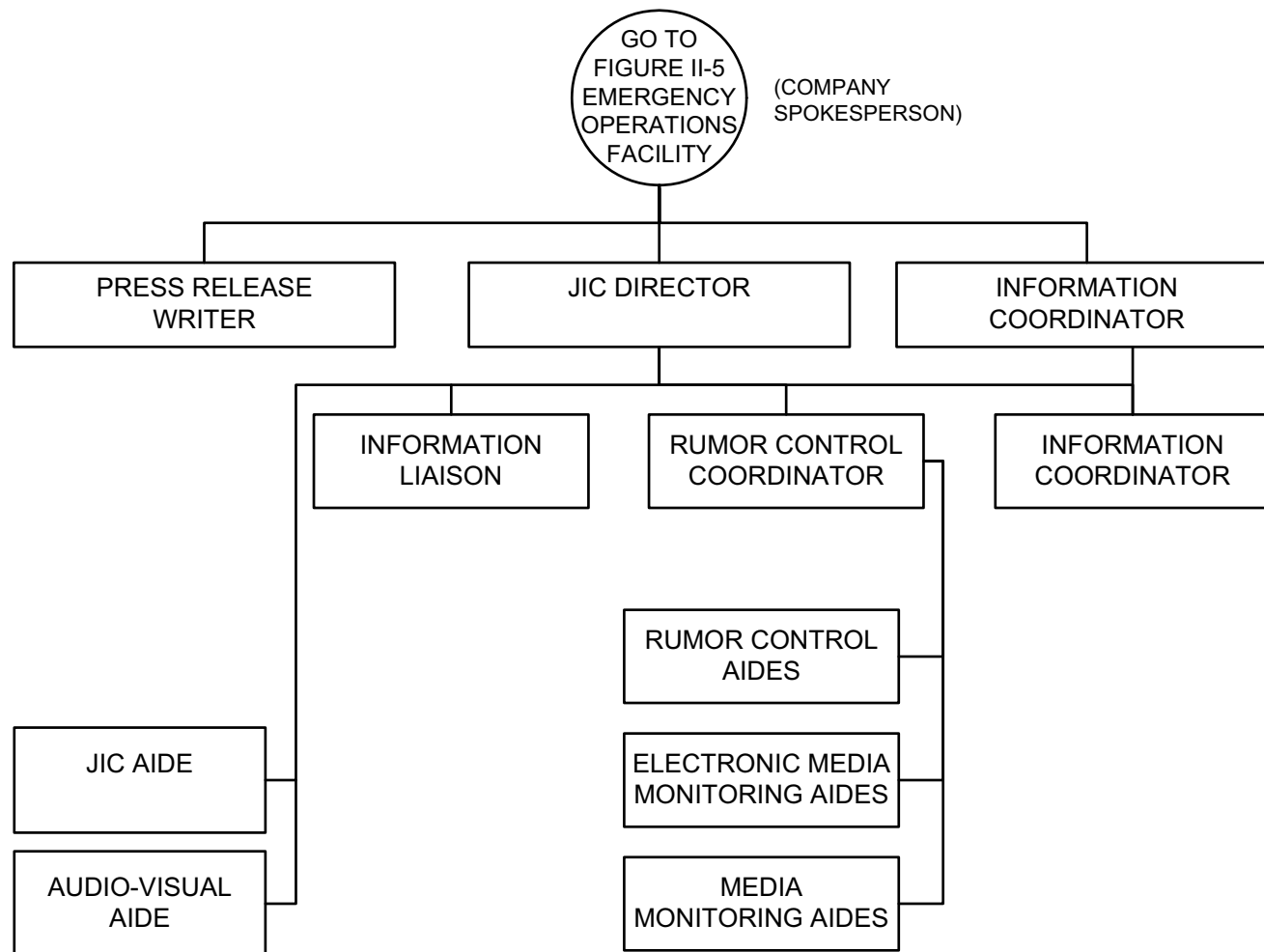
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Figure II-5 Emergency Response Organization – Emergency Operations Facility Manager as Emergency Coordinator



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Figure II-6 Emergency Response Organization – JIC



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Table II-2 Plant Staffing Requirements for Emergencies

FUNCTIONAL AREA	TASK	ON-SHIFT ^c	CAPABILITIES FOR ADDITION ^e	
			30 MINUTES	60 MINUTES
Station Operations	Plant operations and assessment of operational aspects	1 – Shift Manager (SRO) ^d		
		1 – Unit Supervisor (SRO) ^d		
		2 – Reactor Operators (RO) ^d		
		2 – Nuclear Equipment Operators ^d		
Emergency Direction and Control	Direction and control of on-site emergency activities as Emergency Coordinator	1 – Shift Manager (SRO) ^b		1 – TSC Manager 1 – EOF Manager
Notification/Communications	Notify station, local, state and federal personnel and maintain communications	1 – Communicator ^d 1 – Communicator ^a		1 – TSC Communications Coord. 1 – TSC ENS Communicator 1 – EOF Communications Coord.
Radiological Accident Assessment and Support of Operational Accident Assessment	In-Plant Survey	Radiation Protection Technician ^f		2 – Radiation Protection Technician
	Chemistry/Radiochemistry	Chemistry Technician ^a		1 – Chemistry Technician
	On-site Surveys	Radiation Protection Technician ^f		1 – Radiation Protection Technician
	Off-site Surveys		2 – Radiation Protection Technician	2 – Vehicle Driver
	Dose Assessment	1 – Shift Technical Advisor ^a	1 – TSC OnRAC	1 – EOF Dose Assessor
	Protective Actions	2 – Radiation Protection Technician ^a	2 – Radiation Protection Technician	2 – Radiation Protection Technician
	Coordination/Control	1 – Shift Manager ^{a, b}	1 – TSC OnRAC ^a	1 – EOF RP Coordinator
Station System Engineering	Coordination/Control			1 – TSC Engineering Team Coord.
	Technical Support	1 – Shift Technical Advisor ^a		4 – TSC Eng. Team Members
System Repair/Corrective Action	Emergency repair and damage control			1 – OSC Manager
		1 – Radwaste Operator ^a		1 – Plant Equipment Operator
		Mechanic ^a		1 – Mechanic
		Electrician ^a		1 – Electrician
		I&C Technician ^a		1 – I&C Technician
Fire	Fire fighting and rescue operations	Per Final Safety Analysis Report	Local Support	
Medical	First Aid	2 – First Aid Team Member ^a	Local Support	
Security	Site access control and personnel accountability, security	Per Security Plan	Local Support	1 – EOF Security Coordinator
Public Information	Approve release of public information from Luminant	1 – Shift Manager ^{a, b}		1 – TSC Manager ^a 1 – Company Spokesperson
Logistics	Obtain/expedite needed resources for the Luminant Emergency Response Organization	1 – Shift Manager ^{a, b}		1 – TSC Communications Coord. ^a 1 – EOF Logistical Support Coord.

(a) May be provided by on-shift or augmentation personnel assigned other functions.

(b) Shift Manager serves in this capacity until relieved by a designated individual

(c) The minimum on-shift crew composition may be one (1) less than the minimum specified for any position during normal operations for a period of time not to exceed two (2) hours in order to accommodate unexpected absence, provided immediate action is taken to fill the required position. This exception does not permit any crew composition to be unmanned upon shift turnover due to an oncoming crew member being late or absent. This exception is not applicable during declared emergencies.

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- (d) Indicates shift staffing level for each Unit.
- (e) Capabilities for addition shown for the TSC and OSC are at Alert and for the EOF at SAE or GE.
- (f) On-shift staffing is provided in Technical Specifications for these positions.

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C. Emergency Response Support and Resources

Arrangements for requesting and using assistance resources are described in this section of the Plan. Arrangements for accommodating the State of Texas and Somervell and Hood County staff at the EOF are discussed. Other support organizations are described.

1. Federal Response Capability

- a. Under some complex circumstances it may be necessary to obtain off-site radiological monitoring support from Federal government agencies. The Emergency Coordinator or EOF Manager is authorized to request FRMAC assistance on behalf of the site by contacting the NRC (Federal Coordinating Agency).
- b. Federal radiological monitoring assistance may be provided by DOE under the DOE Radiological Assistance Program (RAP).

Luminant estimates that a FRMAC Advance Party will arrive within three to four hours following the order to deploy, based on driving time. This response time may be shortened by use of aircraft.

Luminant expects that NRC assistance from NRC's Region IV Office in Arlington, TX, will arrive within three to four hours following notification; the team may reduce this response time by use of aircraft.

- c. Luminant provides facilities and resources needed to support the Federal response through the EOF. Available resources include office space and telephones. Luminant will also provide limited office space and telephone communications facilities for NRC personnel in the TSC.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

2. Off-site Organization Representation in the EOF

- a. The Texas Emergency Management Plan and Somervell and Hood Counties' Emergency Operations Plans address dispatching representatives to the EOF if deemed advisable by the County Judge(s). Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

Designated work areas have been provided in the EOF for the State of Texas and State Radiation Protection Liaisons.

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- b. In the event of an emergency requiring off-site assistance, Luminant dispatches advisers to the Texas EOC in Austin, the Hood County EOC, and the Somervell County EOC. To ensure effective coordination, advisers are familiar with the incident command concepts, position titles and terminology consistent with the State and local emergency plans and procedures.

3. *Radiological Laboratories*

Radiological laboratories available to support emergency response efforts include the TDSHS mobile radiological laboratory, the DOE Radiological Assistance Team, the U.S. EPA, and the South Texas Project. Fixed facilities are available for gross counting and spectral analysis in the site counting laboratory. These radiological laboratories are available on a 24 hour per day basis and could provide their services and equipment on demand.

Appendix 8 of this Plan provides a cross-reference to these provisions in State Plans, as applicable.

4. *Other Supporting Organizations*

Luminant has made arrangements to obtain additional emergency response support from the INPO Fixed Nuclear Facility Voluntary Assistance Agreement signatories. Letters of Agreement, provided in Appendix 7 of this Plan, outline the scope of the expected support.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

5. *Liaison Personnel to State and Local Governments*

Reserved (to preserve numbering sequence with NUREG-0654).

6. *Support from Off-Site Response Organizations During an Hostile-Action Based Event*

Potential hostile actions against CPNPP present unique challenges to Luminant and OROs because an HAB event could place multiple simultaneous demands on OROs. In the unlikely event that hostile actions are encountered at CPNPP, fire, medical and law enforcement resources may have multiple duties in addition to supporting implementation of the off-site emergency response plans. These multiple duties are considered in each ORO's implementing procedures addressing emergency response actions during a HAB event.

Luminant has established plans for coordinating emergency response efforts with OROs, which are identified and described in section II.A.1 of

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this Plan. The scope of ORO support includes the implementation of State and local emergency response plans to protect public health and safety in the event of a severe reactor accident and to provide sufficient fire, medical and local law enforcement support, as necessary, to CPNPP. Specific arrangements for HAB events are addressed in the Safeguards Contingencies Plan.

CPNPP maintains agreements with facilities, organizations and individuals that can be relied upon in an emergency to provide assistance to CPNPP, including a response to HAB events. The associated Letters of Agreement, included in Appendix 7 of this Plan, outline the scope of the expected support and address prompt access to CPNPP for in-bound first responders, including during HAB events.

Training for ORO personnel necessary to ensure an adequate response during an HAB event at CPNPP is addressed in Section II.O of this Plan.

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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.

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.

Luminant maintains the capability to assess, classify and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an EAL has been exceeded and to promptly declare an emergency condition upon identification of the appropriate emergency classification. For the purpose of this capability:

- A plant operator is defined as any member of the plant staff who, by virtue of training and experience, is qualified to assess the indications or reports for validity and to compare the same to the CPNPP and EALs.
- The 15-minute criterion commences when plant instrumentation, plant alarms, computer displays, or incoming verbal reports that correspond to an EAL first become available to any plant operator.
- The 15-minute criterion ends when the Shift Manager/Emergency Coordinator determines that an EAL has been exceeded, identifies the appropriate classification, and makes the emergency declaration.

Details regarding the capabilities to assess, classify and declare an emergency condition are contained in the EPP addressing "Assessment of Emergency Action Levels, Emergency Classification and Plan Activation."

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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 radioactive material requiring off-site response or monitoring are expected unless further degradation of safety systems occurs.

Actions undertaken at the Notification of Unusual Event include promptly informing State and local authorities of the event, augmenting on-shift resources as needed, assessment and response, and escalation to a more severe class, if appropriate. If the emergency class is not escalated to a more severe class, then State and local authorities will be notified of event termination in accordance with implementing procedures.

- Alert – Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of hostile action. Any releases are expected to be limited to small fractions of the EPA Protective Action Guide (PAG) exposure levels.

Actions undertaken at the Alert emergency class include those described for the Notification of Unusual Event and activation of the Technical Support Center and Operational Support Center. In addition, Emergency Operations Facility and other key emergency response personnel are alerted, on-site monitoring teams are dispatched, periodic plant status updates and meteorological assessments are provided to off-site authorities, as are dose estimates, if any event-related releases are occurring.

- SAE – Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the

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public or hostile actions that result in intentional damage or malicious act: 1) toward site personnel or equipment that could lead to the likely failure of or; 2) that prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary.

Actions undertaken at the Site Area Emergency class include those described for the Alert emergency class and activation of the Emergency Operations Facility. In addition, non-essential personnel are evacuated from the site unless otherwise directed, an individual is dedicated to provide plant status updates to off-site authorities and periodic media briefings (jointly with off-site authorities when practicable), senior technical and management staff are made available for consultation with NRC and the State on a periodic basis, and release and dose projections based on available plant condition information and foreseeable contingencies are provided.

- GE – Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or hostile action that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA PAG exposure levels off-site for more than the immediate site area.

Actions undertaken at the General Emergency class include those described for the Site Area Emergency class. In addition, a Protective Action Recommendation is issued for the public and continuous assessment of information from monitoring groups is provided.

Appendix 1 of this Plan provides recognition categories, the associated IC matrices, and the EALs.

2. Emergency Action Levels

Luminant adopts the EAL methodology provided in NEI 99-01, Rev. 5. EALs contained in this Plan are subject to further review and modification to reflect additional information related to final facility design and operation as reflected in the US-APWR Design Control Document (DCD) (Reference 10) and FSAR.

The US-APWR uses a digital control system that is not addressed in NEI 99-01. Accordingly, related guidance in NEI 07-01 is used. Appendix 1 provides the parameter values and equipment status that are indicative of each emergency class.

The Emergency Coordinator or EOF Manager will close out the emergency class by providing a verbal summary to the affected off-site

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authorities, followed by a Licensee Event Report or written summary. The Emergency Coordinator or EOF Manager may delegate the required notifications and reports, but must approve their content.

3. *State/Local Emergency Action Level Scheme*

The State of Texas and Somervell and Hood Counties have adopted the emergency classification scheme and EALs established by this Plan. Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

4. *State/Local Emergency Action Procedures*

The State of Texas and Somervell and Hood Counties have established procedures that provide for emergency actions to be taken which are consistent with emergency actions recommended by Luminant. Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

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E. Notification Methods and Procedures

Luminant has established procedures for notification of the State of Texas and Somervell and Hood Counties' EROs. This section discusses notification of emergency personnel, the content of initial and follow up messages to EROs and the public, and the means to provide early notification and clear instruction to the public within the Plume Exposure Pathway EPZ.

1. Notification of State and Local Authorities

The Emergency Coordinator initiates notification of the State of Texas and Somervell and Hood Counties' authorities when the following conditions occur:

- Initial declaration of an emergency classification
- Escalation of an emergency classification
- Initial PAR
- Change in a PAR
- Emergency Termination and Reclassification
- Emergency Termination (with no reclassification)

Initial notifications shall be made within fifteen (15) minutes after one of the above conditions are met.

Initial notifications are made to the following:

- Somervell County Sheriff or Dispatcher
- Hood County Sheriff or Dispatcher
- DPS

A dedicated line has been established that simultaneously links CPNPP with the DPS, the Somervell County EOC, and the Hood County EOC. Section II.F.1 of this Plan provides a description of the primary and back-up notification systems. Message content and verification methods are established in EPPs and agreements between the affected organizations.

The NRC is notified as soon as is practical following the notification of the State of Texas and Somervell and Hood County authorities and within one

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hour of the emergency declaration, including escalation or termination⁴. The primary notification system to be used is the Emergency Notification System (ENS). Back-up notification capability is maintained through the use of commercial telephone systems.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

2. Notification and Mobilization of Licensee Response Organizations

The Emergency Coordinator directs the notification of the ERO and Security Shift Supervisor upon declaration of an Alert or higher level emergency. Although Luminant does not expect that the augmented resources of the ERO would be required for a NOUE, the entire, or a portion of the ERO may be mobilized at the NOUE level at the discretion of the Emergency Coordinator.

The plant is provided with an alarm system as described in Section II.F.1 of this Plan. This system is activated from the CR.

ERO personnel are notified of emergency conditions in accordance with the provisions of EPPs. ERO personnel are notified by either the plant page-party system or the autodial calling system utilizing commercial telephone lines. The automatic dialing system is used to call-out Emergency Response Personnel. The system is used at Alert or higher class emergency. As an individual is contacted, a message is played informing them that an emergency is in progress and of the action(s) which should be taken. This system uses multiple telephone lines to contact the response organization. Should this system fail to operate, a backup notification method is used to contact emergency personnel.

A pager system is available and serves as an alternate means to notify selected members of the ERO. Activation of the pager system is at the direction of the Emergency Coordinator and is normally carried out at an Alert or higher emergency classification.

The plant page-party system, part of the public address system, allows CR personnel to announce emergency information to plant areas and permanent buildings for both units. Similar capabilities exist in the TSC and the EOF for use by Emergency Coordinators.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

⁴. In the event of a security-related attack on the site by a hostile force, a brief notification (site name, emergency classification, if determined, and nature of threat) is provided to the NRC following notification of the designated State and local authorities and within approximately fifteen minutes of the discovery of the event.

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3. *Message Content*

Initial notifications to Somervell County EOC, Hood County EOC, and DPS have been established in conjunction with the State of Texas and Somervell and Hood Counties and provide the following information:

- CPNPP Units 3 and 4 Communicator's Name
- Emergency Classification and brief description of emergency
- Whether an emergency-related radiological release is occurring
- PARs,
- Potentially affected areas and populations

4. *Follow-up Messages to Off-site Authorities*

Dedicated communicators are assigned to maintain communications with designated authorities and to provide regular updates to the State of Texas and Somervell and Hood County officials approximately every 60 minutes, when conditions change, or as otherwise requested by off-site authorities.

In addition to information required for an initial notification discussed in Section II.E.3 of this Plan, the following information is provided in the follow-up notification:

- Meteorological conditions (wind velocity and direction; temperature; atmospheric stability data; and form of precipitation, if any)
- IF needed, requests for on-site support
- IF requested by RCP:
 - a. Type of radiological material release (whether actual or projected): airborne, waterborne or surface spill and estimated or known release duration
 - b. Estimated or known quantities of radioactive material released
 - c. Point of release
 - d. Chemical and physical form of released material, including estimates of relative quantities and concentrations of noble gases, radioiodines and particulates
 - e. Estimates or known quantities of radioactive surface contamination, on-site or off-site

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- f. Actual or projected dose rates and integrated doses at the CPNPP Units 3 and 4 site boundary and at two, five, and 10 miles, and affected sectors and Emergency Response Zones (ERZs).
- g. Prognosis for escalation or termination of emergency based on current plant information
- h. Licensee emergency response actions underway

5. *Disseminating Information to the Affected Public*

The State of Texas and Somervell and Hood Counties' Plans establish a system for disseminating to the public appropriate information contained in the initial and follow-up messages received from Luminant including the appropriate notification to the Emergency Alert System (EAS). Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

6. *Instructions to the Public in the Plume Exposure EPZ*

The primary method of alerting the resident and transient population is by sounding the Alert and Notification System. The Alert and Notification System includes an outdoor warning system, measures for notifying special facilities, and notification of the public. The system is designed to meet the acceptance criteria of Section B of Appendix 3, NUREG-0654, FEMA-REP-10, "Guidance for the Evaluation of Alert and Notification Systems for Nuclear Power Plants" (Reference 11) and FEMA CPG-17, "Outdoor Warning Systems Guide" (Reference 12).

