

Emergency Response Plan

AmerenUE

Revision 1

Approved by _____ Date _____

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Callaway Plant Unit 2 Emergency Plant Revision 1

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LIST OF ANNEXES

The Unit Annexes subject to the requirements of this plan are as follows:

Callaway Plant Unit 2 U.S. EPR Annex

PART 1: INTRODUCTION

A: PURPOSE

As required in the conditions set forth by the Nuclear Regulatory Commission (NRC) for the operating license for the Callaway Plant Unit 2, the management of AmerenUE recognizes its responsibility and authority to operate and maintain the nuclear power plant in such a manner as to provide for the safety of the general public. This document describes the Callaway Plant Unit 2 Nuclear Plant Emergency Preparedness Program. The philosophy that guides the development and maintenance of this program is the protection of the health and safety of the general public in the communities around the nuclear power plant and the personnel who work at the plant.

The Licensee Emergency Response Plan (E-Plan) establishes the concepts, evaluation and assessment criteria, and protective actions that are necessary in order to limit and mitigate the consequences of potential or actual radiological emergencies. It has been prepared to establish the procedures and practices for management control over unplanned or emergency events that may occur at Callaway Plant Unit 2. It also provides the necessary pre-arrangements, directions and organization so that all nuclear emergencies can be effectively and efficiently resolved.

The Callaway Plant Unit 2 Emergency Preparedness Program consists of the E-Plan, Unit 2 Annex, E-Plan Implementing Procedures (EPIPs), and associated program administrative documents. The Licensee E-Plan outlines the basis for response actions that would be implemented in an emergency. This document is not intended to be used as a procedure.

In order to minimize the number of ad-hoc decisions made during an emergency and to ensure that necessary equipment, supplies, and essential services are available to meet the needs of an emergency, the Licensee has developed this Emergency Plan. This Emergency Plan is applicable to Callaway Plant Unit 2 operated by the Licensee and considers the consequences of radiological emergencies, as required by 10 CFR 50, Paragraph 50.47 and Appendix E.

In addition, this plan addresses guidance and adheres to the intent of the criteria established and provided within NUREG-0654, which is a joint NRC and Federal Emergency Management Agency (FEMA) document. Regulatory Guide 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors," endorses the criteria and recommendations in NUREG-0654/FEMA-REP-1, Rev. 1, as methods acceptable to the NRC staff for complying with the standards in 10 CFR 50.47.

This plan also addresses the requirements of the Commission Orders of February 25, 2002, relating to security events.

The Emergency Plan also considers the consequences of non-radiological emergencies.

The Unit Annex contains information and guidance that is unique to the U.S. EPR unit. The annex addresses unit-specific criteria, including:

- ◆ Unit Description
- ◆ Emergency Action Levels (EALs),

- ◆ Deviations from the Generic Emergency Plan (such as unit specific on-shift staffing, unique aspects of Emergency response Organization (ERO) augmentation, and so forth).
- ◆ Unit specific emergency response capabilities, such as specific equipment or facilities available for use by the ERO.

The Unit Annex becomes a part of the plan and is subject to the same review and audit requirements as the plan. In the areas where a Unit Annex deviates from the general requirements of the E-Plan, the Unit Annex shall serve as the controlling document.

Detailed E-Plan implementing procedures are maintained separately and are used to guide those responsible for implementing emergency actions.

B: BACKGROUND

Facility Description

The Callaway-Unit 2 is located in east-central Missouri in Callaway County. The site is 25 miles east-northeast of Jefferson City and approximately 5 miles north of the Missouri River. It is situated approximately 10 miles southeast of Fulton and 80 miles west of St. Louis.

The Plant site consists of approximately 7354 acres, including the plant site area, peripheral areas and the corridor area to the Missouri River.