Local officials, primarily County Judges and County Sheriffs, authorize use of and are responsible for operating the Alert and Notification System and providing messages to the EAS stations. Preformatted EAS messages are included in State and county emergency plans.

As a back-up, State and local plans maintain the alert mechanism via systems such as emergency vehicles, automated dialing systems, and public address systems to also alert the public to monitor commercial broadcasts for emergency information.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

7. *Written Messages to the Public*

Written pre-planned EAS messages intended for transmittal to the public via radio and television stations are consistent with the classification scheme. These messages are released to the media by the Emergency Management Director (County Judges) or their designees. The messages

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give instruction with regard to specific actions to be taken by the occupants of the affected area. As appropriate, the messages provide information on the nature of the emergency and recommended protective actions, including sheltering, evacuation, and the use of KI, as appropriate. Luminant supports development of these messages by providing supporting information.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

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F. Emergency Communications

The CPNPP Units 3 and 4 comprehensive communications system is designed to provide prompt, reliable, redundant intraplant communications, plant-to-off-site communications, and off-site emergency response communications with the State of Texas and Somervell and Hood Counties' EROs during normal operation and during accident conditions.

1. Description of Communication Links

Luminant maintains systems and procedures that provide for rapid communications between its ERFs and between CPNPP and off-site ERFs. Dedicated communicators are available to maintain a continuous channel of communications with the NRC as requested and to provide regular updates to the State of Texas and Somervell and Hood County officials approximately every 60 minutes, when conditions change, or as otherwise agreed. The communication system consists of the following subsystems:

- Public Address System / Plant Page – Party System
- Private Automatic Branch Telephone Exchange (PABX)
- Sound Powered Telephone System (SPTS)
- Plant Radio System
- Off-Site Communication System

Communication systems vital to operation and safety are designed so that failure of one component would not impair the reliability of the total communications system.

The communication systems provide independent, alternate and redundant ability to communicate with site and off-site agencies during all operating conditions. Subsection 9.5.2 of the US-APWR DCD provides additional details regarding the communications systems.

Luminant has installed and maintains a microwave communications system between CPNPP and the Dallas Area. This system increases the reliability of the plant-to-off-site telephone system by providing an alternate off-site path from the local Glen Rose telephone system for CPNPP telephone trunks. This microwave system consists of microwave towers located at CPNPP, at Luminant facilities in the Cedar Hill area of Dallas and at two locations in between. This microwave system provides circuits to CPNPP Units 3 and 4 which are used for local Dallas commercial trunk lines, and other Luminant telephone and data circuits. The microwave communications system provides backup capability if existing telephone

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circuits are unavailable. The microwave hut at Comanche Peak is supplied by a battery uninterruptible power supply, backed up by a diesel generator.

The plant is provided with an alarm system as described in Section II.F.1 of this Plan. This alarm is initiated by the CR operator in the event that a site evacuation is ordered by the Emergency Coordinator.

Luminant maintains reliable communications links both within the plant and between the plant and external EROs.

- a. Luminant maintains capabilities for 24 hours per day emergency notification to the State and county emergency response organizations. The State of Texas and Hood and Somervell Counties are capable of receiving 24 hour per day emergency notifications.
- b. Notification to DPS and Somervell and Hood County Sheriff's Offices is made through the following communication links:
 - A dedicated circuit has been established that simultaneously links CPNPP Units 3 and 4 with the DPS, the Somervell County Sheriff's office and the Hood County Sheriff's office. When a call has been initiated, the other telephones ring until answered. Communications by CPNPP individuals, unrelated to an emergency, exercise/drill, system test or Public Information notification are not conducted on this line.
 - Following activation of the local EOCs, communication with Hood and Somervell Counties is made through the respective EOC.
 - Private telephone capability to the county and State warning points/Sheriff's offices serves as backup to the dedicated circuit.
 - Voice and facsimile communications capability is provided via the PABX telephone system between the CR, TSC, EOF, OSC, the Luminant Corporate Office, NRC, State agencies and county Sheriff's offices.

The dedicated circuit and private telephone lines as described above use the public telephone system. Public telephone systems are provided back up power to meet the requirements of 47 CFR 12.2.

- c. Federal Telecommunications System:

The Federal Telecommunications System (FTS) is an independent phone link used for communications between CPNPP and the NRC. The FTS lines are used as the ENS, Health Physics Network (HPN),

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and for NRC personnel communications. Extensions to the FTS are in the Control Room, TSC and EOF. A communications equipment test shall be conducted monthly in accordance with applicable EPPs and shall involve the ENS telephone in the CR and the ENS and HPN telephones in the TSC and EOF. The ENS, along with the other emergency communications functions or circuits: HPN, Reactor Safety Counterpart Link (RSCL), Protective Measures Counterpart Link (PMCL), Emergency Response Data System (ERDS) Channel, Management Counterpart Link (MCL) and Local Area Network (LAN) Access are known collectively as the Emergency Telecommunications System (ETS). The ETS uses the Federal Telecommunications System, with alternative communications paths as described below.

- d. Luminant provides capability for emergency response communications between emergency response support personnel (e.g., on-site and off-site radiological monitoring teams and emergency repair and damage control teams) and the CR, TSC and the EOF using the intraplant radio transmitter-receiver system described above. Additionally, a number of trunk lines provide direct communications between off-site locations and various CPNPP ERFs. These lines allow State of Texas and Somervell and Hood County EROs to communicate with their personnel and facilities stationed on-site and allow CPNPP Units 3 and 4 radiological monitoring teams to transmit field data should their radio fail.

TDSHS field monitoring team communications are described in the State Plan.

The Security Organization uses separate communication channels of unique frequency to enable two-way radio communication between security posts and various plant buildings. Portable transmitter-receivers are provided to security personnel for communication between areas of the plant.

- e. Notification, alerting and activation of emergency response personnel in the TSC, OSC, and EOF are described in Section II.E.2 of this Plan.
- f. Communications between CR/TSC/EOF to the NRC Operations Center is via the ENS or private telephone. Communications from the CR/TSC/EOF to the regional office is via the normal private telephone capability. Communications between the TSC/EOF and off-site monitoring teams is via the radio system described in Section II.F.1.d.
- g. Luminant will activate the Emergency Response Data System (ERDS) within one hour of the declaration of an Alert or higher emergency classification.

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Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

2. *Communication with Fixed and Mobile Medical Support Facilities*

Emergency medical transportation, including communications capabilities, is discussed in Section II.L.4 of this Plan.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

3. *Communication System Periodic Testing*

Sections II.H.10, and II.N.2.a of this Plan provide additional information regarding communications systems testing.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

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G. Public Education and Information

This section of the Plan discusses information provided to the public on a periodic basis describing how they will be notified and what their initial actions should be in an emergency. Principal points of contact with the news media for dissemination of information during an emergency are established. Procedures are established for coordinated dissemination of information to the public by designated members of the Luminant, State of Texas and Somervell and Hood Counties' EROs.

1. Public Information Program

A public information program has been developed with the State of Texas and Somervell and Hood County authorities to disseminate pertinent emergency response information to members of the public in the Plume Exposure Pathway EPZ. Emergency information is provided annually to residents through the distribution of printed material by Luminant. Distribution methods include providing informational publications, such as information sections in local telephone directories and brochures or calendars via mailings to individual households in the Plume Exposure Pathway EPZ. A website also provides the information electronically.

These publications include information on how the public will be notified (e.g., primary EAS station that broadcasts emergency information) and what their actions should be in an emergency. This information also addresses the following:

- a. Educational information on radiation;
- b. Point of contact for additional information;
- c. Immediate actions and protective measures, such as information addressing evacuation routes, reception centers, sheltering and radio-protective drugs, including an EPZ map illustrating evacuation zones and routes;
- d. A method for those with special needs to inform the local responsible agency of their location and nature of the special assistance required.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

2. Distribution and Maintenance of Public Information

Written information applicable to permanent residences is provided in a form that is likely to be maintained in the residence (e.g. telephone directory inserts and advertisements, brochures, and calendars) so it is

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available during an emergency. As discussed above, this information is updated and distributed annually.

Information intended for the transient population (individuals on vacation in, camping in, or traveling through the Plume Exposure Pathway EPZ) may include public postings and publications provided to selected local businesses, public buildings, recreational areas, hotels, motels, and campgrounds. This information provides transients sources for local emergency information, such as local EAS radio stations, telephone numbers for the Somervell and Hood County Sheriff's offices, instructions if asked to take shelter or evacuate, as well as maps and directions for evacuation routes and reception centers. This information will be reviewed and, if necessary, updated annually in coordination with Hood and Somervell Counties.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

3. *News Media Coordination*

- a. During an emergency, press briefings are coordinated with Federal, State, and local public information personnel. Upon declaration of a SAE or higher emergency classification the JIC is activated in accordance with the EPPs. The JIC, located in the Granbury City Hall at 116 W. Bridge, in Granbury, TX, functions as the single contact point for dissemination of emergency-related information to the news media.
- b. The JIC provides space for approximately 75 media personnel and is located outside the Plume Exposure Pathway EPZ.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

4. *Information Exchange*

- a. A Company Spokesperson who has access to required information provides plant status and company information during scheduled press briefings. The Information Liaison and Company Spokesperson are the primary contacts for the news media for Luminant.
- b. Luminant liaisons coordinate with designated members of the State of Texas and Somervell and Hood County EROs on a periodic basis.
- c. Rumor control is accomplished through ongoing contact between the designated Company Spokesperson, the State of Texas' Public Information Coordinator and Somervell and Hood County Public Information Officers. Luminant's Rumor Control Coordinator and Rumor Control Aides in the JIC monitor communications, identify

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rumors, and make appropriate contacts to obtain and disseminate accurate information through the representatives in the JIC. Luminant customer inquiries are handled by Customer Contact Centers. Employees are updated via the company intranet/portal. Elected officials and regulatory agencies are updated through Luminant Corporate Communications and Governmental Affairs departments. Industry groups assist in disseminating information to other industry groups.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

5. *News Media Training*

The news media organizations are provided information and offered a briefing annually regarding the emergency plans, information concerning radiation hazards, and points of contact for release of public information during an emergency.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

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H. Emergency Facilities and Equipment

This section of the Plan describes emergency response facilities and equipment used by the CPNPP ERO in the event an emergency is declared at CPNPP Units 3 and 4.

Facility activation is dependent on the emergency classification; however, the Emergency Coordinator has the option of activating one or all of the ERFs at an emergency classification less severe than that described in the EPPs. Details regarding activation of each ERF are provided in EPPs.

The facilities required in the implementation of the Plan consist of the:

- CRs
- OSC
- TSCs
- EOF

These facilities are designed consistent with the guidance provided in NUREG-0696 (Reference 13) and the clarification in NUREG-0737, Supplement 1 (Reference 14), as applicable.

During an HAB event, the EOF, described in Section II.H.2 of this Plan, serves as the staging area for on-site ERO augmentation staff. Characteristics of the alternate facilities include:

- Accessibility even if CPNPP is under threat or attack
- Communication links with the EOF, CR, and Security
- Capability to notify off-site response organizations
- Capability for emergency repair and damage control teams to begin planning actions to mitigate the consequences of the event
- Capability to support a rapid response to mitigate site damage as soon as the site is deemed accessible
- Access to up-to-date plant technical documentation, including plant drawings, system information and plant procedures to enable engineers and maintenance supervisors to begin planning actions

The EPPs addressing “Activation and Operation of the Technical Support Center (TSC)”, “Activation and Operation of the Operations Support Center (OSC)”, and “Activation and Operation of the Emergency Operations Facility (EOF).” detail the activation and characteristics of the alternative facilities.

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1. On-Site Emergency Response Facilities

Control Rooms

The CR of the affected unit(s) is the initial location for command and control of the emergency response effort and is also the location where the initial assessment and coordination of corrective actions for emergency conditions takes place. The CR, because of its role in normal site operations, is continuously staffed and functional. Controls, instrumentation and displays needed to diagnose plant conditions and to take immediate actions to place the affected unit(s) in a safe condition are available in the CR. Within the CR, the Emergency Coordinator has access to the information needed to classify the emergency.

The CR has the required shielding and ventilation system to remain habitable during the emergency. The habitability system for the CR is described in Section 6.4 of the FSAR.

Access to the CR is limited to those individuals responsible for carrying out assigned emergency response tasks plus other technical advisors, as necessary.

Technical Support Centers

The CPNPP Units 3 and 4 TSCs (one for each unit) provide the following functions:

- Provide plant management and technical support to plant operations personnel during emergency conditions.
- Relieve the ROs of peripheral duties and communications not directly related to reactor system manipulations.
- Prevent congestion in the CR.
- Perform EOF functions until the EOF is activated.
- Serve as primary communications center for the plant during the emergency.
- Provide technical support during recovery operations following an emergency.

The following sections of the US-APWR DCD describe the design of the TSC:

- Section 7.1
- Section 7.5

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- Section 9.4
- Section 9.5
- Section 13.3

Personnel assigned to the TSC are notified at an Alert or higher emergency classification and should activate the facility as soon as possible with a goal of sixty (60) minutes in accordance with EPPs. Once activated, the TSC provides technical support to the CR without obstructing plant manipulations or causing overcrowding in the CR.

Display capability in the TSC includes a workstation that, at a minimum, is capable of displaying the parameters that are required of a Safety Parameter Display System (SPDS). The SPDS function is described in Subsection 7.5.1.4 of the DCD.

Operations Support Center

A common OSC, separate from the CR and TSC, is located in the Maintenance Building between Units 3 and 4. The OSC provides a centralized area and the necessary supporting resources for the assembly of designated operations support personnel during emergency conditions. This permits personnel reporting to the OSC to be assigned to duties in support of emergency operations.

Designated plant support personnel, as indicated in Section II.B of this Plan, assemble in the OSC to provide support to both the CR and TSC of the affected unit. The primary function of the OSC staff is to dispatch assessment, corrective action, and rescue personnel to locations in the plant, as directed by the TSC and CR. The OSC is adequately sized to accommodate 50 emergency response support personnel.

The OSC is not designed to remain habitable under every projected emergency condition; however, EPPs make provisions for relocating the OSC as needed, based on ongoing assessments of plant conditions and facility habitability. The Emergency Coordinator directs relocation of the OSC, if required, as specified by the EPPs.

Personnel assigned to the OSC are notified at an Alert or higher emergency classification and should activate the facility as soon as possible with a goal of sixty (60) minutes in accordance with EPPs.

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2. Off-site Emergency Response Facilities

Emergency Operations Facility

The EOF is located in the NOSF which is located 0.1 miles west of the exclusion area boundary on the Plant Road.

The EOF has functions and capabilities for:

- Management of overall response during an emergency condition
- Coordination of radiological and environmental assessment
- Determination of recommended public protective actions
- Notification of off-site agencies
- Coordination of event, plant, and response information provided to public information staff for dissemination to the media and public
- Staffing and activation of the facility within time frames and at emergency classification levels defined in the Emergency Plan
- Coordination of emergency response activities with Federal, State, and local agencies
- Obtaining and displaying key plant data and radiological information for each unit or plant the EOF serves
- Analyzing plant technical information and providing technical briefings on event conditions and prognosis to Luminant staff and off-site agency responders for each type of unit or plant
- Effectively responding to and coordinating response efforts for events occurring simultaneously at more than one unit

Anticipated occupants of the EOF are the EOF Organization and appropriate Federal, State and local agency representatives.

The EOF is a well engineered building meeting the Uniformed Building Code. It is designed for the expected life of the plant. The walls and ceilings are approximately eight (8) inches of concrete. The ventilation system and structure are not seismically qualified. The EOF has special shielding and ventilation provisions for habitability. The EOF is shielded to provide a gamma protection factor of < 15. The dedicated ventilation system has a High Efficiency Particulate (HEPA) filter which filters the incoming air. The ventilation system maintains a slight positive pressure in the EOF.

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Additional details regarding EOF habitability are described in the EPP that addresses "Activation and Operation of the EOF."

The EOF working space is sized for 35 persons, including Federal, State, and local emergency response personnel. The EOF floor space is approximately 2,625 square feet (ft). The EOF has been designed and is equipped to support continuous operations over an extended period of time.

The EOF is large enough to provide the following:

- Work space for the personnel assigned to the EOF
- Space for the EOF Data Display Equipment
- Space for unhindered access to communication equipment by EOF personnel
- Space for storage of and/or access to plant records and historical data.
- A separate room to accommodate NRC and other Federal personnel |

Section II.H.5 of this Plan provides a description of the radiological monitoring of the EOF.

The EOF has redundant two-way communications with the TSC and appropriate off-site support agencies. Section II.F of this Plan provides a description of the communications capabilities provided in the EOF.

The EOF is equipped with technical data displays to assist EOF personnel in diagnosis of plant conditions and to evaluate potential or actual release of radioactive materials to the environment.

The EOF has ready access to plant records, procedures, and emergency plans needed to exercise overall management of CPNPP Units 3 and 4 emergency response resources. These documents are kept current and are maintained as described in document control procedures. The EOF reference material includes:

- CPNPP Units 3 and 4 FSAR
- Plant Technical Specifications
- Operating Instructions, Both Normal and Emergency
- Off-Site Population Distribution Data
- Evacuation Plans
- US-APWR DCD

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Personnel assigned to the EOF are notified at an Alert or higher emergency classification and should activate the facility as soon as possible with a goal of sixty (60) minutes if a SAE or GE is declared in accordance with EPPs. When the EOF is activated, security protection will be upgraded to restrict access to those personnel assigned to the facility.

Should evacuation of the EOF be required, the alternate EOF, located approximately 11 miles north of CPNPP in the Daffan Industrial Park on Hwy 51, approximately one mile north of Granbury, may be used as an alternate location. This facility provides for continuity of EOF dose projection and decision-making functions using a combination of dedicated and portable equipment. Radiological assessment activities may also be relocated to the State's mobile radiological laboratory.

Periodic EOF activation drills are described in Section II.N.2.f of this Plan and are used to demonstrate the ability to perform consolidated EOF functions.

3. State/County Emergency Operating Centers

The State of Texas and Somervell and Hood Counties' Plans establish EOCs for use in directing and controlling their emergency response functions. Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

4. Activation and Staffing of Emergency Response Facilities

Section II.H.2 of this Plan provides a description of the activation and staffing of the ERFs.

The State of Texas and Somervell and Hood County emergency response personnel also staff their ERFs consistent with the requirements of their respective plans. Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

5. On-site Monitoring Systems

Luminant maintains and operates on-site monitoring systems needed to provide data that is essential for initiating emergency measures and performing accident assessment. This includes monitoring systems for geophysical phenomena, radiological conditions, plant processes, and fire hazards.

- a. Section II.H.8 of this Plan provides a description of the meteorological instrumentation and procedures necessary to assess and monitor actual or potential off-site consequences of a radiological emergency.

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Section 2.4 of the FSAR provides details on hydrologic engineering for CPNPP Units 3 and 4.

Seismic instrumentation is provided within the plant so that in case of an earthquake, sufficient data is generated to permit verification of the dynamic analysis of the plant and evaluation of the safety of continued operation.

- Subsection 2.3 of the FSAR provides a description of the meteorological monitoring system.
- Subsection 2.4 of the FSAR provides details on hydrology for the site.
- Subsection 3.7.4 of the FSAR provides a description of the seismic monitoring system.
- b. In addition to the habitability provisions provided for each facility, the TSC, OSC, and EOF are monitored for airborne radioactivity and external (gamma) radiation. For radioiodines, portable equipment capable of continuously detecting radioiodine air activity as low as 10^{-7} microcuries per cubic centimeter (micro Ci/cc) is used. Noble gas (external gamma exposure) is continuously monitored using a gamma detection device set to alarm at a predetermined exposure rate or dose.

In addition to the installed systems, the CPNPP Units 3 and 4 Radiation Protection Department maintains an adequate supply of health physics laboratory and portable radiation monitoring and sampling equipment, including dedicated emergency response equipment, consistent with Section II.H and Appendix 6 of this Plan.

Subsections 11.5 and 12.3.4 of the US-APWR DCD provide a description of the installed radiological monitoring systems.

- c. Plant process monitors used for emergency classification are identified in Appendix 1 of this Plan.
- d. Subsection 9.5.1 of the US-APWR DCD provides a description of the plant fire monitoring system.

6. Access to Data from Monitoring Systems

- a. Section II.H.8 of this Plan provides a discussion of Luminant's on-site meteorological data collection system. In the event that data from this system are unavailable, Luminant maintains the ability to obtain meteorological data from National Weather Service (NWS) in Fort Worth, TX.

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Back-up seismic data may be obtained from the U.S. Geological Survey.

Flooding data may be obtained from NOAA's Hydro-Meteorological Reports.

These data are shared with affected Federal, State of Texas and Somervell and Hood Counties' authorities via the communications links discussed in Section II.F of this Plan.

- b. The CPNPP Units 3 and 4 Off-site Dose Calculation Manual (ODCM) describes the routine Radiological Environmental Monitoring Program. Equipment for the routine radiological environmental monitoring includes multiple radioiodine and particulate monitors and thermoluminescent dosimeters or other dose integrating devices. The dosimeters are posted and collected in accordance with the ODCM which provides locations of posted dosimeters and air samplers. Appendix 6 of this Plan provides a description of the types of radiological monitoring equipment provided for field team use.
- c. In addition to chemical and radiochemical laboratory facilities located at CPNPP, the following resources are available to Luminant in support of emergency response activities:
 - TDSHS mobile laboratory
 - Chemical and radiochemical laboratory facilities of neighboring nuclear utilities as coordinated by INPO
 - South Texas Project

The TDSHS staging area is the central point for receipt of field samples.

7. Off-site Radiological Monitoring Equipment

Luminant provides off-site radiological monitoring equipment suitable for assessment of the off-site radiological consequences of facility incidents, for use by its off-site monitoring field teams. Each ERF, as well as local hospitals and the NOSF, is supplied with emergency equipment and supplies suitable to the response expected from that facility. Appendix 6 of this Plan provides a description of the types of radiological monitoring equipment provided for field team use.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

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8. *Meteorological Instrumentation and Procedures*

Luminant acquires meteorological data from on-site meteorological towers, instrumented at the 10 meter (m) and 60 m levels for winds and ambient temperatures. Atmospheric stability is determined from the vertical temperature difference between the 10 m and 60 m level temperatures (i.e. delta-T). Precipitation is measured at ground level. The CPNPP Meteorological Measurements Program is designed to measure the parameters needed to evaluate the dispersive characteristics of the site for both the routine operational and the hypothetical accidental releases of radionuclides to the atmosphere. The program is described in section 2.3 of the FSAR. Measured data from the on-site meteorological tower is available to the plant computer(s) and ERF display systems.

The parameters monitored by the CPNPP Units 3 and 4 meteorological towers include the following:

- Wind speed in miles per hour (mph) at 10 m and 60 m heights
- Wind direction (degrees from North) at 10 m and 60 m heights
- Temperature (oF) at 10 m and 60 m heights
- Precipitation (inches) at ground level

Meteorological data can also be obtained from the NWS office in Fort Worth.

9. *Operations Support Center*

See Section II.H.1 and Appendix 6 of this Plan.

10. *Emergency Equipment and Supplies*

Luminant performs inspections, inventories, and appropriate operational tests of dedicated emergency equipment and instruments at least once each calendar quarter and after each use. EPPs address specific inventories and establish requirements for performing inventories and operational tests. Luminant maintains sufficient reserves of equipment and instruments to replace items that are removed from the emergency kits for calibration or repair.

Emergency equipment shall be periodically tested to identify and correct deficiencies. The specific scope and responsibilities for performing these tests are provided in administrative procedures.

Appendix 6 of this Plan provides a description of the emergency equipment and supplies to be provided.

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Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

11. Emergency Kits

Appendix 6 of this Plan provides a description of the emergency equipment and supplies to be provided.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

12. Receipt of Field Monitoring Data

Radiological Assessment personnel located in the NOSF are designated as the central point for the receipt of off-site monitoring data results and sample media analysis results collected by Luminant personnel. Resources exist within the organization to evaluate the information and make recommendations based upon the evaluations. Radiological Assessment personnel perform these evaluations.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

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I. Accident Assessment

This section of the Plan describes methods, systems, and equipment for assessing and monitoring actual or potential off-site consequences of a radiological emergency.

1. *Parameters Indicative of Emergency Conditions*

Luminant identifies plant system and effluent parameter values that are indicative of off-normal conditions. Appendix 1 of this Plan includes the various indications that correspond to the emergency ICs based on the methodology provided in NEI 99-01. Appendix 1 also specifies the instruments, and the capabilities of the instruments, used to monitor effluent parameter values.

2. *Initial and Continuing Accident Assessment*

Initially, during an emergency, the on-shift Radiation Protection and Chemistry Technicians perform on-site and in-plant radiological assessment, and sampling activities, respectively, as directed by the Emergency Coordinator.

Initial values and continuing assessment of plant conditions through the course of an emergency may rely on reactor coolant sample results, radiation and effluent monitors, in-plant iodine instrumentation, and containment radiation monitoring.

Subsection 9.3.2 of the US-APWR DCD describes provisions for obtaining samples under accident conditions.

Section 11.5 of the US-APWR DCD describes the process effluent radiation monitoring systems.

Subsection 12.3.4 of the US-APWR DCD describes the area radiation monitoring system.

3. *Determination of Source Term and Radiological Conditions*

The following paragraphs discuss methods and techniques used for radiological dose assessment.

- a. Appendix 2 of this Plan describes the process for relating various measured parameters, including containment radiation monitor readings, to the source term available for release within plant systems.
- b. Appendix 2 of this Plan describes the process for relating various measured parameters, including effluent monitor readings, to the magnitude of the release of radioactive materials.

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4. Relationship Between Effluent Monitor Reading and Exposure and Contamination Levels

A computer-based dose projection program is used to estimate the off-site consequences of a radiological release to the surrounding public. The dose assessment program is site-specific and consists of a straight-line Gaussian plume model for initial dose projections within the Plume Exposure Pathway EPZ and a separate segmented-plume model for providing radiological assessment due to wind shifts and plume deposition over portions of the Ingestion Exposure Pathway EPZ. This program can use system parameters from the Plant Computer System (PCS), radiation monitor instrument readings from the Radiation Monitoring System (RMS), or the results from in-plant sampling to estimate the source term and release rate. These values are then used, with meteorological parameters from the PCS, to estimate plume location and calculate projected doses to the public.

Dose projections are used by Radiation Protection personnel for development of PARs, to predict plume location for dispatching and control of off-site radiological monitoring teams, and estimating the dose received by persons exposed to the plume. Once field data become available from the radiological monitoring teams, projected dose information is reevaluated and PARs provided to off-site officials are updated as necessary.

5. Meteorological Information

Section 2.3 of the FSAR provides a description of the meteorological monitoring system used to provide initial values and continuing assessment of meteorological conditions under emergency conditions.

This data is used by dose assessment personnel to calculate off-site doses, which are provided to the Emergency Coordinator to help formulate off-site PARs. This data is available in the CR, TSC, and EOF.

6. Determination of Release Rates and Projected Doses When Installed Instruments are Inoperable or Off-Scale

Appendix 2 of this Plan provides a description of plant procedures that establish processes for estimating release rates and projected doses if the associated instrumentation is inoperable or off-scale. These procedures include the following considerations:

- Estimated releases based on field monitoring data
- Surrogate instrumentation and methods to estimate extent of fuel damage.

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If system or monitor parameters are unavailable, default or estimated information can be used to generate dose projections. Once information becomes available from the off-site survey teams, these data may be used by the software to update projected doses and plume location based on field observations.

7. *Field Monitoring Capability*

Field monitoring teams act under the direction of Radiation Protection personnel in the TSC prior to activation of the EOF. Once the EOF is activated, the EOF Radiation Protection Coordinator assumes responsibilities for coordination of off-site radiological assessment and monitoring activities. Each off-site radiological monitoring team is typically composed of at least two members, one of which should be a Radiation Protection technician qualified in accordance with the emergency preparedness training requirements established in Section II.O of this Plan.

In the event that dose projection or on-site monitoring results indicate the potential for radioactivity release with off-site dose consequences, an off-site radiological monitoring team may be dispatched.

The EOF Radiation Protection Coordinator and his staff dispatch off-site radiological monitoring teams to preselected points in affected downwind sectors. Off-site environmental monitoring locations are identified in EPPs. At preselected points, the team performs external dose measurements; obtains air samples; determines contamination levels; and obtains vegetation and liquid samples, as directed by the EOF Radiation Protection Coordinator. From this point the team can be moved to determine the plume boundary, centerline of the plume, and other factors necessary to determine impact of the release on the public and environment. This monitoring shall continue, as required, during the emergency so the need for protective measures can be quickly addressed.

Transportation for On-site Survey Team(s) is provided in accordance with EPPs. On-site Survey Teams should be deployed within 15 to 30 minutes after arrival on-site. Deployment time may vary due to duration of on-site briefing session, time required to obtain protective clothing and equipment, and time required to prepare for entry into plant environs.

Appendix 6 of this Plan provides a listing of the types of instrumentation and supporting equipment and supplies that are provided for field monitoring and on-site surveying activities.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

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8. *Assessing Hazards Through Liquid or Gaseous Release Pathways*

Luminant trains, designates, equips, dispatches, and coordinates field teams consistent with Section II.I.7 of this Plan. The field teams perform sampling of off-site media as needed to assess the actual or potential magnitude and locations of radiological hazards. Luminant notifies and activates field team personnel consistent with Section II.E of this Plan. Mobilization times are consistent with Section II.B of this Plan.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

9. *Measuring Radioiodine Concentrations*

Luminant equips field teams with portable air samplers, appropriate sampling media, and analytical equipment capable of detecting radioiodine concentrations at or below 10⁻⁷ microcuries per milliliter under field conditions, taking into consideration potential interference from noble gas activity and background radiation. Appendix 6 of this Plan provides information regarding emergency supplies, equipment, and instruments.

Appendix 8 of this Plan provides a cross-reference to these provisions in State Plans, as applicable.

10. *Relating Measured Parameters to Dose Rates*

Appendix 2 of this Plan describes the process established to relate measured parameters, such as surface, airborne or waterborne activity levels, to dose rates for those key isotopes listed in Table 3 of NUREG-0654. Appendix 2 of this Plan also describes provisions for estimating the dose based on projected and actual dose rates. Radiation Protection personnel are responsible for directing implementation of these procedures under emergency conditions.

Appendix 8 of this Plan provides a cross-reference to these provisions in State Plans, as applicable.

11. *Tracking of Plume Using Federal and State Resources*

The State of Texas Plan establishes direction for locating and tracking an airborne radioactive plume using Federal and State resources. Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

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J. Protective Response

This section of the Plan describes protective actions that have been developed for the Plume Exposure Pathway EPZ for emergency workers and the public. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are described. Protective actions for the Ingestion Exposure EPZ are described.

1. On-Site Notification

Luminant establishes and maintains methods to inform personnel within the site boundary of an emergency condition requiring individual action. Luminant informs individuals located within the Protected Area primarily via use of the plant public address system and audible warning systems. In addition to employees and contractors with emergency response assignments, these individuals located within the Protected Area may include:

- a. Employees not having emergency assignments
- b. Visitors
- c. Contractor and construction personnel, and
- d. Other persons who may be in the public access areas on or passing through the site or within the owner controlled area

In high noise areas or other areas where these systems may not be audible, other measures, such as rotating blue warning beacons, may be used.

CPNPP Units 3 and 4 inform individuals located outside of the Protected Area (PA) via audible warnings provided by warning systems and the activities of the Security Organization and, if needed, local law enforcement personnel. CPNPP Units 3 and 4 provide information regarding the meaning of the various warning systems, and the appropriate response actions, via plant training programs, visitor orientation, escort instructions, posted instructions, or within the content of audible messages.

Luminant maintains the ability to notify individuals within the Protected Area within about 15 minutes of the declaration of any emergency requiring individual response actions, such as accountability or evacuation.

Personnel arriving or remaining on-site are to be notified of protective measures and shall be provided protective equipment, as necessary,

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depending on the actual radiological conditions existing during the emergency.

2. Evacuation Routes and Transportation

During an emergency at CPNPP Units 3 and 4, the Emergency Coordinator may choose to evacuate certain areas, buildings, or the entire site. The decision to evacuate is based on the action that presents the least risk to affected personnel.

During an area or building evacuation, non-essential personnel should leave the affected area or building and report to the designated assembly area.

Personnel in buildings outside the PA should use normal fire evacuation assembly areas.

During evacuations, visitors should remain with their escort until they are outside the affected area.

The Emergency Coordinator or designee uses EPPs, information available from meteorological tower instruments and current radiological data for determining the appropriate evacuation route.

Affected individuals evacuate the site via personal vehicles. If any individual on-site does not have access to a personal vehicle, the Security Organization will make arrangements for transportation with another evacuating individual. Luminant directs evacuees to the designated relocation site. Luminant informs individuals of the evacuation routes and appropriate instructions via plant training programs, visitor orientation, escort instructions, posted instructions, or within the content of audible messages.

Should evacuation of CPNPP Units 3 and 4 via designated evacuation routes be determined to be inadvisable due to adverse conditions (e.g., weather-related, radiological, or traffic density conditions), Luminant will direct affected individuals to a safe on-site area (as determined by the Emergency Coordinator or his designee) for accountability and, if necessary, contamination monitoring and decontamination.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

3. Personnel Monitoring and Decontamination

Luminant has established a relocation site to provide a location for personnel monitoring and decontamination, if necessary. The Emergency Coordinator directs contamination monitoring of personnel, vehicles, and

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personal property arriving at the relocation site when there is a likelihood that individuals and their property may have become contaminated before or during the evacuation. Evacuees at this location are logged in/out, monitored for contamination, and decontaminated if required.

4. *Non-Essential Personnel Evacuation and Decontamination*

At a SAE classification or higher, the Emergency Coordinator shall order a site evacuation of CPNPP Units 3 and 4. This site evacuation includes the Exclusion Area, Squaw Creek Park, and Squaw Creek Reservoir. Should a site evacuation be ordered, non-essential personnel depart the site, preferably using normal site egress routes, as directed by the Emergency Coordinator consistent with Section II.J.2 of this Plan. Personnel with Emergency Organization assignments report to the designated ERF, unless otherwise directed. Appropriate equipment and supplies are provided from the facility to the assembly areas to facilitate contamination monitoring.

Personnel and visitors off-site, but within the owner-controlled area, are warned of an emergency by the Security Organization or by Squaw Creek Park personnel in accordance with the Squaw Creek Park Emergency Plan (Reference 15). Security personnel are notified of the emergency by CR personnel. Squaw Creek Park personnel are notified of the emergency by the CPNPP Units 3 and 4 Security Organization in accordance with Security procedures.

Members of the general public who are on-site must be evacuated if there is a possibility of individual exposures exceeding:

- External Radiation Level = 2 mrem/hr
- Airborne Radioactivity = 1 times DAC for an unrestricted area

The designated relocation site will have decontamination and contamination control capability and equipment in the event it is needed.

5. *Personnel Accountability*

CPNPP Units 3 and 4 have the capability to account for individuals within the Protected Area and to identify any missing individuals within 30 minutes following initiation of accountability measures. Following this initial determination of individuals on-site, CPNPP Units 3 and 4 have the capability to continuously account for individuals within the Protected Area. CPNPP Units 3 and 4 maintain these capabilities consistent with the requirements of the Security Plan.

In the event of a hostile attack against the site, conditions may dictate initiation of protective measures other than personnel assembly,

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accountability and evacuation. The Emergency Coordinator makes decisions regarding appropriate protective measures based on evaluation of site conditions, including input from the Security Organization. If, based on the judgment of the Emergency Coordinator, personnel assembly, accountability, and evacuation may result in undue hazards to site personnel, the Emergency Coordinator may direct other protective measures, including:

- Evacuation of personnel from areas and buildings perceived as “high-value” targets (including security personnel)
- Site evacuation by opening, while continuing to defend, security gates
- Dispersal of licensed operators
- On-site sheltering away from potential site targets
- Staging of ERO personnel in alternate locations pending restoration of safe conditions
- Implementation of accountability measures following restoration of safe conditions

The EPP addressing "Security Events" addresses each of these items and provides instructions for protecting on-site personnel if a Security Event or Hostile Action is occurring or a specific, credible threat is received.

6. *Protective Measures*

Luminant distributes protective equipment and supplies to on-site emergency response personnel, as necessary, to control radiological exposures or contamination. Protective measures utilized include the following:

a. Respiratory Protection and Engineering Controls:

- Protective measures are utilized to minimize the ingestion and/or inhalation of radionuclides and to maintain internal exposure below the limits specified in 10 CFR Part 20, Appendix B.
- Ventilation controls are utilized in the TSC and CR to control concentrations of radioactive material in air. Otherwise, when not practical to apply engineering controls to limit intakes of radioactive material in air, one or more of the following protective measures is utilized:
 - Control of Access

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- Limitation of exposure times
- Use of individual respiratory protection equipment
- Self-contained breathing apparatus (SCBA) is available for use in areas that are deficient in oxygen or when fighting fires. Respiratory protective equipment is issued by Radiation Protection or Safety and Health Services. SCBAs are available with other firefighting equipment for use by the site Fire Brigade.

b. Use of Protective Clothing:

Protective clothing is issued when removable contamination levels exceed 1,000 dpm/100 cm² beta-gamma or 20 dpm/100 cm² alpha. Protective clothing is available from storage areas and Radiation Protection supplies located throughout the site. Special firefighting protective clothing and equipment is available in designated site supply storage areas for use by Fire Brigade personnel. Appendix 6 identifies types of protective clothing available or emergency response.

c. Individual Thyroid Protection:

Respiratory protection and engineering controls are used to minimize the ingestion and/or inhalation of radioactive iodine. However, if an unplanned incident involves the accidental or potential ingestion or inhalation of radioactive iodine, KI tablets are available for distribution in accordance with EPPs.

Appendix 6 provides a description of the emergency response supplies and equipment available.

7. Protective Action Recommendations and Bases

Luminant develops PARs based on plant conditions, radiological dose estimates and meteorological conditions. These PARs are provided to the State of Texas and Somervell and Hood Counties, who, in turn determine protective actions and communicate these to the public. Luminant's PARs are based on NUREG-0654, Supplement 3, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" (Reference 16) and EPA 400-R-92-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents" (Reference 17) (EPA PAGs).

The initial PAR for any event classified as a GE is to evacuate in all directions out to two miles and evacuation of the downwind sector and one sector on either side of the downwind sector out to five miles. This PAR may vary depending upon meteorological conditions. Sheltering may be appropriate when a release is short term and controlled or when known

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conditions make evacuation dangerous, e.g., severe weather or overriding threat to public safety.

The Evacuation Time Estimate (ETE) (discussed in Section II.J.8 of this Plan) is used by Luminant in the development of off-site PARs and by the OROs when making off-site protective action decisions. Luminant submits any updated ETE analysis to the NRC at least 180 days before using it to form PARs and providing it to state and local governmental authorities for use in developing off-site protective action strategies. Luminant reevaluates the initial PAR following each annual population estimate and any subsequent ETE update, as described in Section II.P.4 of this Plan.

PARs may change as plant conditions, radiological dose estimates, or meteorological conditions change and may consist of sheltering, evacuation, KI, or no action. Details regarding appropriate PARs are contained in EPPs.