The plant site is situated in an area of low population. The land area within 5 miles of the site consists of approximately 60 percent forests, 20 percent farming and 20 percent pastures. The plateau upon which the plant is located covers approximately 8 square miles and varies in elevation from 800 feet near the perimeter to a maximum of 858 feet. This upland plateau overlooks the Missouri River above the floodplain that has an elevation of 525 feet msl adjacent to the site. Figure 1-1 shows the general location of Callaway Plant Unit 2. More specific information on unit siting may be found in the Final Safety Analysis Report (FSAR).

The plant consists of one U.S. EPR. Cooling for the plant is provided by a Collector Well River Intake System drawing water from the Missouri River.

Emergency Planning Zone

The plume exposure Emergency Planning Zone (EPZ) for Callaway Plant Unit 2 is be an area surrounding the Site with a radius of about ten miles (16 kilometers). (Exact boundaries are determined in concurrence with state and local authorities). Refer to Figure 1-2.

The ingestion pathway EPZ for Callaway Plant Unit 2 shall be an area surrounding the Site with a radius of about 50 miles (80 kilometers). Refer to Figure 1-3.

The primary hazard consideration at the nuclear power plant is the potential unplanned release of radioactive material resulting from an accident. The probability of such a release is considered very low due to plant design and strict operational guidelines enforced by the NRC. Notwithstanding, federal regulations require that a sound emergency preparedness program exist for each commercial nuclear power plant. A detailed description of the site is given in the Final Safety Analysis Reports (FSAR).

C: SCOPE

This document describes actions to be taken in the event of a radiological accident at Callaway Plant Unit 2 that may impact the health and safety of the general public or site employees. It also serves to limit the damage to facilities and property, and provide for the restoration of such facilities in the event of an emergency. If such an accident were to occur, the ERO would be put in place and maintained until such time where the plant is returned to a stable condition and the threat to the general public or station personnel no longer exists. This plan describes the functions and operation of the ERO, including assignments of authority and responsibility. It does not, nor is it intended to, provide guidance for actual plant equipment manipulations. These instructions are contained in site-specific normal and emergency operating procedures as required by Technical Specifications and other regulatory guidance. The E-Plan provides for identification and evaluation of emergency situations, protective measures, communications, coordination and notification of governmental authorities, document review and control, emergency preparedness assessment, and training of all emergency personnel. An emergency recovery phase is also described in this plan.

D: PLANNING BASIS

The E-Plan, in conjunction with the Unit Annex and implementing and administrative procedures, documents the methods by which the Callaway Plant Unit 2 Emergency Preparedness Program meets the planning standards set forth in 10 CFR 50.47(b) and the requirements of 10 CFR 50 Appendix E. Development of the E-Plan was based on NUREG-0654/FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants."

Acceptable alternate methods, which deviate from NUREG-0654, are allowed under Regulatory Guide 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors." However, deviations will be documented in the respective Unit Annex and evaluated as continuing to meet the Planning Standards of 10 CFR 50.47(b) and Appendix E to 10 CFR 50 under the 10 CFR 50.54(q) process to ensure the continued effectiveness of the Callaway Plant Unit 2 E-Plan and Unit Annex.

Other applicable regulations, publications, and guidance were used (see Appendix 1, "References") along with site-specific documents to ensure consistency in the planning effort.

E: CONTIGUOUS-JURISDICTION EMERGENCY PLANNING

The Emergency Plan recognizes the surrounding four counties and the city of Fulton (hereafter referred to as local authorities) as the overall local authorities responsible for protective action directives in order to protect the health and safety of the general public. Callaway Plant coordinates with the State Emergency Management Agency (SEMA) in emergency planning and with Callaway, Gasconade, Montgomery and Osage Counties that partially lie within the Plume Exposure Pathway (10-mile EPZ) and the City of Fulton for emergency response.

F: INTEGRATED GUIDANCE AND CRITERIA

Federal, state and local emergency response plans are developed in conjunction with this plan to ensure a consistent and integrated response to a classified event.