The EOF Radiation Protection Coordinator is responsible for making dose projections on a periodic basis. These calculations use plant procedures to calculate projected dose to the population-at-risk for either potential or actual release conditions. For conditions in which a release has not occurred, but fuel damage has taken place and radiation levels in the containment atmosphere are significant, a scoping analysis is performed to determine what recommendations would be made if containment integrity were lost at that time. A Total Effective Dose Equivalent (TEDE) and thyroid Committed Dose Equivalent (CDE) are calculated at various distances from the plant (site boundary; 2 miles; 5 miles; 10 miles and beyond, if needed). These dose projections are compared to PAGs shown in Table II-3, which are derived from EPA PAGs. Based on these comparisons, PARs are developed by the EOF Radiation Protection Coordinator. If these recommendations involve sheltering or evacuation of the public around the plant, the EOF Radiation Protection Coordinator informs the EOF Manager of the situation and recommendations for protective actions.

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Table II-3 Protective Action Guides

Projected Dose		Protective Action Recommendation
Total Effective Dose Equivalent (TEDE)	Committed Dose Equivalent Thyroid (CDE Thyroid)	
< 1 rem	< 5 rem	No protective action required based on projected dose
≥ 1 rem	≥ 5 rem	Evacuate affected zones and shelter the remainder of the Plume Exposure Pathway EPZ
N/A	≥ 5 rem	Consider use of KI in accordance with State Plans and policy

If dose projections show that PAGs are exceeded at 10 miles, the dose assessment code and in-field measurements, when available, are used to calculate doses at various distances downwind to determine how far from the CPNPP Units 3 and 4 PAG levels are exceeded. The Radiation Protection Coordinator forwards the results to the EOF Manager who communicates this information to the off-site authorities.

8. Evacuation Time Estimates

Luminant conducted an ETE (Reference 18). The ETE follows the guidance provided in Appendix 4 of NUREG-0654 and NUREG/CR-6863, "Development of Evacuation Time Estimate Studies for Nuclear Power Plants" (Reference 19). The ETE did not reveal the existence of any significant impediments to the development of emergency plans.

The ETE may be used by state and local government agencies to assist in the development of traffic management plans to support an evacuation.

Population distribution and a summary of the Evacuation Time Estimate are included in Appendix 4 of this Plan.

CPNPP Units 3 and 4 will perform an estimate of the population within the Plume Exposure Pathway EPZ after receipt of a license under 10 CFR Part 52 to determine the need for an updated ETE. This update, subsequent updates to the ETE (including those conducted following the decennial Census) and the performance of annual estimates of the Plume Exposure Pathway EPZ permanent resident population are addressed in Section II.P.4 of this Plan.

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9. *State and Local Government Implementation of Protective Measures*

The State of Texas and Somervell and Hood Counties' Plans establish a capability for implementing protective measures based upon PAGs and other criteria consistent with the recommendations of U.S. EPA regarding exposure resulting from radioactive plumes and with the FDA regarding radioactive contamination of human food and animal feeds. Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

10. *Protective Measures Implementation*

- a. Appendix 4 provides maps of the Plume Exposure Pathway EPZ illustrating evacuation routes, evacuation areas, and locations of shelter areas and reception centers and locations of pre-selected radiological sampling and monitoring points. Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.
- b. Appendix 4 provides maps of the Plume Exposure Pathway EPZ illustrating population distribution around the facility by evacuation area and in a sector format. Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.
- c. Warnings to the public within the Plume Exposure Pathway EPZ are the responsibility of the State of Texas and Somervell and Hood County officials. The primary method of warning the public is by the use of the Alert and Notification System, which is described in Appendix 3. Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.
- d. The State of Texas and Somervell and Hood Counties' Plans establish means for protecting those persons whose mobility may be impaired due to institutional or other confinement. Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.
- e. The State of Texas and Somervell and Hood Counties' Plans establish provisions for the use of radioprotective drugs, particularly for state and local emergency workers, including any mobility-impaired or institutionalized members of the general public whose evacuation could not be readily effected. These provisions include quantity, storage and means of distribution. Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

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- f. The State of Texas does not administer radioprotective drugs to the general population. Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.
- g. The State of Texas and Somervell and Hood Counties' Plans include a means of relocating the populace within the Plume Exposure EPZ. Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.
- h. The State of Texas and Somervell and Hood Counties' Plans include reception centers beyond the Plume Exposure EPZ. Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.
- i. The State of Texas and Somervell and Hood Counties' Plans include projected traffic capacities of evacuation routes under emergency conditions. Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.
- j. The State of Texas and Somervell and Hood Counties' Plans include control of access to evacuated areas and establishment of organizational responsibilities for such control. Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.
- k. The State of Texas and Somervell and Hood Counties' Plans include the identification of and means for dealing with potential impediments to the use of evacuation routes. Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.
- l. The State of Texas and Somervell and Hood Counties' Plans include evacuation time estimates for the Plume Exposure EPZ. Appendix 8 of this Plan provides a cross-reference to these provisions in State Plans, as applicable.
- m. The choices of recommended protective actions are based on the guidance provided in NUREG-0654, Supplement 3. The NRC approved ETE and updates to the ETE are used as input to the protective action decision-making process, to formulate protective action recommendations. Section II.J.8 and Appendix 4 of this Plan provide discussion of the ETE that has been prepared for the Plume Exposure Pathway EPZ.

11. Ingestion Pathway Protective Measures

The State of Texas Plan specifies the protective measures to be used for the Ingestion Pathway, including the methods for protecting the public from

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consumption of contaminated foodstuffs. This includes criteria for the use of stored feed for dairy animals. The plan identifies procedures for detecting contamination, for estimating the dose commitment consequences of uncontrolled ingestion, and for imposing protection procedures. Appendix 8 of this Plan provides a cross-reference to these provisions in State Plans, as applicable.

12. Registering and Monitoring Evacuees

The State of Texas and Somervell and Hood Counties' Plans, in concert with Cleburne, Stephenville and Benbrook Emergency Management Plans, include a description of the means for registering and monitoring of evacuees at reception centers. The Plans provide for personnel and equipment capable of monitoring residents and transients in the Plume Exposure EPZ arriving at reception centers within a 12 hour period. Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

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K. Radiological Exposure Control

This section of the Plan describes the means for controlling radiological exposures for emergency workers in an emergency. These exposure guidelines have been established consistent with EPA PAGs.

1. On-Site Exposure Guidelines and Authorizations

CPNPP Units 3 and 4 implement on-site exposure guidelines for emergency response personnel consistent with those published in EPA PAGs. The applicable guidelines are provided in Table II-4 of this Plan. Doses to emergency response personnel shall be held as low as reasonably achievable (ALARA).

In the absence of the extenuating circumstances identified in Table II-4, the site applies the occupational radiation dose limits as established in 10 CFR Part 20 to each of the following activities:

- a. Removal of injured persons
- b. Undertaking corrective actions
- c. Performing assessment actions
- d. Providing first aid
- e. Performing personnel decontamination
- f. Providing ambulance service
- g. Providing medical treatment services

If any of the extenuating circumstances identified in Table II-4 exist, then the associated exposure guidelines identified in Table II-4 may be applied, subject to the authorization processes discussed in Section II.K.2 of this Plan.

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Table II-4 Emergency Worker Exposure Guidelines

Activity	Dose Guideline in rem		
	TEDE	Lens of the Eye	Other Organs**
Any activity other than those specifically authorized below	5	15	50
Protecting Valuable Property	10	30	100
Lifesaving or Protection of Large Populations	25	75	250
Lifesaving or Protection of Large Populations ^{Note 1}	>25	>75	>250

Note 1: This guideline applies only to volunteers who are fully aware of the risks involved.

** Includes skin and extremities.

2. Radiation Protection Program

The Emergency Coordinator, in consultation with the TSC Radiological Assessment Coordinator and/or EOF Radiation Protection Coordinator, is responsible for authorization of any emergency exposures resulting in doses exceeding the numerical values of the occupational dose limits provided in 10 CFR Part 20.

The EPP addressing “Emergency Exposure Guidelines and Personnel Dosimetry” provides guidance for authorizing and documenting emergency exposures.

If exposures in excess of the numerical values of the occupational dose limits provided in 10 CFR Part 20 are required, the following shall apply:

- Rescue personnel should be volunteers or professional rescue personnel.
- Rescue personnel should be familiar with consequences of exposure to radiation.
- Women capable of reproduction should not take part in these actions.
- Volunteers 45 or older, if available, should be selected.
- Planned individual emergency dose should not exceed 25 rems (TEDE).
- Internal exposure should be minimized (as long as TEDEs are maintained ALARA) by using best available respiratory protection, and

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contamination should be controlled by use of available protective clothing.

- Exposure under these conditions shall be limited to once in a lifetime.

For actions in less urgent emergency situations, where it is necessary to enter a hazardous area to protect facilities and equipment, eliminate further escape of effluents, or to control fires, the following shall apply:

- Persons performing planned action should be volunteers familiar with consequences of exposure to radiation and with task to be performed.
- Women capable of reproduction should not take part in these actions.
- Planned individual emergency dose should not exceed 10 rems.
- Planned individual extremities dose should not exceed 100 rems.

Internal exposure shall be minimized (as long as TEDE is maintained ALARA) by use of respiratory protection and contamination controlled by use of protective clothing.

Chapter 12 of the CPNPP Units 3 and 4 FSAR describes the Radiation Protection Program (RPP) consistent with the requirements of 10 CFR Part 20.

3. Dosimetry and Dose Assessment

- a. CPNPP Units 3 and 4 provide and distribute self-reading and permanent record dosimeters to personnel involved in on-site emergency response regardless of their affiliation. Emergency worker doses are tracked throughout the course of an emergency to control individual's doses within applicable limits.

CPNPP maintains a personnel radiation dosimetry program that includes the capability to determine both external and internal doses consistent with the requirements of 10 CFR Part 20.

The external dosimetry program includes provisions and requirements for use of both permanent record and self-reading dosimeters (e.g., pocket or electronic dosimeters). Dosimeter ranges are sufficient to measure both planned routine and accident doses. EPPs establish requirements for distributing dosimeters to emergency responders, including those individuals responding from off-site locations.

Routine TLD processing is accomplished by Radiation Protection personnel using automatic equipment linked to a records management computer. Dose assessment capabilities are available on a 24-hour per day basis.

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Internal doses are typically estimated through the use of whole body counting and/or in-vitro sampling and analysis routines. Routine procedures associated with the internal dosimetry program establish requirements for determining internal doses based on in-vivo or in-vitro analyses results or by assessment of individual exposures to airborne radioactive materials.

- b. EPPs also establish requirements for wearers to periodically read their self-reading dosimeters to maintain compliance with emergency exposure guidelines. Decisions related to emergency exposure, TLD processing and exposure extensions are based on each individual's current exposure history and self-reading dosimeter data. Personnel exposure history records are available to TSC and EOF personnel.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

4. *State and Local Responder Exposure Authorizations*

The State of Texas and Somervell and Hood Counties' Plans establish a decision line for authorizing emergency workers to incur exposures in excess of the EPA PAGs for lifesaving activities. Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

5. *Decontamination Action Levels*

- a. Results of on-site and off-site contamination surveys, performed in accordance with approved EPPs, shall be used as the basis for determining and posting Radiation Controlled Areas (RCAs). Posting of RCAs shall be accomplished in accordance with RPP procedures.

When removable ground or surface contamination levels in unrestricted areas exceed 1,000 dpm per 100 cm² beta-gamma within the Owner Controlled Area, but outside the RCA, that contaminated area shall be isolated and treated as a RCA. Appropriate radiological protection and access control measures shall be implemented as described in RPP procedures. In the event contamination levels in a RCA exceed 1,000 dpm per 100 cm² beta-gamma removable, decontamination or other necessary protective actions shall be considered.

CPNPP Units 3 and 4 implement requirements for personnel and area decontamination, including decontamination action levels and criteria for returning areas and items to normal use, in procedures supporting the RPP.

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- b. Decontamination shall be directed by appropriately trained personnel. Decontamination shall be performed in accordance with approved EPPs and RPP procedures. EPPs prescribe that personnel decontamination is deemed necessary if contamination levels are found to be in excess of 1,000 dpm beta-gamma per probe area (using a "pancake" style probe or equivalent in a low background area (i.e., less than 100 counts per minute (cpm))). EPPs and RPP procedures describe actions to be taken in the event of skin contamination or suspected internal contamination.

Procedures for the decontamination of on-site emergency personnel wounds, supplies, instruments and equipment, and for waste disposal are included in the EPPs. Appendix 6 of this Plan provides a description of the emergency equipment and decontamination supplies to be provided.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

6. Contamination Control Measures

- a. During an emergency, areas of the site which are normally considered unrestricted access areas may become contaminated and as such shall be considered RCAs. Radiation Protection personnel should survey the site and make changes to RCAs as necessary during the course of the emergency. If the immediate area around the site is contaminated, then a RCA access point may be established at the NOSF. The decontamination facility at the NOSF would then be used as required to decontaminate personnel leaving the site.
- b. The RPP and its supporting procedures establish requirements for limiting access to areas having significant radiological hazards, consistent with the requirements of 10 CFR Part 20 and Chapter 12 of the FSAR.
- c. To avoid unnecessary intakes of radioactive materials during an emergency, drinking water and food supplies that have been outside the CR ventilation envelope and within a RCA shall not be consumed without being surveyed by Radiation Protection personnel. If the potential exists for contamination of on-site food or drinking water that renders these supplies non-consumable, Luminant Nuclear Supply Chain personnel will make arrangements for transport of non-contaminated off-site supplies to CPNPP Units 3 and 4.
- d. Decontamination of personnel, equipment and areas depends on conditions at the time. Personnel decontamination is given first priority to minimize exposures and to release individuals as soon as possible back to the work force. Equipment and areas are decontaminated as

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conditions permit, with priority given to equipment or areas essential to recovery activities. CPNPP Units 3 and 4 permit areas and items to be returned to normal (i.e., non-contaminated) use following conduct of appropriate surveys and verification that the contamination levels meet the criteria provided in the RPP or its supporting procedures.

7. Decontamination of Relocated CPNPP Units 3 and 4 Personnel

CPNPP Units 3 and 4 make provisions for protective clothing, contamination monitoring, and decontamination, including decontamination of radioiodine contamination on the skin, at the relocation site. Appendix 6 of this Plan provides a description of the emergency equipment and supplies to be provided.

Because of decontamination activities, limited amounts of radioactive waste may be generated or accumulated and may be brought to the NOSF Laboratory Facilities for temporary storage. As conditions permit, this radioactive waste shall be returned to the site for processing.

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L. Medical and Public Health Support

This section of the Plan describes arrangements made for medical services for contaminated injured individuals.

1. Hospital and Medical Support

Luminant maintains agreements with Lake Granbury Medical Center (LGMC) in Granbury, Texas and Harris Methodist Walls Regional Hospital (WRH) in Cleburne, Texas, under which each hospital provides medical services for injured personnel from CPNPP Units 3 and 4. The hospitals are equipped and their personnel trained to care for contaminated injured personnel or radiological overexposure requiring medical attention. Appropriate radiological monitoring and control equipment and supplies are available at each hospital consistent with Appendix 6 of this Plan.

LGMC and WRH maintain the capability to evaluate the radiation exposure and/or uptake of accident victims and to handle contaminated victims. These capabilities are established and maintained through training courses supported by Luminant consistent with Section II.O of this Plan, periodic drills and exercises consistent with Section II.N of this Plan, and material support provided consistent with agreements between Luminant and the medical support providers.

In the event that a contaminated injured person is transported to an off-site medical facility, Luminant Radiation Protection personnel accompany the victim to support radiological monitoring and control activities during medical treatment and post-treatment efforts. Because of decontamination activities, limited amounts of radioactive waste may be generated or accumulated by the hospital, ambulance, or other emergency response function and may be brought to the NOSF Laboratory Facilities for temporary storage. As conditions permit, this radioactive waste shall be returned to the site for processing.

Appendix 7 of this Plan contains the relevant letters of agreement.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

2. On-Site First Aid Capability

A first aid station located at CPNPP Units 3 and 4 provides the normal complement of first aid supplies and equipment necessary to treat those injuries not requiring hospitalization or professional medical services. Pre-staged equipment for responders is located at the Access Building for each unit and Fire Brigade assembly areas. First aid kits with basic supplies are located throughout CPNPP Units 3 and 4. Eyewash stations are located throughout the plant at strategic locations.

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Selected CPNPP Units 3 and 4 personnel are trained to provide basic first aid and patient preparation for on-site personnel who become injured or ill. In addition, selected CPNPP Units 3 and 4 ERO personnel receive annual instruction in handling contaminated injured individuals.

Luminant maintains a trained First Aid Team at the site to provide 24 hour per day first aid support. In addition, the following medical facilities and services are available:

- Granbury/Hood County Emergency Medical Service, Inc. (ambulance services; see Section II.L.4 of this Plan)
- Somervell County Fire, Rescue, and EMS Service (initial medical response services; see Section II.L.4 of this Plan)
- LGMC facilities
- WRH facilities

Luminant provides for First Aid readiness through training consistent with Section II.O of this Plan and drills and exercises consistent with Section II.N of this Plan.

3. *Emergency Medical Facilities within the Affected State*

The State of Texas plan contains the locations of emergency medical facilities capable of providing medical support for any contaminated injured member of the public or emergency responder. Appendix 8 of this Plan provides a cross-reference to these provisions in the State plan, as applicable.

4. *Medical Emergency Transportation*

CPNPP Units 3 and 4 provide a vehicle to transport injured personnel to the appropriate medical facility and agreements are in place with local ambulance services to provide assistance as needed. Off-site support for a medical emergency is provided by the Somervell County Fire, Rescue, and EMS Service and Granbury/Hood County Emergency Medical Service, Inc. (either highway vehicle or air transport, as appropriate). Any injured and contaminated individual transported from CPNPP Units 3 and 4 is accompanied by a Radiation Protection Technician (RPT) equipped with suitable radiological monitoring equipment. Any ambulance will be able to communicate with the staff at the receiving hospital. Should care beyond the capabilities of the area hospitals be required, arrangements for transporting the individual are made contingent on the injuries and radiological conditions.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

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M. Recovery and Re-Entry

This section of the Plan discusses general plans for recovery and re-entry.

1. Recovery Plans and Procedures

Once the emergency has terminated and the situation is no longer considered a threat to on-site personnel or the general public, efforts are initiated to restore the affected unit(s) to full operation or place the affected unit(s) in a long-term safe shutdown condition. The scope of these efforts is dependent on the severity of the emergency, ranging from a simple close-out to a full-scale mobilization of personnel and resources to support a long-term recovery effort. If a recovery effort is deemed necessary, the CPNPP Units 3 and 4 Recovery Organization is established to provide personnel and resources to that effort.

Luminant does not expect a recovery organization to be necessary following a NOUE or Alert.

Luminant implements recovery plans and procedures that provide guidance for a range of recovery and re-entry activities, including:

- Recovery/re-entry organization;
- Responsibilities for recovery/re-entry decision-making, including decisions for relaxing protective measures based on existing and potential hazardous conditions;
- Means for informing members of the ERO that recovery operations are to be initiated and related changes in the organizational structure; and
- Methods for periodically updating estimates of total population exposure and recommending relaxation of public protective measures.

Reentry into environs of the site by selected personnel is an important source of information available to the Recovery Organization. These activities should aid in ascertaining the resources, manpower and recovery actions necessary to restore the site to operational status.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

2. Recovery Organization

If established, overall technical direction and control of the Recovery Organization is assumed by the Recovery Manager. The initial Recovery Organization consists of the existing CPNPP ERO. During the recovery phase, ERO personnel continue to perform their functional assignments and responsibilities outlined in Sections II.B.1, II.B.2 and II.B.5.

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Management of activities conducted from the EOF, as well as direction and control of the CPNPP ERO, is assumed by the Recovery Manager.