G: FUNDING AND TECHNICAL ASSISTANCE

The Licensee is dedicated to providing the level of support necessary, as dictated by federal regulation, to ensure appropriate integration of the state, local, and licensee radiological emergency preparedness programs.

H: EMERGENCY RESPONSE ORGANIZATION

The Licensee acknowledges its primary responsibility for planning and implementing emergency measures within the site boundary and for overall plant accident assessment. These emergency measures include corrective actions, protective measures, and aid for personnel onsite. To accomplish these responsibilities, the Licensee has established an Emergency Response Organization (ERO), which will be mobilized to provide the initial response to an event. In addition, advance arrangements have been made with offsite organizations for special emergency assistance such as ambulance, medical, hospital, fire, and police services.

In the longer time frame, a framework for a Recovery Organization is set forth in this plan. It is recognized that the normal site organization will be utilized for much of the recovery effort, with additional resources identified at the time of the event.

I: FEDERAL RESPONSE

Provisions are made within the E-Plan for the integration of appropriate elements of the federal assistance activities. Arrangements have been made to accommodate a federal response organization presence in the AmerenUE emergency response facilities as well as support communications between licensee and federal emergency facilities. NRC response as described in NUREG-0728, Rev. 4, "NRC Incident Response Plan (IRP)", was used in the development of the E-Plan as guidance to ensure coordination between the AmerenUE ERO and NRC EROs.

J: FORM AND CONTENT OF PLAN

As required by federal regulations, the E-Plan is governed by and contained (or referenced) in the unit FSAR. The E-Plan is administratively maintained as a separate document. The E-Plan has been formatted similar to NUREG-0654/FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." The use of this format lends itself to uncomplicated comparison with the criteria set forth in NUREG-0654/FEMA-REP-1.

Appendix 2, "Procedure Cross-Reference to NUREG-0654," provides a cross-reference between the NUREG-0654 evaluation criteria and the E-Plan implementing procedures and applicable administrative documents. Appendix 2 also references other regulatory guidance used in development of this plan.

Required Content of the Unit Annex

Information that is in the plan need not be restated in the Annex. The Annex shall address unit specific details or any differences from the main body of this plan.

Annex Format and Specific Content: As a minimum, the Unit Annex shall address the areas described as follows:

1. Section 1: Introduction

The unit description and any surrounding area differences are described by the inclusion of maps, drawings and/or diagrams. A summary statement describes the Annex's interface with the Emergency Plan.

2. Section 2: Organizational Control of Emergencies

Unit specific differences from the Generic Emergency Plan, such as on-shift staffing or ERO augmentation, shall be outlined. Unit-specific position titles, corresponding to the generic position titles used in this Generic Emergency Plan shall also be provided, if not standard across the site.

3. Section 3: Classification of Emergencies

Unit specific EALs are included for all emergency classes for the purpose of event classification.

4. Section 4: Emergency Response Facilities and Equipment

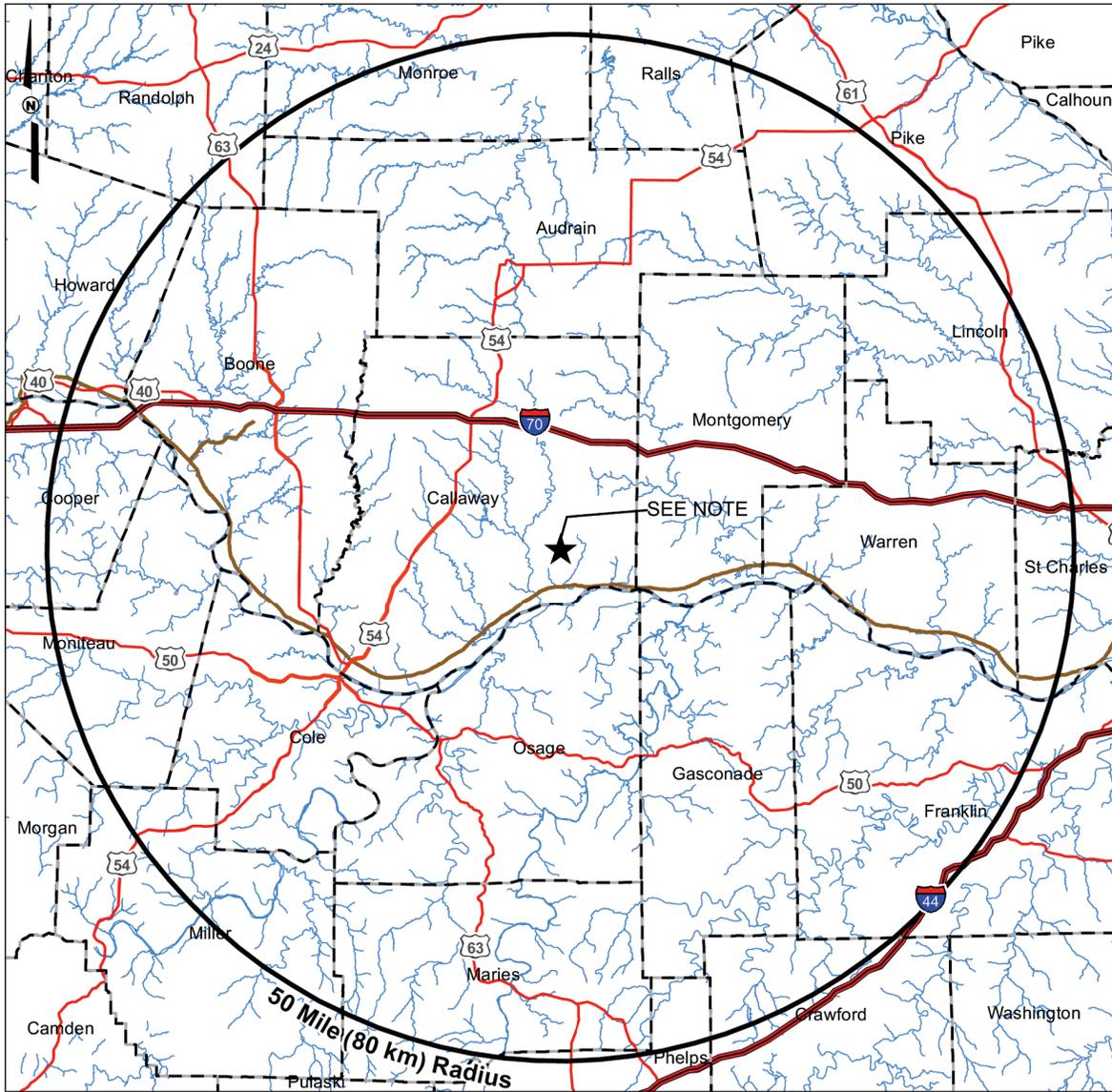
Unit specific emergency response facilities and equipment and instrumentation for emergency assessment are provided if not shared by all units at the site.

5. Section 5: Emergency Measures

Unit specific assembly areas and egress routes are provided if not shared by all units at the site.

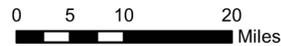
Additional section(s) may be added if additional areas are unit specific.

Figure 1-1—Map of Site and Surrounding Area



LEGEND:

- County Boundary
- Interstate Highway
- US Highway
- Katy Trail
- Primary Streams