The Recovery Organization is composed of CPNPP Units 3 and 4 personnel; Luminant resources are available as necessary. Contract personnel are used as needed to expand the capabilities of Luminant personnel. Because the magnitude of any recovery effort is dependent on the scope of the event, Recovery Organization staffing requirements are difficult to predict in advance; therefore, this Plan only predesignates certain management level positions in the Recovery Organization. Managers form their respective groups as appropriate to deal with recovery. The structure of the CPNPP Recovery Organization is discussed in the EPP addressing "Reentry, Recovery, and Closeout."

The primary positions in the Recovery Organization are described below:

Recovery Manager

A member of Luminant senior management is designated as the Recovery Manager and is responsible for directing actions of the Recovery Organization.

Responsibilities and authorities assigned to the Emergency Coordinator are transferred to the Recovery Manager when the Recovery Organization is formed, thus assuring continuity of resources, communications and other activities initiated by the ERO. This information is provided in the EPP addressing "Duties of the Emergency Coordinator/Recovery Manager."

Operations Support personnel are responsible for analyzing and developing plans and procedures directly supporting operations with the objective of restoring the site to operational status. Their primary responsibilities include:

- Providing direct support to shift operations
- Analyzing instrument and control problems and developing modification and repair plans
- Analyzing conditions and developing guidance for shift operations personnel regarding core protection
- Developing out-of-normal and emergency procedures for operations support

Technical Support personnel are responsible for:

- Determining need for and providing engineering and technical specialists to support other managers as required

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- Assuring design activities are adequately staffed and equipped to provide timely support
- Providing direct interface between CPNPP Units 3 and 4 personnel and others on administrative matters
- Directing, coordinating and approving engineering and design activities conducted on-site during recovery
- Developing any required modifications for radwaste systems in support of recovery operations
- Providing technical expertise for repair and modification activities in support of the resolution of mechanical and electrical problems
- Providing qualified personnel to augment emergency repair and damage control items

3. Corporate Support

Luminant resources and personnel are available upon request by the Recovery Manager. These resources are discussed in Section II.B.7 of this Plan.

The basic organization may be modified, as required, to address the needs of the given situation. The Recovery Manager assumes control and direction of the recovery operation with the authority and responsibilities set forth in the EPPs.

The following conditions are considered appropriate for the recommendation to relax protection measures:

- Site operational parameters no longer indicate a potential or actual emergency exists
- The release of radioactivity from the site is controllable, no longer exceeds permissible levels and does not present a credible danger to the public
- The site is capable of sustaining itself in a long term shutdown condition

Depending on plant conditions and the scope of required activities, the recovery organization may perform its activities from one or more designated ERFs or from other locations as specified by the responsible recovery organization managers. As recovery operations progress, the recovery organization may be augmented or reduced as needed to meet ongoing operational needs.

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4. Notification of Initiation and Changes in Organizational Structure

The recovery process is implemented when the ERO managers, with concurrence of State and Federal agencies, have determined the site to be in a stable and controlled condition. Upon the determination, the EOF Manager notifies the NRC Operations Center, the State EOC, and the local EOCs that the emergency has been terminated and any required recovery has commenced. As appropriate, the TSC or EOF Communications Coordinator directs communication to the supporting EROs detailing the change in site status and of the organizational transition. EPPs delineate requirements and actions to be taken for recovery phase activities, including transition to the Recovery Organization.

Appendix 8 of this Plan provides a cross-reference to these provisions in State Plans, as applicable.

5. Updating Total Population Exposure During Recovery Operations

CPNPP Units 3 and 4 personnel periodically estimate total population doses in the affected sectors and zones utilizing population distribution data from within the EPZs. The State oversees this activity. It is conducted in accordance with Appendix 7 of the Texas Radiological Emergency Management Plan.

Appendix 8 of this Plan provides a cross-reference to these provisions in State Plans, as applicable.

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N. Exercises and Drills

This section of the Plan describes exercises conducted to evaluate major portions of Luminant's emergency response capabilities. Periodic drills are conducted to develop and maintain key emergency response skills. Deficiencies identified as a result of exercises and drills are corrected.

1. Exercises

a. Exercise Scope and Frequency

Luminant conducts emergency exercises in accordance with NRC and FEMA requirements (e.g., 10 CFR 50.47(b)(14), 10 CFR Part 50 Appendix E.IV.F, and 44 CFR 350.9). Exercise objectives when the State of Texas and Somervell and Hood County agencies participate in an exercise are coordinated and agreed upon with State and local emergency management officials.

b. Exercise Scenarios and Participation

Exercise scenarios are developed in a manner that provides reasonable assurance that preconditioning of participants is avoided. The scenarios include a wide spectrum of radiological releases and events, including hostile action. When appropriate to the objective, exercise scenarios emphasize coordination among on-site and off-site response organizations. All biennial exercises must include demonstration of response to at least the SAE emergency classification level.

Exercise scenarios are submitted to the NRC in accordance with 10 CFR 50.4 at least 60 days prior to use.

The State of Texas and Somervell and Hood Counties' Plans provide for the mobilization of State and local personnel and resources adequate to verify the capability to respond to an incident requiring response. Luminant conducts exercises on a periodic basis, including biennial exercises required under Appendix E of 10 CFR Part 50. Exercises test the:

- Adequacy of timing and content of EPPs and methods
- Emergency equipment and communications networks
- Public notification system

In addition, exercises test the familiarity of emergency organization personnel with their duties.

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In each eight-year cycle, CPNPP varies the content of scenarios to provide the opportunity for the ERO to demonstrate proficiency in key skills necessary to respond to the following scenario elements:

- a. Hostile action directed at CPNPP Units 3 and 4 involving the integration of off-site resources with on-site response;
- b. An initial classification of, or rapid escalation to, a SAE or GE;
- c. No radiological release or an unplanned minimal radiological release that does not require public protective actions;
 - i. Luminant is required to demonstrate the ability to respond to a no/minimal radiological release scenario only once within the eight-year exercise cycle. State and local response organizations have the option, and should be encouraged, to participate jointly in this demonstration.
 - ii. When planning for a joint no/minimal radiological release exercise, affected State and local jurisdictions, Luminant, and FEMA will identify off-site capabilities that may still need to be evaluated and agree upon appropriate alternative evaluation methods to satisfy FEMA's biennial criteria requirements. Alternative evaluation methods that could be considered during the extent of play negotiations include expansion of the exercise scenario, out-of-sequence activities, plan reviews, staff assistance visits, or other means as described in FEMA guidance.
 - iii. If the off-site organizations elect not to participate in Luminant's required minimal or no release exercise, they will still be obligated to fully participate in an integrated exercise at least every 2 years to meet the requirements as specified in 44 CFR 350.9.
- d. Implementation of strategies, procedures and guidance developed under 10 CFR 50.54(hh)(2).

Luminant maintains records of exercises conducted during each eight year exercise cycle that document the content of scenarios used to comply with the requirements of 10 CFR Part 50, Appendix E, Section IV.F.2.j.

A remedial exercise is required if it is determined that implementation of the Emergency Plan was not satisfactorily demonstrated during the biennial exercise such that the NRC cannot find reasonable assurance that adequate protective measures can be taken in the event of a radiological emergency.

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The need for a remedial exercise will be determined on a case-by-case basis when any of the following conditions associated with a biennial exercise occur:

- Confidentiality is compromised to an extent that broadly affects ERO performance
- The scenario does not provide the opportunity for demonstration of key skills
- The scenario is not implemented in such a way that provides the opportunity for demonstration of key skills, or
- ERO performance does not provide the NRC with a basis to determine that key skills have been maintained.

c. Off-Hours and Unannounced Exercises

At least once every eight years, the specific exercise date is unannounced. At least once every eight years, an exercise is initiated during off-hours (between 6 pm and 4 am). Requirements for unannounced and off-hours exercises may be satisfied concurrently.

The unannounced and/or off-hours demonstration may be conducted during or independent of the biennial exercise required by Appendix E of 10 CFR Part 50.

OROs are not required to participate in off-hours or unannounced exercises; however, Luminant encourages the State of Texas and Somervell and Hood County governments to participate in these exercises.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

d. State and Local Participation in Ingestion Pathway Exercise

As stated in FEMA Regulations and guidance in Supplement 4 of NUREG-0654, State and local personnel and resources adequate to verify the capability and response to a radiological release requiring ingestion pathway protective actions beyond the Plume Exposure Pathway EPZ, must participate in the ingestion pathway portion of an exercise at least once every eight years.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

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2. Drills

Luminant maintains adequate emergency response capabilities between biennial exercises by conducting drills, including at least one drill involving a combination of some of the principal functional areas of on-site emergency response capabilities, including activities such as: management and coordination of emergency response, accident assessment, protective action decision-making, and plant system repair and corrective actions. The drills follow preplanned scenarios developed to thoroughly test response of personnel involved. On the spot performance corrections may be made and demonstration of proper performance offered by the drill controller during drills. Upon request, Luminant encourages the State of Texas and Somervell and Hood County governments to participate in the drills.

During these drills, activation of the ERFs may not be necessary. Luminant may use the drills to consider accident management strategies, provide supervised instruction, allow the operating staff to resolve problems and focus on internal training objectives. Luminant may include one or more drills as portions of an exercise.

The activities undertaken in the event of an actual declared emergency may be used to satisfy emergency drill requirements, provided that these activities demonstrate adequate execution of the specified activities.

The drill program includes the following:

a. Communications Drills

Communications links between CPNPP Units 3 and 4, the DPS, and Somervell and Hood County EOCs are tested monthly. Communications between CPNPP Units 3 and 4, Federal agencies and the State of Texas are tested quarterly. Communications between CPNPP Units 3 and 4, State and local EOCs and radiological monitoring teams are tested annually. Communications tests evaluate both the operability of the system(s) and the ability to understand message content.

ERDS is tested quarterly in accordance with Generic Letter GL-93.01. Additional information regarding the quarterly test is contained in the EPP addressing "Maintaining Emergency Preparedness."

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

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b. Fire Drills

Luminant conducts fire drills as discussed in Subsection 9.5.1 of the FSAR. The Somervell County Fire, Rescue, and EMS Service are invited to participate annually in one of the periodic drills.

c. Medical Emergency Drills

Luminant conducts medical emergency drills that include a simulated contaminated injured individual and participation by the local support services agencies (e.g., medical transportation and off-site medical treatment facility) annually.

Medical Emergency drills include:

- A simulated contaminated-injured individual
- Transport to an off-site medical facility
- Participation by the off-site medical facility

d. Radiological Monitoring Drills

Luminant conducts radiological monitoring drills annually to prepare radiological monitoring teams to perform air sampling as well as dose rate and surface contamination determinations within the Plume Exposure Pathway EPZ. Radiological monitoring drills include:

- Use of the appropriate procedures for collecting and analyzing samples and recording results
- Collection and analysis of sample media for which the facility is responsible
- Communications with monitoring teams
- Recordkeeping activities

Site personnel assigned to radiological monitoring teams participate in drills to collect environmental samples such as soil, water, and vegetation. These drills maintain site personnel capable to assist State agencies, if necessary. Luminant may coordinate radiological monitoring drills with those drills conducted by the State of Texas and Somervell and Hood County or may conduct these drills independently.

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e. Radiation Protection Drills

Luminant conducts on-site Radiation Protection drills at least semi-annually. Radiation Protection drills include:

- Response to and analysis of simulated elevated airborne and liquid activity levels
- Response to simulated elevated area radiation levels
- Analysis of the simulated radiological situation using the appropriate procedures.

f. EOF Activation Drills

Luminant conducts periodic EOF activation drills to demonstrate the ability to perform the consolidated EOF functions set forth in Subsection 4.1 of NUREG-0696. These drills include operation of all facilities that could be used to perform EOF functions, including any support facilities located outside the EOF. The ERO will demonstrate the ability to perform the consolidated EOF functions in at least one drill or exercise per eight-year exercise cycle.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

3. Conduct of Drills and Exercises

Drills and exercise scenarios are developed to provide a method to test and evaluate the CPNPP Units 3 and 4 Emergency Preparedness Program. These scenarios are designed to allow free play in decision-making and shall include, as appropriate:

- a. Basic objective(s) of each drill and exercise, and appropriate evaluation criteria;
- b. Date(s), time period(s), location(s), and participating organizations;
- c. Simulated events;
- d. Time schedule of real and simulated initiating events;
- e. Narrative summary describing conduct of the exercise or drill which addresses simulated casualties, off-site fire department assistance, rescue of personnel, use of protective clothing, deployment of radiological monitoring teams, public information activities, and;

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- f. Description of arrangements for and advance materials to be provided to official observers.

The Emergency Planning Group is responsible for developing drill objectives, exercise objectives, and developing exercise programs. Scenarios and objectives developed for those exercises or drills are submitted to the NRC and/or FEMA for review and approval.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

4. Provisions for Observing, Evaluating, and Critiquing Exercises

Luminant provides the opportunity for official observers from Federal agencies (e.g., NRC and FEMA), the State of Texas and Somervell and Hood Counties to observe, evaluate, and critique exercises.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

5. Exercise Evaluation and Corrective Actions

The Emergency Planning Group is responsible for conducting exercise critiques and for preparing a written summary of each exercise critique. This summary should include objectives of the exercise, a list of participants, controllers, evaluators, observers and a list of identified deficiencies.

For each drill, the drill evaluator is responsible for preparing a written summary of the critique. This summary should include a list of participants, controllers, evaluators, observers and observed deficiencies. This summary shall be provided to the Emergency Planning Manager, who is responsible for ensuring the appropriate changes are incorporated in the Plan and EPPs.

One or more qualified instructors/evaluators supervise and evaluate drills and exercises. A qualified instructor/evaluator is an individual whose knowledge, skills, and abilities have been evaluated by the Emergency Planning Manager or his designee and determined to be sufficient for observing and evaluating the planned activities against the established criteria. For example, a qualified instructor/evaluator may be an individual who has been trained to fill the emergency response position to be observed or may be a supervisor or instructor for the position.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

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O. Radiological Emergency Response Training

This section of the Plan describes radiological emergency response training that is provided to those who may be called on to assist in an emergency.

1. General

Luminant implements a training program that provides for initial training and periodic retraining for individuals who have been assigned emergency response duties as discussed in this section.

a. Off-site Emergency Response Training

Luminant conducts, or supports the conduct of, site-specific training for off-site personnel who may be called upon to provide assistance in the event of an on-site emergency. This includes emergency responders employed by agencies identified in Section II.A of this Plan.

Training for off-site support personnel may include the following, to the extent appropriate to the assigned duties and responsibilities:

- The basic scope of the Plan
- Emergency classifications
- Notification methods
- Basic radiation protection
- Site access procedures
- The individual, by title, in the site ERO who will direct their activities on-site
- Definition of support roles

Luminant provides or supports training for affected hospital, ambulance/rescue, police, and firefighting personnel that includes their expected emergency response roles, notification procedures, and radiation protection precautions. For these and any other off-site emergency responders who may be required to enter the site under emergency conditions, Luminant provides or supports training that addresses site access procedures and identifies (by position) the individual who will control their activities on-site.

b. Mutual Aid Agreements

The State of Texas and Somervell and Hood County response organizations participate in and receive training. Appendix 8 of this

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Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

2. On-site Emergency Response Training

Instructions for personnel who are accredited for unescorted access to the site are provided in site access training.

Emergency response training program is provided to Luminant personnel who may be called upon to respond to an emergency. The training program includes practical drills, consistent with Section II.N of this Plan; during which each individual demonstrates the ability to discharge their assigned emergency response function. The instructor/evaluator immediately corrects any erroneous performance noted during these practical drills and, as appropriate, demonstrates proper performance consistent with approved procedures and accepted standards.

Training is also provided to the CPNPP Units 3 and 4 Fire Brigade. This training is coordinated by the Nuclear Training Manager, and addresses methods and equipment used for fighting various types of fires that could occur on-site. Appropriate emphasis is placed on radiological aspects of firefighting in accordance with section 9.5.1 of the FSAR.

Security training is conducted by the CPNPP Units 3 and 4 Security Organization and is coordinated by the Security Manager. Training is provided to security personnel based on each person's specific tasks. Appropriate emphasis is placed on emergency response required within radiologically controlled environments in accordance with the Security Plan.

Personnel not assigned to CPNPP Units 3 and 4 ERO receive information on reporting emergencies and expected actions in case of an emergency.

3. First Aid Team Training

Luminant provides first aid training to First Aid Team Members in accordance with the EPP addressing "Emergency Preparedness Training." Training of first aid personnel is also discussed in Section II.L.2. This training meets or exceeds the training formerly known as Red Cross Multimedia Training mentioned in Evaluation Criterion II.O.3 in NUREG-0654.

4. Emergency Response Training and Qualification

Luminant conducts a program for instructing and qualifying personnel who implement this Plan. Each individual completes the required training prior to assignment to a position in the ERO. Initial and continuing training for ERO personnel is provided in accordance with the EPP addressing

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“Emergency Preparedness Training.” The training program establishes the scope, nature, and frequency of the required training and qualification measures.

Luminant implements a program to provide position-specific emergency response training for designated members of the ERO. The content of the training program is appropriate for the duties and responsibilities of the assigned position. The affected positions and the scope of the associated training programs include:

- a. Emergency Coordinator – Emergency condition assessment and classification, notification systems and procedures, organizational interfaces, CPNPP Units 3 and 4 evacuation, radiation exposure controls, off-site support, and recovery.
- b. Accident assessment personnel - Emergency condition assessment and classification, notification systems and procedures, organizational interfaces.
- c. Radiological monitoring and analysis personnel – Dose assessment, emergency exposure evaluation, protective measures, protective actions, contamination control and decontamination, monitoring systems and procedures.
- d. Police, security and firefighting personnel - Notification of site personnel, facility activation, personnel accountability and evacuation, and access control. Police and Security also receive training on the Security Plan. Firefighting personnel also receive annual site orientation, communications protocol and radiation protection training. (Note: Off-site police and firefighting personnel will be offered training consistent with Section II.O.1.a of this Plan.)
- e. Damage control/repair/corrective action teams - Damage control organization, communication systems, and planning and coordination of damage control tasks.
- f. First aid/rescue personnel - Emergency organizational interfaces, firefighting, search and rescue procedures, and communications systems.
- g. Local support services/emergency service personnel – Training consistent with Section II.O.1.a of this Plan.
- h. Medical support personnel - Training consistent with Section II.O.1.a of this Plan.

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- i. Corporate office support personnel - Emergency condition assessment and classification, notification systems and procedures, organizational interfaces.
- j. Emergency Communicators - Notifications and reports to off-site authorities and communication systems as appropriate for individual position assignments.

Section II.O.5 of this Plan discusses provisions for periodic retraining of ERO personnel.

Luminant provides training for local support services personnel, including emergency service, police, and firefighting personnel, consistent with Section II.O.1.a of this Plan.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

5. *Retraining*

Luminant conducts, or supports the conduct of, annual retraining for those categories of emergency response personnel listed in Section II.O.4 of this Plan. Failure to successfully complete this training in a timely manner as specified in plant training procedures results in the individual's removal from the ERO pending completion of the required training.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

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P. Responsibility for the Planning Effort

Luminant implements an organizational structure and processes to periodically review, update, audit, distribute, and control this Plan consistent with facility quality assurance and document control requirements. Luminant also implements a program to provide appropriate training to personnel responsible for the emergency planning effort.

1. Training

Luminant develops and implements a process to provide training for the Emergency Planning Manager and support staff to facilitate effective implementation of the emergency planning effort, consistent with applicable regulatory requirements and guidance, license conditions, other commitments, and accepted good practices. Training may include formal education, professional seminars, plant-specific training, industry meetings, and other activities and forums that provide for an exchange of pertinent information.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

2. Responsibility for Radiological Emergency Response Planning

The CPNPP Plant Manager holds the overall authority and responsibility for ensuring that an adequate level of emergency preparedness is maintained. The Plant Manager shall approve changes to the Plan. Responsibility for the planning effort is delegated to the Emergency Planning Manager.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

3. Emergency Planning Manager

Luminant has established an Emergency Planning Manager position. The incumbent is responsible for developing and updating the Plan and coordinating this Plan with other response organizations. The Emergency Planning Manager approves the EPPs and is responsible for maintenance and coordination of the emergency preparedness program and providing the training program for the ERO. The EPM has support staff, who, under his direction, support day-to-day and long-range emergency planning activities.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

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4. Plan Reviews and Updates

This Plan shall be reviewed, updated as needed, and certified by the Plant Manager to be current on an annual basis. The review includes consideration of items identified during drills and exercises that could affect the Plan and the following:

- After receipt of a license under 10 CFR Part 52, and at least 365 days prior to scheduled fuel load, CPNPP Units 3 and 4 will perform an estimate of the population within the Plume Exposure Pathway EPZ in accordance with 10 CFR Part 50, Appendix E, Section IV.7 and the guidance provided in NUREG/CR-7002, "Criteria for Development of Evacuation Time Estimates" (Reference 20). If the results of this review indicate a population change resulting in the need to update the ETE, CPNPP Units 3 and 4 will update the ETE to reflect the impact of the population increase. CPNPP Units 3 and 4 will submit the updated ETE to the NRC for review in accordance with 10 CFR 50.4 no later than 365 days prior to scheduled fuel load.
- After Units 3 and/or 4 begin operation, CPNPP Units 3 and 4 will conduct a new ETE study and submit an updated ETE Report to the NRC within 365 days of the release of subsequent decennial census data by the U.S. Census Bureau in accordance with regulations. During the years between those in which decennial census data are released, CPNPP Units 3 and 4 conducts annual estimates of the Plume Exposure Pathway EPZ permanent resident population to assess the impact of population changes on the ETE. The annual estimates of permanent resident population are conducted once each year and are based on U.S. Census Bureau annual resident population estimates and State/local government population data (if available). The first periodic estimate will be completed within 365 days following the date that the updated ETE Report, based on the decennial census, is submitted to the NRC.

If the annual estimate of permanent resident population indicates that the permanent resident population change results in a need to update the ETE, CPNPP Units 3 and 4 will undertake performance of an updated ETE study to reflect the impact of the population change.

CPNPP Units 3 and 4 will submit an updated ETE Report to the NRC in accordance with 10 CFR 50.4 no later than 365 days following release of decennial census data or following determination that the population criteria requiring an updated ETE have been met. Luminant submits any updated ETE analysis to the NRC at least 180 days before using it to form protective action recommendations and providing it to state and local governmental authorities for use in developing off-site protective action strategies.

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- On an annual basis, changes to the Emergency Plan will be reviewed to determine the affect they may have on the On-Shift Staffing Analysis. This review will determine whether any changes to the Emergency Plan include changes in on-shift staffing, the assignment of key responsibilities, the introduction of key technologies, or other changes that could affect the results of the On-Shift Staffing Analysis. The On-Shift Staffing Analysis is updated if it is determined that assumptions presented in the On-Shift Staffing Analysis are affected by changes to the Emergency Plan.
- Likewise, this plan will be updated to account for any change to shift staffing that has been identified by updates to the On-Shift Staffing Analysis.

On an annual basis, the Emergency Planning Manager reviews the procedures for emergency classification with the State of Texas and Somervell and Hood County. Review of the EPPs is conducted at least biennially.

The Station Operations Review Committee (SORC) shall review changes to the Plan and submit recommended changes to the Operations Review Committee (ORC). Any changes identified by drills and exercises are incorporated into the Plan following approval by the Plant Manager.

Letters of Agreement with supporting agencies are maintained in the CPNPP Emergency Planning Office and are reviewed annually.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

5. *Distribution of Revised Plans*

Upon completion of the annual review, the Emergency Planning Manager or designee incorporates any necessary changes. These documents are controlled and revised in accordance with site administrative policies.

Following approval of the updated Plan by the Plant Manager, the document control organization distributes the updated plan to the designated organizations/individuals with emergency response/planning responsibilities.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

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6. *Supporting Plans*

The following list identifies supporting plans and their sources.

- Texas Emergency Management Plan

Source: Texas Department of Public Safety
- Somervell County Emergency Management Plan and Manual of Emergency Procedures

Source: Somervell County Government
- Hood County Emergency Management Plan and Manual of Emergency Procedures

Source: Hood County Government
- Squaw Creek Park Emergency Plan

Source: Luminant

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

7. *Implementing Procedures*

Appendix 5 of this Plan provides a topical listing of EPPs that support this Plan.

Certain emergency plan features recommended by NUREG-0654 (e.g., Evaluation Criterion I.3, which addresses methods and techniques for determining source terms and the magnitude of releases) are procedural in nature and have been appropriately placed in EPPs. Changes to the affected portions of these procedures are developed and approved consistent with the requirements of 10 CFR 50.54(q) and the guidance provided in NRC Regulatory Guide 1.219, "Guidance on Making Changes to Emergency Plans for Nuclear Power Reactors" (Reference 21).

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

8. *Table of Contents*

The format for this Plan directly follows the format of NUREG-0654. Appendix 8 of this Plan provides a cross-reference between this Plan, 10 CFR 50.47 and Appendix E to 10 CFR Part 50. Appendix 8 also provides

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a cross-reference from NUREG-0654 Evaluation Criteria to this Plan, the State of Texas and Somervell and Hood Counties' Plans.

9. *Emergency Plan Audits*

Luminant performs, or oversees the performance of, a periodic independent review of the emergency preparedness program consistent with the requirements of 10 CFR 50.54(t). The reviews include, at a minimum, the following:

- The Emergency Plan
- EPPs
- The Emergency Plan training program
- Readiness testing (e.g., drills and exercises)
- ERFs, equipment, and supplies
- Interfaces with the State of Texas and Somervell and Hood County government agencies
- Required records and documentation

Luminant applies appropriate management controls to audit findings consistent with the facility's corrective action program.

Luminant establishes and maintains the frequency of the periodic audits based on an assessment of performance as compared to performance indicators; however, each element of the emergency preparedness program is reviewed at least once every 24 months.

In addition, Luminant conducts an independent review after a change occurs in personnel, procedures, equipment, or facilities that could potentially adversely affect emergency preparedness. This review is conducted as soon as practicable but no longer than twelve months after the change occurs.

Luminant documents audit results and improvement recommendations and reports these results to the facility and Luminant management. Luminant makes those portions of the audits that address the adequacy of interfaces with the State of Texas and Somervell and Hood County governments available to the affected governments.

Records Management files and maintains the following records for five years:

- The review results and recommended improvements

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- The answers to the recommended improvements
- A description of the corrective actions taken

10. Emergency Telephone Numbers

On a quarterly basis the Emergency Planning Manager or his designee is responsible for performing a review of the telephone numbers used for emergency response and for ensuring required revisions are completed.

Appendix 8 of this Plan provides a cross-reference to these provisions in State and local Plans, as applicable.

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III. References and Appendices

A. Cited References

1. U.S. Nuclear Regulatory Commission, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," NUREG-0654/FEMA-REP-1, Rev. 1, October 1980.
2. U.S. Nuclear Regulatory Commission, "NSIR/DPR-ISG-01, Interim Staff Guidance, Emergency Planning for Nuclear Power Plants," Revision 0, November 2011.
3. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors," Rev. 3, August 1992.
4. U.S. Nuclear Regulatory Commission, "NRC Incident Response Plan," NUREG-0728, Rev. 4, April 2005.
5. U. S. Department of Energy, "Federal Radiological Monitoring and Assessment Center Operations Plan," DOE/NV 11718-080, December 2005.
6. U.S. Department of Homeland Security, "National Response Framework," January 2008.
7. Nuclear Energy Institute, "Methodology for Development of Emergency Action Levels" NEI 99-01, Rev. 5, February 2008.
8. Nuclear Energy Institute, "Methodology for Development of Emergency Action Levels, Advanced Passive Light Water Reactors," NEI 07-01, Rev. 0, September 2007.
9. U.S. Nuclear Regulatory Commission, "Event Reporting Guidelines: 10 CFR 50.72 and 50.73," NUREG-1022, Rev. 2, October 2000.
10. Mitsubishi Heavy Industries, Ltd., "Design Control Document for the US-APWR, Rev. 1, August 2008.
11. FEMA-REP-10, "Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants, FEMA, November 1985
12. FEMA CPG 1-17, "Outdoor Warning Systems Guide," March 1980
13. U.S. Nuclear Regulatory Commission, "Functional Criteria for Emergency Response Facilities," NUREG-0696, February 1981.

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14. U.S. Nuclear Regulatory Commission, "Clarification of TMI Action Plan Requirements," NUREG-0737, Supplement 1, January 1983.
15. Luminant Generation Company, LLC, "Squaw Creek Park Emergency Plan, January 2007.
16. U.S. Nuclear Regulatory Commission, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants - Criteria for Protective Action Recommendations for Severe Accidents," NUREG-0654/FEMA-REP-1, Supplement 3, July 1996.
17. U.S. Environmental Protection Agency, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents," EPA-400-R-92-001, October 1991.
18. KLD Associates, Inc., "Comanche Peak Nuclear Power Plant Units 3 and 4 Development of Evacuation Time Estimates," April 2008.
19. U.S. Nuclear Regulatory Commission, "Development of Evacuation Time Estimate Studies for Nuclear Power Plants," NUREG/CR-6863, January 2005.
20. U.S. Nuclear Regulatory Commission, "Criteria for Development of Evacuation Time Estimates," NUREG/CR-7002, November 2011.
21. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.219, "Guidance on Making Changes to Emergency Plans for Nuclear Power Reactors," Revision 0, November 2011.

B. Supplemental References

1. NRC IN 91-77- Shift Staffing at Nuclear Power Plants
2. NRC IN 93-81 – Implementation of Engineering Expertise On Shift
3. NRC IN 95-48 – Results of Shift Staffing Study
4. NRC IN 86-16 – NRC On-Scene Response During a Major Emergency
5. NRC RIS 2002-21 – National Guard and Other Emergency Responders Located in the Licensee's Controlled Area
6. NRC RIS 2003-18 - Use of NEI 99-01, Methodology for Development of Emergency Action Levels (including Supplements 1 and 2)
7. NRC IN 97-05 – Off-site Notification Capabilities

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8. NRC RIS 00-011 – NRC Emergency Telecommunications System, including Supplement 1
9. NRC IN 87-58 – Continuous Communications Following Emergency Notifications
10. NRC IN 93-53 – Effect of Hurricane Andrew on Turkey Point Nuclear Generating Station and Lessons Learned
11. NRC IN 97-05 – Off-site Notification Capabilities
12. NRC RIS 2002-16 – Current Incident Response Issues
13. NRC IEC 80-09 – Problems with Plant Internal Communications Systems
14. NRC IN 85-44 – Emergency Communications System Monthly Test
15. NRC IN 86-16 – NRC On-Scene Response During a Major Emergency
16. NRC IN 93-53 – Effect of Hurricane Andrew on Turkey Point Nuclear Generating Station and Lessons Learned
17. NRC IN 2004-19 – Problems Associated with Back-Up Power Supplies to Emergency Response Facilities and Equipment
18. NRC IN 2002-14 – Ensuring a Capability to Evacuate Individuals, Including Members of the Public, from the Owner-Controlled Area
19. NRC IN 88-15 – Availability of USFDA-Approved Potassium Iodide for Use in Emergencies Involving Radioactive Iodine
20. NRC IN 96-19 – Failure of Tone alert Radios to Activate When Receiving a Shortened Activation Signal
21. NRC IN 2002-25 – Challenges to Licensees' Ability to Provide Prompt Public Notification and Information During an Emergency Preparedness Event
22. NRC IN 2005-06 – Failure to Maintain Alert and Notification System Tone Alert Radio Capability
23. NRC RIS 01-016 – Update of Evacuation Time Estimates
24. NRC RIS 2003-12 – Clarification of NRC Guidance for Modifying Protective Actions

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25. NRC RIS 2004-13 - Consideration of Sheltering in Licensee's Range of Protective Action Recommendations, including Supplement 1
26. NRC RIS 2005-08 – Endorsement of NEI Guidance “Range of Protective Actions for Nuclear Power Plant Incidents”
27. NRC IN 98-020 – Problems with Emergency Preparedness Respiratory Protection Programs
28. NRC IN 85-41 – Scheduling of Pre-Licensing Emergency Preparedness Exercises
29. NRC IN 87-54 – Emergency Response Exercises
30. NRC Bulletin 2005-02 – Emergency Preparedness and Response Actions for Security-Based Events
31. NRC RIS 2006-02 – Good Practices for Licensee Performance During the Emergency Preparedness Component of Force-on-force Exercises
32. NRC RIS 2006-03 – Guidance on Requesting an Exemption from Biennial Emergency Preparedness Exercise Requirements
33. NRC RIS 2006-12 - Endorsement of Nuclear Energy Institute Guidance "Enhancements to Emergency Preparedness Programs for Hostile Action"
34. 44 CFR 350, Review And Approval of State and Local Radiological Emergency Plans and Preparedness
35. FEMA-REP-10 – Guide for the Evaluation of Alert and Notification systems for Nuclear Power Plants
36. FEMA-REP-11 – Guide to Preparing Emergency Public Information Materials

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C. Appendices

Appendix 1	Emergency Action Levels
Appendix 2	Radiological Assessment and Monitoring
Appendix 3	Public Alert and Notification System Description
Appendix 4	Evacuation Time Estimate
Appendix 5	Emergency Plan Procedures
Appendix 6	Emergency Equipment and Supplies
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Appendix 1 – Emergency Action Levels

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EAL Differences and Deviations from NEI Guidance

NEI 99-01, Rev. 5		CPNPP Units 3 & 4 Preliminary EALS		Justification
IC		IC		
None		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>Deviation: 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&C for the US-APWR. The digital I&C systems used in the US-APWR are comparable to the Westinghouse AP1000 specifically addressed in NEI 07-01.</p> <p>EAL CU9 has been provided as supplemental information to this Table.</p>
None		CA7	<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. Loss of all PSMS, PCMS, and DAS Digital Monitoring and Control Function for 15 minutes or longer.</p>	<p>Deviation: 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&C for the US-APWR. The digital I&C systems used in the US-APWR are comparable to the Westinghouse AP1000 specifically addressed in NEI 07-01.</p> <p>EAL CA7 has been provided as supplemental information to this Table.</p>

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EAL Differences and Deviations from NEI Guidance

NEI 99-01, Rev. 5		CPNPP Units 3 & 4 Preliminary EALS		Justification
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		<p>Deviation:</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&C for the US-APWR. The digital I&C systems used in the US-APWR are comparable to the Westinghouse AP1000 specifically addressed in NEI 07-01.</p> <p>SU3, related to annunciator malfunctions, has been modified as presented in NEI 99-01 to address the digital control systems in the US-APWR.</p>

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NEI 99-01, Rev. 5		CPNPP Units 3 & 4 Preliminary EALS		Justification
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">(Site specific control room safety system annunciation) <p>OR</p> <ul style="list-style-type: none">(Site specific control room safety system indication) <p>b. EITHER of the following:</p> <ul style="list-style-type: none">A SIGNIFICANT TRANSIENT is in progress.Compensatory indications are unavailable	SA7	<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 partial Loss of All 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>Deviation:</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&C for the US-APWR. The digital I&C systems used in the US-APWR are comparable to the Westinghouse AP1000 specifically addressed in NEI 07-01.</p> <p>SA4, related to annunciator malfunctions, has been modified as presented in NEI 99-01 to address the digital control systems in the US-APWR.</p> <p>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.</p> <p>EAL SA7 has been provided as supplemental information to this table.</p>

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NEI 99-01, Rev. 5		CPNPP Units 3 & 4 Preliminary EALS		Justification
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">(Site specific control room safety system annunciation) <p>OR</p> <ul style="list-style-type: none">(Site specific control room safety system indication) <p>AND</p> <p>b. A SIGNIFICANT TRANSIENT is in progress.</p> <p>AND</p> <p>c. Compensatory indications are unavailable.</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>Deviation:</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&C for the US-APWR. The digital I&C systems used in the US-APWR are comparable to the Westinghouse AP1000 specifically addressed in NEI 07-01.</p> <p>SS6, related to annunciator malfunctions, has been modified as presented in NEI 99-01 to address the digital control systems in the US-APWR.</p> <p>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.</p> <p>EAL SS7 has been provided as supplemental information to this table.</p>

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EAL Differences and Deviations from NEI Guidance

NEI 99-01, Rev. 5		CPNPP Units 3 & 4 Preliminary EALS		Justification
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">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.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. <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	<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><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></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">Refueling Water Storage Pit Level on L-1400, L-1401, L-1402, L-1403Containment Vessel Reactor Coolant Drain Tank (CVDT) Level on L-1000Pressurizer Relief Tank Level on L-560CCW Surge Tank (Train A & B) Level on L-1200 and L-1201 for Train A, L-1210 and L-1211 for Train BContainment Sump Level on L-1083	<p>Deviation:</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><i>Note:</i></p> <p>CPNPP preliminary EAL is consistent with NEI 99-01 EAL Threshold #2.</p> <p>EAL CU2 has been provided as supplemental information to this table.</p>
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>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>	HA1	<p>EAL Threshold #4 not included.</p>	<p>Deviation: 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><i>Note:</i></p> <p>CPNPP preliminary EALs are consistent with NEI 99-01 EAL Thresholds #1, 2, 3, 5, and 6.</p>

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NEI 99-01, Rev. 5		CPNPP Units 3 & 4 Preliminary EALS		Justification
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	<p>EAL Thresholds #4 and 5 not included.</p>	<p>Difference: 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><i>Note:</i> CPNPP preliminary EALs are consistent with NEI 99-01 EAL Thresholds #1, 2, and 3.</p>

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NEI 99-01, Rev. 5		CPNPP Units 3 & 4 Preliminary EALS		Justification
IC		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	<p>EAL Thresholds #4 and 5 not included.</p>	<p>Difference: 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><i>Note:</i> CPNPP preliminary EALs are consistent with NEI 99-01 EAL Thresholds #1, 2, and 3.</p>
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>	AS1	<p>EAL Threshold #3 not included.</p>	<p>Difference: 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.</p> <p><i>Note:</i> CPNPP preliminary EALs are consistent with NEI 99-01 EAL Thresholds #1, 2, and 4.</p>

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NEI 99-01, Rev. 5		CPNPP Units 3 & 4 Preliminary EALS		Justification
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	EAL Threshold #3 not included.	<p>Difference:</p> <p>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.</p> <p><i>Note:</i></p> <p>CPNPP preliminary EALs are consistent with NEI 99-01 EAL Thresholds #1, 2, and 4.</p>
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	EAL Threshold # 5 not included.	<p>Difference:</p> <p>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.</p> <p><i>Note:</i></p> <p>CPNPP preliminary EALs are consistent with NEI 99-01 EAL Thresholds #1, 2, 3, and 4.</p>

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COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

CU9

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

UNPLANNED Partial Loss of Indicating, Monitoring and Control Functions for ≥ 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.

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COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

CA7

Initiating Condition -- ALERT

Inability to Monitor and Control the Plant for ≥ 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

Initiating Condition - ALERT

UNPLANNED Partial Loss of Indicating, Monitoring and Control Functions for ≥ 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

Initiating Condition - SITE AREA EMERGENCY

Inability to Monitor and Control the Plant for ≥ 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

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.

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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Appendix 2 – Radiological Assessment and Monitoring

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I. Introduction

This appendix provides information regarding the process used by CPNPP to assess radionuclide atmospheric transport and diffusion under emergency conditions as discussed in Appendix 2 to NUREG-0654/FEMA-REP-1. Appendix 2 of NUREG-0654/FEMA-REP-1 identifies three topics:

- Meteorological measurements
- Atmospheric transport and diffusion assessment
- Remote interrogation

Section 2.3 of the CPNPP FSAR provides a detailed discussion of the facility's meteorological data system and remote access to the associated data, this appendix provides only a brief discussion of these topics. Therefore, this Appendix describes the design of the atmospheric transport and diffusion assessment models for CPNPP.