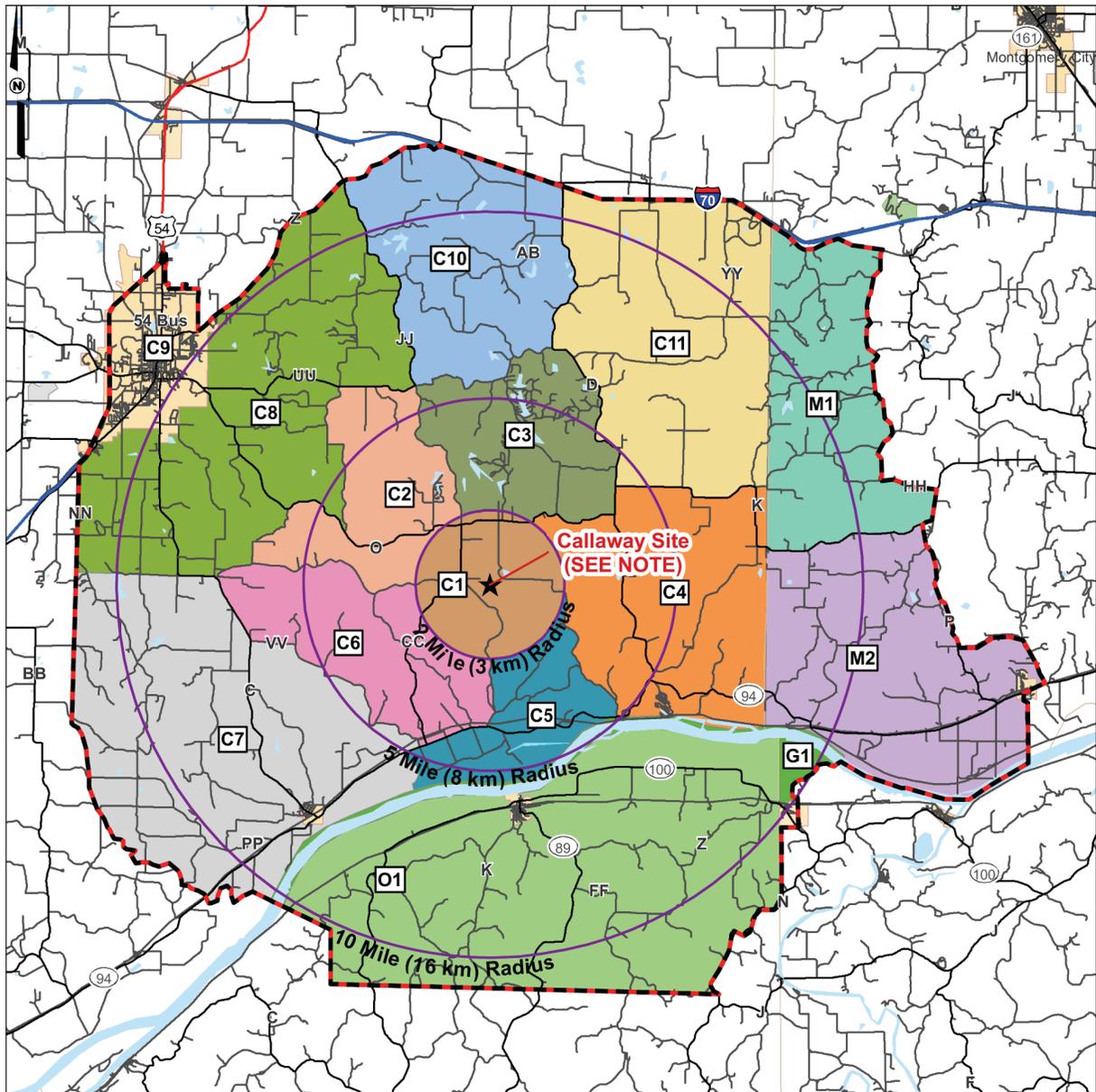
NOTE:

REFERENCE CENTER POINT OF PLANT SITE IS DEFINED AS THE MIDPOINT BETWEEN EXISTING REACTOR FOR CALLAWAY PLANT UNIT 1 AND REACTOR FOR CALLAWAY PLANT UNIT 2.