II. Discussion

10 CFR 50.47(b)(9) requires that the licensee describe in its Emergency Plan methods to provide and maintain "adequate methods, systems, and equipment for assessing and monitoring actual or potential off-site consequences of a radiological emergency condition..." Appendix E to 10 CFR 50 requires that the licensee's Emergency Plans describe "equipment for determining the magnitude of and for continuously assessing the impact of the release of radioactive materials to the environment."

A. Meteorological Measurements

Appendix 2 to NUREG-0654 provides guidance for complying with the requirement in 10 CFR Part 50, Appendix E. CPNPP FSAR Subsection 2.3 discusses the design of the meteorological measurement system. This design addresses the guidance provided in Supplement 1 to NUREG-0737. The meteorological measurements program is consistent with Revision 1 to NRC Regulatory Guide 1.23¹.

B. Atmospheric Transport and Diffusion Assessment

Appendix E to 10 CFR 50 requires that licensee Emergency Plans describe, "the means to be used for determining the magnitude of and for continually assessing the impact of the release of radioactive material..."

NUREG-0654/FEMA-REP-1 discusses two classes of atmospheric transport and diffusion models. The model used for CPNPP is a "Class B" model as described in Appendix 2 of NUREG-0654/FEMA-REP-1: "a numerical model which predicts the spatial and temporal variations of plume distribution and

1. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.23, Rev. 1, "Meteorological Monitoring Programs for Nuclear Power Plants," Washington, DC, March 2007.

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provides estimates of deposition and relative concentration of radioactivity within the plume exposure and ingestion pathway emergency planning zones for the duration of any radioactive materials releases during a declared emergency.”

C. Remote Access

Appendix 2 of NUREG-0654/FEMA-REP-1 provides guidance concerning remote interrogation. The guidance supports the requirement in 10 CFR 50, Appendix E. Regulatory Guide 1.23 also discusses remote interrogation capability. FSAR Subsection 2.3 addresses provisions for remote access to the meteorological system. Remote access to meteorological data is provided to the TSC and EOF.

III. Design Description: Atmospheric Transport and Diffusion Assessment

The remainder of this appendix describes the design of the atmospheric transport and diffusion assessment models. The design addresses the following program elements for accident assessment that demonstrate compliance with requirements in 10 CFR 50.47(b)(9) and evaluation criteria from NUREG-0654/FEMA-REP-1 discussed in Section II.I of this plan:

1. The means to provide initial and continuing radiological assessment throughout the course of an accident.
2. The means to determine the source term of releases of radioactive material within plant systems, and the magnitude of the release of radioactive materials based on plant system parameters and effluent monitors.
3. The means to continuously assess the impact of the release of radioactive materials to the environment, accounting for the relationship between effluent monitor readings, and onsite and off-site exposures and contamination for various meteorological conditions.
4. The means to make rapid assessment of potential magnitude and locations of any radiological hazards through gaseous release pathways.
5. The means to estimate integrated dose from the projected and actual dose rates, and for comparing these estimates with the EPA Protective Action Guides (PAGs).

CPNPP's Radiological Assessment personnel use the Comanche Peak Assessment Model Projecting Estimated Dose Evaluation (CPAMPEDE) computer program described below to perform dose assessment calculations under emergency conditions. CPAMPEDE is a Windows-based, menu driven program which has the capability to provide near real time estimates of potential doses to individuals from releases of radioactive materials via the atmospheric pathway and to back-calculate release rates from field measurements.

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CPAMPEDE uses a straight-line Gaussian plume model for initial dose projections within the Plume Exposure Pathway EPZ. It uses a segmented-plume model for tracking wind shifts and plume deposition over portions of the Ingestion Exposure Pathway EPZ. CPAMPEDE can use system parameters and radiation monitor readings from plant monitoring systems, or the results of in-plant sampling, to estimate the source term and release rate. It then uses these values with meteorological data, which may be provided automatically or input manually, to estimate plume location and to calculate projected doses. CPAMPEDE can also use default data in the absence of plant-specific data. The program uses terminology and concepts consistent with 10 CFR Part 20 and related guidance.

Plume transport and diffusion are based on meteorological data measured on the site meteorological tower.

Following initiation of the program, dose assessment personnel have the option to accept various conservative default values or to enter measured or estimated values that are pertinent to the dose estimation process. Table A2-1 discusses the data requested by CPAMPEDE.

Table A2-1 – CRAMPEDE Data

Data	Discussion	Comment
Meteorological Data (Wind speed, wind direction, release duration, and stability class)	Dose assessment personnel may accept conservative default values or enter data provided automatically by plant monitoring systems	
Stability Class	Dose assessment personnel may accept default stability class (Class D), select known stability class, or enter meteorological data to facilitate determination of stability class.	
Release Path	Dose assessment personnel may select from: 1) monitored unit vent release 2) unmonitored containment release 3) monitored steam generator tube rupture release 4) unmonitored steam generator tube rupture release	Prompts user to enter release rate from plant monitoring systems Prompts user to enter secondary data (containment pressure, rate of pressure loss, containment exposure rate or noble gas activity) Prompts user to enter steam flow rate and activity concentration Prompts user to enter reactor coolant leak rate and activity concentration
Nuclide Mix	Dose assessment personnel choose appropriate nuclide mix: 1) noble gas; 2) noble gas + iodine; 3) coolant inventory; 4) gap inventory; 5) melt inventory; or 6) user-entered.	"User-entered" option allows user to enter data from post-accident sample.

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Following completion of required data entry, dose assessment personnel may complete the dose calculations. Upon completion of the dose calculations, several output options are made available. The output options include:

- Plot map – allows the user to display a map with a plot of the dose calculation results. Based on any point in the surrounding area selected by the user, CPAMPEDE will display the distance, angle from the plant, calculated dose rates for noble gas, total effective dose equivalent, and thyroid, and concentrations of iodine and particulate airborne radioactivity. CPAMPEDE also displays the general direction of the plume and its concentration marked by isopleths.
- Preview results – allows the user to review the results prior to printing a formal report
- Preview inputs – allows the user to review the inputs used in the calculations
- Print report – allows the user to print a formal report of the dose calculations

CPAMPEDE provides an option for the user to enter field monitoring data (typically centerline distance from plant and measured exposure rate) and then back-calculate the release rate. The user may also enter the measured gross radioiodine activity to calculate the thyroid committed dose equivalent.

Following completion of a set of calculations, the user may save the results of each individual CPAMPEDE run. The user may, as needed, opt to use the results of individual runs in the Run Integrate function, which allows the user to calculate the effects of the entire event rather than an individual release period. The Integrate code provides options for five different plots: 1) an iodine deposition plot; 2) a particulate deposition plot; 3) a total effective dose equivalent plot; 4) a noble gas plot; and 5) a thyroid dose plot.

If the EOF must be evacuated in the midst of any set of emergency dose calculations, CPAMPEDE provides the capability of transferring the existing database to portable media for subsequent transfer to a computer in the designated alternate location.

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Appendix 3 – Public Alert and Notification System Description

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I. Summary

This Appendix describes the Alert and Notification System (ANS) required by 10 CFR 50.47(b) (5) to alert the public in the Comanche Peak Nuclear Power Plant (CPNPP), plume exposure pathway EPZ in the event of a declared emergency requiring public response. The Comanche Peak Steam Electric Station Alert and Notification System Final Report, updated and revised September 28, 2004 (ANS Report), submitted as supplemental information in Part 5 of the CPNPP COLA, describes the system in place for Units 1 and 2. The current system meets all related regulations and guidance. The objective of the Alert and Notification System is to alert the public in the CPNPP EPZ of an emergency requiring specific action that will be provided by State and local emergency management officials. These actions may include protective actions that may be required.

This Appendix describes the outdoor warning devices (sirens), including equipment capabilities, and details the means of satisfying the criteria provided in Appendix 3 of NUREG-0654 which references FEMA CPG 1-17, "Outdoor Warning Systems Guide." Additional guidance is also provided in FEMA-REP-10, "Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants."

Table A8-3 in Appendix 8 of this Plan provides a cross-reference to these provisions.

II. Concept of Operations

The ANS consists of fixed sirens in the Plume Exposure Pathway EPZ that serves as the primary means of alerting the public of an emergency at CPNPP requiring public protective actions.

Somervell and Hood Counties each have the capability to control the activation of the portion of the Alert and Notification System within its respective boundaries. In addition, each County can activate all or part of the sirens located in the other County, if necessary.

The emergency plans of the State of Texas and Somervell and Hood Counties include the organizations and individuals, by title, which are responsible for decision-making regarding the Alert and Notification System. Once alerted, the public is provided emergency information and instructions on the Emergency Alert System (EAS), which is described in State and local emergency response plans. The county locations from which the sirens will be activated are manned 24 hours per day. Each organization's Plan contains provisions for disseminating emergency instructions to the public. The State of Texas Plan includes a description of the information that would be communicated to the public under various radiological emergency conditions.

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III. CPNPP Alerting System Design Criteria

The existing CPNPP siren system design is consistent with the guidance provided in Appendix 3 of NUREG-0654; FEMA CPG 1-17, and FEMA-REP-10. Specifically, the system design basis incorporates the following features:

A. Capabilities

The siren system is capable of providing an alerting signal that is at least 10 dB above the ambient background noise level throughout the EPZ within 15 minutes from the time the appropriate off-site agencies have determined the need for such alerting exists. Additionally, no member of the public will be exposed to sound levels in excess of 123 dB.

B. Siren Coverage within 5-Mile Radius of CPNPP

The system provides coverage for essentially 100% of the population within 5 miles of CPNPP.

C. Special Alerting Arrangements

Parks and public recreational areas within the CPNPP EPZ are covered by the sirens. The alerting requirements for industrial sites and institutions were determined with consideration given to existing alerting mechanisms.

D. Backup Means for Alert and Notification

The State of Texas and Somervell and Hood Counties' Plans describe the backup means of alerting and notifying the public (as discussed in Section II.E.6 of this Plan).

E. Population Density within the CPNPP EPZ

The population density within the EPZ was reviewed during preparation of the ANS Report. No population center had a density of greater than 2,000 persons per square mile. For the cities of Glen Rose and Granbury, siren sound pressure level coverage was determined in accordance with CPG 1-17 guidelines for suburban and rural areas. On this basis, the siren coverage is designed to provide an alerting signal 10 db above the average daytime ambient background. Accordingly, the applicable guidance in NUREG-0654 is satisfied.

F. Field Sound Survey

The CPNPP system was designed without a field sound survey. Over 90% of the CPNPP EPZ was designed to receive a SPL of at least 60 dB. An attenuation factor of 10 dB loss per distance doubled as discussed in FEMA CPG 1-17 was used as the design basis of siren coverage for the CPNPP alerting system. Actual placement of the sirens was determined by the local topography, demography and special requirements of a particular siren site.

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These details are addressed in Sections III.G, III.H, and III.I of this Appendix.

G. Maintenance and Testing Program

The maintenance and testing program is implemented to assure continued reliability and availability of the outdoor sirens. Features of the maintenance and testing program include:

- monthly activation of the entire system for a period of 30 seconds
- monthly report of the siren system effectiveness summarized quarterly and submitted to the State of Texas and FEMA
- A process to identify and implement improvements to the system

The maintenance and test program is discussed in further detail in Section VI of this Appendix.

H. Topography, Demography, and Special Facilities

1. Topography

Consideration of the topography in the EPZ was addressed in the design of the siren system.

2. Demography

The EPZ is predominately a rural agricultural area. Population density was considered when determining placement of the sirens within the EPZ.

3. Special Facilities

Industrial locations, schools, institutions, campgrounds, retail trade centers, private clubs, and public gathering facilities were collectively identified as special facilities. The alerting requirements for each facility or type of facilities was determined with consideration given to existing alerting mechanisms (e.g. page systems, intercoms, bells, and local sirens, etc.)

The siren system design includes increased alert level based upon guidance provided by Table 5.4 of NUREG/CR-2654, PNL-4227. In all cases, a minimum sound level of 70 dB SPL is designed to cover the administrative office of each facility.

Chapter 2 of the Final Safety Analysis Report (FSAR) and the Evacuation Time Estimate (ETE), Appendix 4 of the COL Emergency Plan, provide specific information regarding the site, its surrounding topography, and affected populations.

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IV. Existing CPNPP Alerting System

The existing ANS consists of a network of 72 sirens located throughout the Plume Exposure Pathway EPZ. The sirens are radio controlled and activated by Federal Commander Digital Controller SS2000 encoders, which provide computer based data feedback, located in the Somervell and Hood County Sheriff's Office. A third control point, located at the CPNPP site, is used for diagnostic purposes, verification of test data and post-maintenance testing. The controllers located in the county's Sheriffs' offices are used to activate the siren system during an emergency. The siren system is divided into four quadrants, each of which could be activated from either Sheriff's Office. Each quadrant can be activated independently, or in conjunction with any other or all other quadrants. The process for activating the ANS is discussed in further detail in Section V.

A. Siren Characteristics

According to the ANS Report, as verification of the vendor's rated output, sound level measurements were taken 50 ft in the air at 100 ft from a siren. Maximum siren output was recorded to be 126 dB(C). As the data taken in the field was within 2 dB of the manufacturer's rating, the full rated siren output of 128 dB was used as the design basis for the siren SPL.

The maximum sound level to be expected at a given distance from each siren was determined based on a factor a 10 dB loss per distance doubled.

The design of the CPNPP siren system assumed a circular SPL contour for each siren. As discussed in Section III.G of this Appendix, sirens were sited with consideration given to the local topography to compensate for areas where a circular SPL was not likely to be obtained.

The alert signal is set to sound for slightly over 3 minutes and may be repeated as often as necessary.

The State of Texas and Somervell and Hood Counties' Plans describe the backup means of alerting and notifying the public (as described in Section II.E.6 of this Plan).

B. Siren Installation

Siting and spacing of the devices to achieve the desired coverage considered topography and demography of the EPZ. The design coverage guidance provided in Appendix 3 of NUREG-0654.

Acceptance testing of a number of sirens determined that the maximum SPL measured around any actual siren installation location, at ground level 100 ft from the siren, was 123 dB.

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V. Implementation of the Siren System

The activation of the Alert and Notification System requires procedures and relationships between Luminant, the off-site agencies that support Luminant and CPNPP.

A. Activation of the Alert and Notification System

Procedures are established to promptly notify State and local government organizations of the nature of any emergency at CPNPP and protective actions recommended by Luminant. Details regarding notification of off-site agencies are discussed in Section II.E of this Plan.

B. Ownership of the Siren System

Control of the system is maintained by local officials of Somervell and Hood Counties; however, maintenance and testing of the system is the responsibility of Luminant.

VI. Maintenance and Testing Programs

A. Annual Maintenance

The annual maintenance of each siren is performed and documented in accordance with maintenance instructions. These instructions include the following steps:

Annual Maintenance for Thunderbeam Sirens

Annual maintenance of the Thunderbeam Siren includes an inspection of physical conditions and a growl test of the siren by manual activation followed by activation by remote activation.

Annual Maintenance for Model 2001 Sirens

Annual maintenance of the Model 2001 Siren includes an inspection of physical conditions and a quiet test of the siren by manual activation followed by a quiet test of the siren by remote activation.

If any siren is found to be inoperable, or needs repair, it is reported to the Luminant Emergency Planning Siren Coordinator, repaired and returned to service as quickly as possible.

B. Siren System Performance Testing

Sirens are sounded for approximately 30 seconds the first Monday of every month except for major holidays. If the first Monday of any month is a major holiday, or if severe weather or a discretionary decision of the County Judge to cancel the test is implemented, the Sound Test is cancelled and a Quiet Test (Growl Test) is performed in lieu thereof on any day during the month. Activation of the siren

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system alternates between the Somervell and Hood County Sheriff's Office. The test results are forwarded to the Texas DEM and FEMA for review and reported to the NRC for inclusion in Plant Performance Indicators.

C. Silent Test

Siren testing guidance provided by Appendix 3 to NUREG-0654 included a recommendation that a "silent test" be performed on the siren system every two weeks. In lieu of the silent test discussed in NUREG-0654, monthly performance tests are conducted as described previously.

VII. Complete Design Report and FEMA Acceptance

On September 23, 2003, FEMA issued a letter stating the alert and notification system installed around CPNPP satisfies the requirements of NUREG-0654 and FEMA REP-10 and there was reasonable assurance that the system is adequate to alert and promptly notify the public in the event of a radiological emergency at the site. The ANS is recertified annually and the most recent FEMA acceptance letter is included as Supplemental Information to Part 5 of the COL Application.

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Appendix 4 – Evacuation Time Estimate

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Comanche Peak Nuclear Power Plant Evacuation Time Estimate

This Appendix summarizes the results of the analysis of evacuation times for the public in the Plume Exposure Pathway EPZ at the Comanche Peak Nuclear Power Plant (CPNPP). Details are published separately in report that describes the analyses undertaken and the results obtained in a study of Evacuation Time Estimates (ETE) for the proposed CPNPP Units 3 and 4 located in Somervell County, Texas. Evacuation time estimates provide State and local government with site-specific information needed for Protective Action decision-making.

In the performance of the ETE, guidance was provided by documents published by Federal Government agencies. Most important of these are:

- Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, NUREG-0654/FEMA-REP-1, Rev. 1, November 1980.
- Analysis of Techniques for Estimating Evacuation Times for Emergency Planning Zones, NUREG/CR-1745, November 1980.
- Development of Evacuation Time Estimates for Nuclear Power Plants, NUREG/CR-6863, January 2005.

Table A8-4 in Appendix 8 of this Plan provides a cross-reference to these provisions.

Planning Basis and Assumptions

The ETE project began in January 2007 and extended over a period of 15 months. The major activities performed are briefly described in chronological sequence:

- Attended “kick-off” meetings with Luminant Power personnel, Enercon Services and emergency management personnel representing State and local governments.
- Reviewed prior ETE reports prepared for CPNPP and accessed U.S. Census Bureau data files for the year 2000. Studied Geographical Information Systems (GIS) maps of the area in the vicinity of CPNPP, then conducted a field survey of the highway network.
- Synthesized this information to create an analysis network representing the highway system topology and capacities within the Plume Exposure Pathway Emergency Planning Zone (EPZ), plus a “Shadow” area extending 15 miles radially from the plant.
- Designed and sponsored a telephone survey of residents within the EPZ to gather focused data needs for this ETE study that were not contained within the Census database. The survey instrument was reviewed and modified by State and county personnel prior to the survey.

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- Data collection forms (provided to the counties at the kick-off meeting) were returned with data pertaining to employment, transients, and special facilities in each county. Phone calls were placed to recreational, medical, and day care facilities to obtain more detailed information.
- The traffic demand and trip-generation rates of evacuating vehicles were estimated from the gathered data. The trip generation rates reflected the estimated mobilization time (i.e., the time required by evacuees to prepare for the evacuation trip) that was computed using the results of the telephone survey of EPZ residents.
- Following Federal guidelines, the EPZ is subdivided into 31 zones. These zones are then grouped within circular areas or “keyhole” configurations (circles plus radial sectors) that define a total of 63 Evacuation Regions.
- The time-varying external circumstances are represented as Evacuation Scenarios, each described in terms of the following factors: (1) Season (Summer, Winter); (2) Day of Week (Midweek, Weekend); (3) Time of Day (Midday, Evening); and (4) Weather (Good, Rain). Two special scenarios were considered, one representing a large event occurring at the Texas Amphitheatre, the other involving construction of a new unit at the CPNPP site.
- The Planning Basis for the calculation of the ETE is:
 - A rapidly escalating incident at CPNPP that quickly assumes the status of General Emergency such that the Advisory to Evacuate is virtually coincident with the siren alert.
 - While an unlikely accident scenario, this Planning basis yields ETEs, measured as the elapsed time from the Advisory to Evacuate until the last vehicle exits the impacted Region, that represent “upper bound” estimates. This conservative Planning Basis is applicable for all initiating events including the prospect of a terrorist attack.
- If the emergency occurs while schools are in session, the ETE study assumes that the children are evacuated by bus directly to reception centers located outside the EPZ. Parents, relatives, and neighbors are advised to not pick up their children at school prior to the arrival of the buses dispatched for that purpose. The ETE for school children are calculated separately.
- Evacuees who do not have access to a private vehicle either ride-share with relatives, friends or neighbors, or be evacuated by buses provided as specified in the county evacuation plans. Those in special facilities likewise are evacuated with public transit, as needed: bus, van, or ambulance, as required. Separate ETE are calculated for

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the transit-dependent evacuees and for those evacuated from special facilities.

Computation of ETE

A total of 756 ETE were computed for the evacuation of the general public. Each ETE quantifies the aggregate evacuation time estimated for the population within one of the 63 Evacuation Regions to completely evacuate from that Region, under the circumstances defined for one of the 12 Evacuation Scenarios ($63 \times 12 = 756$). Separate ETE are calculated for transit-dependent evacuees, including school children for applicable scenarios.

In addition, numerous cases were created to determine the sensitivity of ETE to variations in the mobilization time and extent of shadow population evacuation, and also to investigate the impact of the Granbury 4th of July celebration on ETE. The results of the Granbury 4th of July Celebration sensitivity study are discussed below.

Except for Region R03, which is the entire EPZ, only a portion of the population within the EPZ would be advised to evacuate. That is, the Advisory to Evacuate applies only to those people occupying the specified impacted region. It is assumed that 100 percent of the people within the impacted region will evacuate in response to this Advisory. The people occupying the remainder of the EPZ outside the impacted region may be advised to take shelter.

The computation of ETE assumes that a portion of the population within the EPZ but outside the impacted Region, elect to “voluntarily” evacuate. In addition, a portion of the population in the “shadow” region beyond the EPZ, but within 15 miles of CPNPP, will also elect to evacuate. These voluntary evacuees could impede those who are evacuating from within the impacted region. The impedance that could be caused by voluntary evacuees is considered in the computation of ETE for the impacted region. The computational procedure is outlined as follows:

- A link-node representation of the highway network is coded. Each link represents a unidirectional length of highway; each node typically represents an intersection or merge point. The capacity of each link is estimated based on the field survey observations and on established procedures.
- The evacuation trips are generated at location called “zonal centroids” located within the EPZ. The trip generation rates vary over time reflecting the mobilization process, and from one location (centroid) to another depending on population density and on whether a centroid is within, or outside, the impacted area.
- The computer models compute the routing patterns for evacuating vehicles that are compliant with federal guidelines (outbound relative to the location of CPNPP), then simulate the traffic flow movements

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over space and time. This simulation process estimates the rate that traffic flow exits the impacted region.

- The ETE statistics provide the elapsed times for 50 percent, 90 percent, 95 percent and 100 percent, respectively, of the population within the impacted region, to evacuate from within the impacted region. These statistics are represented in tabular and graphical formats.

Traffic Management

The study includes the development of a comprehensive traffic management plan with recommendations designed to expedite the evacuation of people from within an impacted region. This plan also addresses recommendations to control access into the EPZ after returning commuters have rejoined their families. The traffic management plan does not supersede existing evacuation plans, but provides information that may be considered in updating these existing plans. This plan was reviewed with State and local law enforcement personnel.

Results

A compilation of selected information is presented in the figures and tables provided in the body of the report. The ETE indicates that the estimated evacuation time for the non-transit dependent population of the entire Plume Exposure Pathway EPZ, under adverse weather conditions, is four hours and 20 minutes. The ETE indicates that the maximum estimated evacuation time for the transit dependent population of the entire Plume Exposure Pathway EPZ, under adverse weather conditions, is three hours and 35 minutes. The average estimated evacuation time for the transit dependent population under corresponding conditions is three and one half hours.

The Granbury 4th of July sensitivity study considered an evacuation of the entire EPZ and was conducted to measure the impact of the Granbury 4th of July Celebration. The sensitivity study resulted in the following:

- The ETE for the 2-mile region is not affected,
- The ETE for the 5-mile region increases by 50 minutes,
- The ETE for the Entire EPZ increases by two hours and twenty minutes

The ETE did not identify any impediments to the development of emergency plans for the CPNPP site.

Tables A4-1 through A4-3 provide summaries of the estimated evacuation times for the general population, schools, and transit dependent populations, respectively. Table A4-4 presents the results of the Granbury 4th of July Celebration sensitivity study.

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Table A4-1 – Time to Evacuate the Area of 100% of the Affected Population
(Sheet 1 of 2)

	Summer		Summer		Summer		Winter		Winter		Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek		Weekend		Midweek Weekend		Weekend	Midweek
Scenario:	(1)	(2)	(3)	(4)	(5)	Scenario:	(6)	(7)	(8)	(9)	(10)	Scenario:	(11)	(12)
Region Wind Toward:	Midday		Midday		Evening	Region Wind Toward:	Midday		Midday		Evening	Region Wind Toward:	Midday	Midday
	Good Weather	Rain	Good Weather	Rain	Good Weather		Good Weather	Rain	Good Weather	Rain	Good Weather		Event in Amphitheatre	New Plant Construction
Entire 2-Mile Region, 5-Mile Region, and EPZ														
R01 2-mile ring	3:50	3:50	2:50	3:00	3:00	R01 2-mile ring	3:50	3:50	2:50	2:50	3:00	R01 2-mile ring	2:50	3:40
R02 5-mile ring	4:10	4:10	3:10	3:10	3:10	R02 5-mile ring	4:10	4:10	3:10	3:10	3:10	R02 5-mile ring	3:10	4:10
R03 Entire EPZ	4:20	4:20	4:00	4:00	4:00	R03 Entire EPZ	4:20	4:20	4:00	4:00	4:00	R03 Entire EPZ	4:00	4:20
2-Mile Ring and Downwind to 5 Miles (3 sector groups)														
R04 N	4:10	4:10	3:10	3:10	3:00	R04 N	4:00	4:10	3:10	3:10	3:10	R04 N	3:10	4:10
R05 NNE	4:00	4:10	3:00	3:00	3:10	R05 NNE	4:00	4:10	3:00	3:10	3:00	R05 NNE	3:00	4:00
R06 NE	4:00	4:00	3:00	3:00	3:10	R06 NE	4:00	4:10	3:10	3:10	3:10	R06 NE	3:00	4:00
R07 ENE	4:00	4:00	3:00	3:00	3:00	R07 ENE	4:00	4:00	3:00	3:00	3:00	R07 ENE	3:00	4:00
R08 E	4:00	4:00	3:00	3:00	3:00	R08 E	4:00	4:00	3:00	3:00	3:00	R08 E	3:00	4:00
R09 ESE	4:00	4:00	3:00	3:00	3:00	R09 ESE	4:00	4:00	3:00	3:00	3:00	R09 ESE	3:00	4:00
R10 SE	4:00	4:00	3:00	3:00	3:00	R10 SE	4:00	4:00	3:00	3:00	3:00	R10 SE	3:00	4:00
R11 SSE, S	4:00	4:00	3:00	3:00	3:00	R11 SSE, S	4:00	4:00	2:50	3:00	3:00	R11 SSE, S	3:00	4:00
R12 SSW	4:00	4:00	3:00	3:00	3:00	R12 SSW	4:00	4:00	2:50	3:00	3:00	R12 SSW	3:00	4:00
R13 SW	4:00	4:00	3:00	3:10	3:00	R13 SW	4:00	4:00	3:10	3:10	3:00	R13 SW	3:00	4:00
R14 WSW	4:10	4:10	3:10	3:10	3:10	R14 WSW	4:00	4:10	3:10	3:10	3:10	R14 WSW	3:10	4:00
R15 W	4:10	4:10	3:10	3:10	3:10	R15 W	4:00	4:10	3:10	3:10	3:10	R15 W	3:10	4:00
R16 WNW	4:10	4:10	3:10	3:10	3:10	R16 WNW	4:00	4:10	3:10	3:10	3:10	R16 WNW	3:10	4:00
R17 NW, NNW	4:10	4:10	3:10	3:10	3:10	R17 NW, NNW	4:00	4:10	3:10	3:10	3:10	R17 NW, NNW	3:10	4:10
2-Mile Ring and Downwind to EPZ Boundary (3 sector groups)														
R18 N	4:10	4:20	4:00	4:00	4:00	R18 N	4:10	4:10	4:00	4:00	4:00	R18 N	4:00	4:10
R19 NNE	4:10	4:10	4:00	4:00	3:50	R19 NNE	4:10	4:10	4:00	4:00	4:00	R19 NNE	4:00	4:10
R20 NE	4:10	4:10	3:50	4:00	3:50	R20 NE	4:10	4:10	3:50	4:00	4:00	R20 NE	3:50	4:10
R21 ENE	4:00	4:00	3:40	3:40	3:40	R21 ENE	4:00	4:00	3:40	3:40	3:40	R21 ENE	3:40	4:00
R22 E	4:00	4:00	3:40	3:40	3:40	R22 E	4:00	4:00	3:40	3:40	3:40	R22 E	3:40	4:00
R23 ESE	4:00	4:00	3:00	3:00	3:00	R23 ESE	4:00	4:00	3:00	3:10	3:00	R23 ESE	3:00	4:00
R24 SE	4:00	4:00	3:00	3:00	3:00	R24 SE	4:00	4:00	3:00	3:10	3:00	R24 SE	3:00	4:00
R25 SSE	4:00	4:00	3:00	3:10	3:00	R25 SSE	4:10	4:10	3:10	3:10	3:10	R25 SSE	3:10	4:10
R26 S	4:00	4:00	3:00	3:10	3:00	R26 S	4:00	4:00	3:00	3:00	3:10	R26 S	3:00	4:10
R27 SSW	4:00	4:00	3:10	3:10	3:00	R27 SSW	4:00	4:10	3:00	3:00	3:00	R27 SSW	3:00	4:00
R28 SW	4:00	4:10	3:10	3:10	3:10	R28 SW	4:10	4:10	3:10	3:10	3:10	R28 SW	3:10	4:10
R29 WSW	4:10	4:10	3:10	3:10	3:10	R29 WSW	4:10	4:10	3:10	3:10	3:10	R29 WSW	3:10	4:00
R30 W	4:10	4:10	3:50	3:50	4:00	R30 W	4:10	4:10	3:50	3:50	3:50	R30 W	3:50	4:10
R31 WNW	4:20	4:20	3:50	3:50	4:00	R31 WNW	4:10	4:20	3:50	4:00	4:00	R31 WNW	3:50	4:20
R32 NW	4:20	4:20	3:50	3:50	3:50	R32 NW	4:20	4:20	3:50	4:00	3:50	R32 NW	3:50	4:20
R33 NNW	4:10	4:20	4:00	4:00	4:00	R33 NNW	4:10	4:20	4:00	4:00	4:00	R33 NNW	4:00	4:20

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Table A4-1 – Time to Evacuate the Area of 100% of the Affected Population
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	Summer		Summer		Summer		Winter		Winter		Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek		Weekend		Midweek Weekend		Weekend	Midweek
Scenario:	(1)	(2)	(3)	(4)	(5)	Scenario:	(6)	(7)	(8)	(9)	(10)	Scenario:	(11)	(12)
Region Wind Toward:	Midday		Midday		Evening	Region Wind Toward:	Midday		Midday		Evening	Region Wind Toward:	Midday	Midday
	Good Weather	Rain	Good Weather	Rain	Good Weather		Good Weather	Rain	Good Weather	Rain	Good Weather		Event in Amphitheatre	New Plant Construction
2-Mile Ring and Downwind to 5 Miles (5 sector groups)														
R34 N	4:10	4:10	3:10	3:10	3:10	R34 N	4:00	4:10	3:10	3:10	3:10	R34 N	3:10	4:00
R35 NNE	4:10	4:10	3:10	3:10	3:10	R35 NNE	4:10	4:10	3:10	3:10	3:10	R35 NNE	3:10	4:10
R36 NE	4:00	4:00	3:00	3:00	3:10	R36 NE	4:00	4:10	3:10	3:00	3:10	R36 NE	3:00	4:00
R37 ENE	4:00	4:00	3:00	3:00	3:00	R37 ENE	4:00	4:00	3:00	3:00	3:00	R37 ENE	3:10	4:00
R38 E	4:00	4:00	3:00	3:00	3:00	R38 E	4:00	4:00	3:00	3:00	3:00	R38 E	3:10	4:00
R39 ESE	4:00	4:00	3:00	3:00	3:00	R39 ESE	4:00	4:00	3:00	3:00	3:00	R39 ESE	3:10	4:00
R40 SE	4:00	4:00	3:00	3:00	3:00	R40 SE	4:00	4:00	3:00	3:00	3:00	R40 SE	3:10	4:00
R41 SSE, S	4:00	4:00	3:00	3:00	3:00	R41 SSE, S	4:00	4:00	3:00	3:00	3:00	R41 SSE, S	3:10	4:00
R42 SSW	4:00	4:00	3:00	3:00	3:00	R42 SSW	4:00	4:00	3:00	3:00	3:00	R42 SSW	3:10	4:00
R43 SW	4:00	4:00	3:10	3:00	3:10	R43 SW	4:00	4:00	3:10	3:10	3:10	R43 SW	3:10	4:00
R44 WSW	4:10	4:10	3:10	3:10	3:10	R44 WSW	4:00	4:10	3:10	3:10	3:10	R44 WSW	3:10	4:00
R45 W	4:10	4:10	3:10	3:10	3:10	R45 W	4:10	4:10	3:10	3:10	3:10	R45 W	3:10	4:10
R46 WNW	4:10	4:10	3:10	3:10	3:10	R46 WNW	4:10	4:10	3:10	3:10	3:10	R46 WNW	3:10	4:10
R47 NW, NNW	4:10	4:10	3:10	3:10	3:10	R47 NW, NNW	4:10	4:10	3:10	3:10	3:10	R47 NW, NNW	3:10	4:10
2-Mile Ring and Downwind to EPZ Boundary (5 sector groups)														
R48 N	4:10	4:20	4:00	4:00	4:00	R48 N	4:20	4:20	4:00	4:00	4:00	R48 N	4:00	4:10
R49 NNE	4:10	4:20	4:00	4:00	4:00	R49 NNE	4:10	4:20	4:00	4:00	4:00	R49 NNE	4:00	4:10
R50 NE	4:10	4:10	4:00	4:00	4:00	R50 NE	4:10	4:10	3:50	4:00	4:00	R50 NE	4:00	4:10
R51 ENE	4:10	4:10	3:50	4:00	3:50	R51 ENE	4:10	4:10	3:50	4:00	4:00	R51 ENE	3:50	4:10
R52 E	4:10	4:10	3:40	3:40	3:40	R52 E	4:00	4:10	3:40	3:40	3:40	R52 E	3:40	4:00
R53 ESE	4:10	4:10	3:40	3:40	3:40	R53 ESE	4:00	4:00	3:40	3:40	3:40	R53 ESE	3:40	4:00
R54 SE	4:00	4:10	3:00	3:10	3:00	R54 SE	4:00	4:10	3:00	3:10	3:00	R54 SE	3:20	4:10
R55 SSE	4:00	4:00	3:00	3:10	3:00	R55 SSE	4:10	4:10	3:00	3:10	3:10	R55 SSE	3:20	4:10
R56 S	4:00	4:00	3:10	3:10	3:10	R56 S	4:10	4:00	3:00	3:10	3:10	R56 S	3:20	4:10
R57 SSW	4:00	4:10	3:10	3:10	3:10	R57 SSW	4:10	4:10	3:10	3:10	3:10	R57 SSW	3:20	4:10
R58 SW	4:10	4:10	3:10	3:10	3:10	R58 SW	4:10	4:10	3:10	3:10	3:10	R58 SW	3:20	4:00
R59 WSW	4:10	4:10	3:50	3:50	3:50	R59 WSW	4:10	4:10	3:50	3:50	3:50	R59 WSW	3:50	4:10
R60 W	4:20	4:20	3:50	3:50	4:00	R60 W	4:10	4:20	3:50	4:00	3:50	R60 W	3:50	4:10
R61 WNW	4:20	4:20	3:50	4:00	4:00	R61 WNW	4:20	4:20	3:50	3:50	4:00	R61 WNW	3:50	4:20
R62 NW	4:10	4:20	4:00	4:00	4:00	R62 NW	4:20	4:20	4:00	4:00	4:00	R62 NW	4:00	4:20
R63 NNW	4:20	4:20	4:00	4:00	4:00	R63 NNW	4:20	4:20	4:00	4:00	4:00	R63 NNW	4:00	4:20

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Table A4-2 – Estimated Evacuation Times for EPZ Schools

School	Driver Mobilization Time (min)	Loading Time (min)	Dist. to EPZ Bndry (mi.)	Travel Time to EPZ Bndry (min)	ETE (hr:min)	Dist. EPZ Bndry to H.S. (mi.)	Travel Time EPZ Bndry to H.S. (min)	ETE to H.S. (hr:min)
Hood County Schools								
Brawner Intermediate School	60	5	3.0	6	1:15	31	47	2:00
Emma Roberson Elementary School	60	5	3.2	6	1:15	31	47	2:00
Mambrino Elementary School	60	5	14.0	24	1:30	20	30	2:00
Tolar Elementary School	60	5	1.2	3	1:10	24	36	1:45
Tolar Junior High School	60	5	1.2	3	1:10	24	36	1:45
Tolar High School	60	5	0.3	1	1:10	24	36	1:45
Somervell County Schools								
Brazos River Charter School	60	5	3.1	6	1:15	13.4	21	1:35
Glen Rose Elementary School	60	5	9.2	16	1:25	23	35	2:00
Glen Rose High School	60	5	8.8	15	1:20	23	35	1:55
Glen Rose Intermediate School	60	5	9.0	16	1:25	23	35	2:00
Glen Rose Junior High School	60	5	8.1	14	1:20	23	35	1:55
Happy Hills Farm	60	5	10.0	17	1:25	13	20	1:45
Average for EPZ:					1:20	Average:		1:55

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Table A4-3 – Estimated Evacuation Times for the Transit-Dependent Population

Route Number	Bus Number	Single Wave					Second Wave							
		Mobilization (min.)	Route Length (mi.)	Route Travel Time (min.)	Pickup Time (min.)	ETE (hr:min)	Mobilization (min.)	Unload (min.)	Driver Rest (min.)	Return Travel Time to EPZ (min.)	Travel Time EPZ to Route Start (min.)	Route Travel Time (min.)	Pickup Time (min.)	ETE (hr:min)
1	1 - 4	90	10	17	30	2:20	115	5	10	35	0	15	30	3:30
	5 - 7	105	10	17	30	2:35	115	5	10	35	0	15	30	3:30
2	1 - 4	90	10	17	30	2:20	115	5	10	38	0	15	30	3:35
	5 - 7	105	10	17	30	2:35	115	5	10	38	0	15	30	3:35
3	1 - 3	90	18	31	30	2:35	115	5	10	20	0	27	30	3:30
	4, 5	105	18	31	30	2:50	115	5	10	20	0	27	30	3:30
4	1	90	8	14	30	2:15	115	5	10	27	0	12	30	3:20
Average for EPZ:						2:30	Average for EPZ:							3:30

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Table A4-4 – Estimated Evacuation Times for the Granbury 4th of July Sensitivity Study

Transient Vehicles	Evacuation Region		
	2-Mile Region (R01)	5-Mile Region (R02)	Entire EPZ (R03)
5,362 (Base)	2:50	3:10	4:00
25,407	2:50	4:00	6:20