REFERENCE:

Roads, Katy Trail, and Streams from Missouri Spatial Data Information Service (MSDIS) web site <http://www.msdis.missouri.edu/>. Accessed September 2007.

Figure 1-2—10-MILE (16 KM) Emergency Planning Zone



LEGEND:

- ★ Callaway Site
- 2-5-10 mile Radius
- Emergency Planning Zone (EPZ)
- C1 EPZ Subareas
- Interstate
- Primary US State Highways
- Secondary State/County Roads
- Local Roads (LETTER SYMBOL REFERS TO COUNTY ROADS)
- Major Towns/City Limits



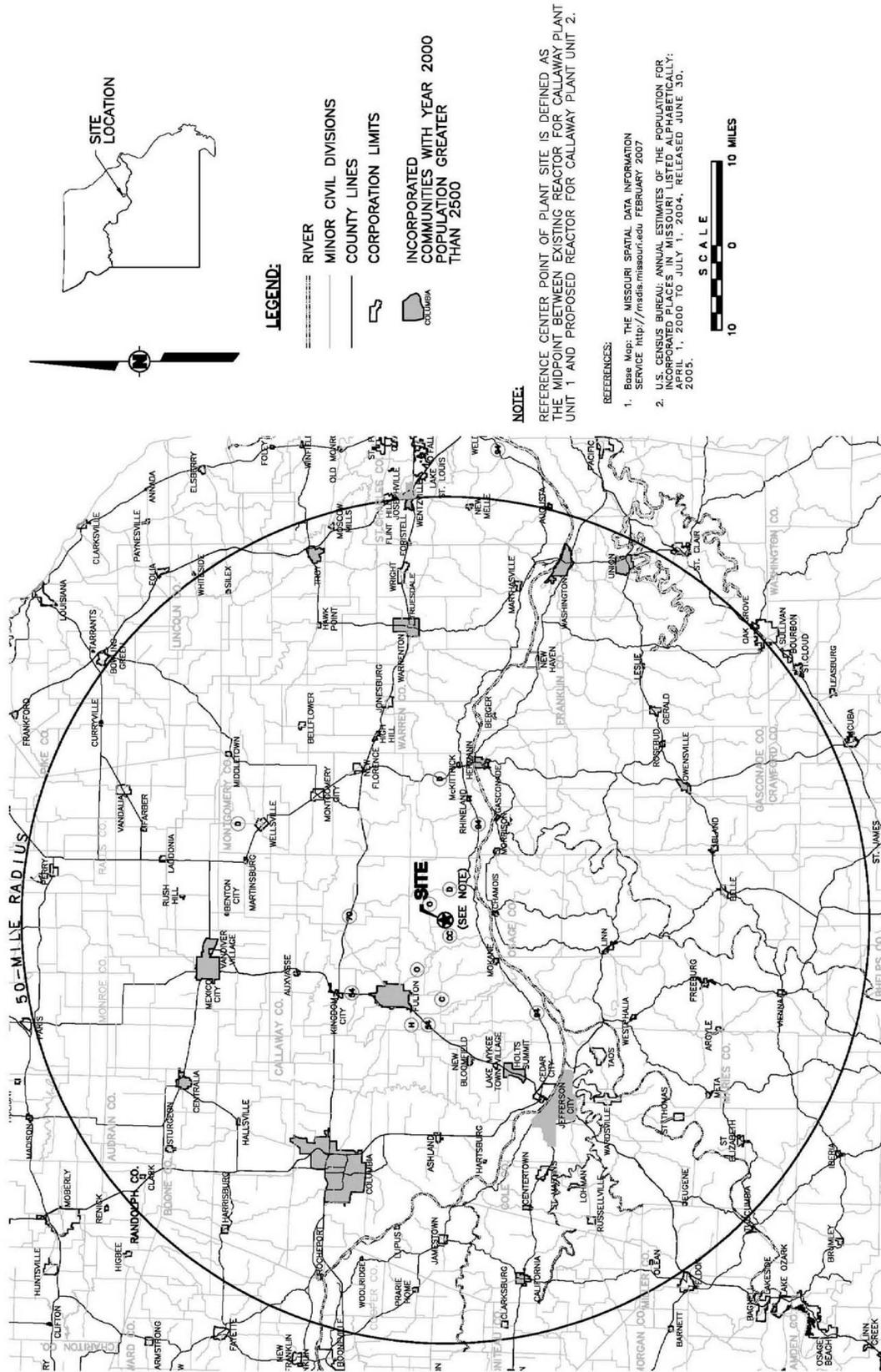
NOTE:

REFERENCE CENTER POINT OF PLANT SITE IS DEFINED AS THE MIDPOINT BETWEEN EXISTING REACTOR FOR CALLAWAY PLANT UNIT 1 AND REACTOR FOR CALLAWAY PLANT UNIT 2.

REFERENCE:

ESRI StreetMap Pro [CD-ROM], 2007, Streets, Waterbodies, & City Limits

Figure 1-3—50-Mile (80 Kilometer) Emergency Planning Zone



PART 2: PLANNING STANDARDS AND CRITERIA

SECTION A: ASSIGNMENT OF RESPONSIBILITY

This section describes the primary responsibilities and organizational control of the licensee, federal, state, local, and other emergency response organizations within the Plume Exposure Pathway and the Ingestion Pathway Emergency Planning Zones (EPZs). Various supporting organizations are also described as well as staffing for initial and continuous response.

1. CONCEPT OF OPERATIONS

The relationships and the concept of operations for the organizations and agencies that are a part of the overall ERO are as follows:

- a. Identified below are federal, state, and local organizations that are involved in a response to an emergency at Callaway Plant Unit 2.
 1. Federal Agencies: The National Response Plan (NRP), Nuclear/Radiological Incident Annex outlines the statutory and regulatory responsibilities. The primary federal response for supporting an emergency at Callaway Plant Unit 2 includes:
 - a. Nuclear Regulatory Commission (NRC): The NRC is responsible for licensing and regulating nuclear facilities and materials and for conducting research in support of the licensing and regulatory process. These responsibilities include protecting the public health and safety, protecting the environment, protecting and safeguarding materials and plants in the interest of national security and assuring conformity with antitrust laws.

The NRC Regional Office has the responsibility for auditing of nuclear power plants. It is responsible for ensuring that such activities are conducted in accordance with the terms and conditions of such NRC licenses and that as a result of such operations, there is no undue risk to the health and safety of the public.

With regard to emergency preparedness, the NRC shall:

- ◆ Assess licensee emergency plans for adequacy;
- ◆ Review the Federal Emergency Management Agency (FEMA) findings and determinations on the adequacy and capability of implementation of state and local plans; and
- ◆ Make decisions with regard to the overall state of emergency preparedness and issuance of operating licenses.

The NRC shall respond to incidents at licensed facilities or vehicular accidents involving licensed materials, including radionuclides, in transit. The NRC shall act as the lead Federal agency with regard to technical matters during a nuclear incident including radiological assistance. The NRC shall be prepared to recommend appropriate protective actions for the public and technical actions to the licensee. FEMA shall act as the lead Federal agency for offsite, non-technical concerns.

During an incident, the Chairman of the Commission is the senior NRC authority for all aspects of a response. The Chairman shall transfer control of emergency response activities to the Director of Site Operations when deemed appropriate by the Chairman.

All NRC Regions as well as Headquarters are prepared to respond to potential emergencies. All Regions and Headquarters have developed plans and procedures for responding to radiological incidents involving NRC licensees. Headquarters has developed the NRC Incident Response Plans and Implementing Procedures. Each NRC Region has developed Regional Supplements that detail how the Region will fulfill all of the responsibilities assigned in the NRC Incident Response Plan. All NRC organizations are responsible for maintaining an effective state of preparedness through periodic training, drills and exercises.

Each Region and Headquarters has established and maintains an Incident Response Center designed to centralize and coordinate the emergency response function. Adequate communications are established to link the licensee, Headquarters and the Region. The NRC has established lines of communications with local government, State government, other Federal agencies, Congress and the White House. Public information will be disseminated in a timely manner and periodically.

Each Region is prepared to send a team of qualified specialists to the scene expeditiously. All of the necessary supplies and equipment needed for emergency response will be provided and maintained by the NRC.

The NRC Incident Response Plan objectives are to provide for protection of the public health and safety, property, and the environment, from the effects of radiological incidents that may occur at licensed facilities or which involve licensed materials, including radionuclides in transit.

The objectives of the agency plan set forth the organizational and management concepts and responsibilities needed to assure that NRC has an effective emergency response program.

The plan is intended to ensure NRC preparedness:

- ◆ To receive and evaluate notification information of incidents, accidents and unusual events and determine the extent of NRC response necessary to meet NRC responsibilities for mitigating the consequences of these events;
- ◆ To determine the cause of incidents, accidents, and unusual events in order to ensure that appropriate corrective actions are taken by the licensee to minimize the consequences of these events;
- ◆ To provide onsite expertise in a timely manner, to evaluate the nature and extent of the incident, ascertain plant status (for reactors and fuel facilities), monitor licensee activities, determine compliance, make recommendations, and, if necessary, issue orders relative to the event;

- ◆ To inform the public and others of plant status and technical details concerning the incident;
 - ◆ To recommend adequate protective actions to the responsible local and/or state agencies;
 - ◆ To provide technical assistance;
 - ◆ To ensure the plant is returned to a safe condition; and
 - ◆ To return the NRC Headquarters and Regional office to normal operations.
- b. Department of Homeland Security (DHS): Per the National Response Plan (NRP), DHS is responsible for the overall coordination of a multi-agency Federal response to a significant radiological incident. The primary role of DHS is to support the state by coordinating the delivery of Federal non-technical assistance. DHS coordinates state requests for Federal assistance, identifying which Federal agency can best address specific needs. If deemed necessary by DHS, it will establish a Federal Response Center from which it will manage its assistance activities.
- c. Federal Emergency Management Agency (FEMA): FEMA is the agency within DHS, which provides direct support to state, and local agencies in emergency response.
- d. Federal Radiological Preparedness Coordinating Committee (FRPCC): The FRPCC consists of FEMA, which chairs the Committee, the Nuclear Regulatory Commission, the Environmental Protection Agency, the Department of Health and Human Services, the Department of Energy, the Department of Transportation, the Department of Defense, the Department of Agriculture, the Department of Commerce, and where appropriate and on an ad hoc basis, other Federal departments and agencies. The FRPCC shall assist FEMA in providing policy direction for the program of Federal assistance to state and local governments in their radiological emergency planning and preparedness activities.
- e. U.S. Department of Energy (DOE): The Department of Energy (DOE) has extensive radiological monitoring equipment and personnel resources that it can assemble and dispatch to the scene of a radiological incident. The Department of Energy (DOE) local operations office can assist AmerenUE following a radiological incident as outlined in the Federal Radiological Monitoring and Assessment Plan (FRMAP). If AmerenUE, the NRC or the affected state deems that assistance from DOE is necessary or desirable, the affected state would notify the appropriate DOE operations office.
- f. Environmental Protection Agency (EPA): Assists with field radiological monitoring/sampling and non-plant related recovery and reentry guidance.
- g. The U.S. Coast Guard (USCG): The USCG patrols and ensures the safety of navigable waterways in the United States. The USCG is promptly notified of any oil or hazardous substance discharges into rivers or lakes or radioactive

contamination of rivers or lakes under its jurisdiction at levels requiring assistance to effect protective actions. The USCG District 2 is contacted by the Missouri State Emergency Management Agency in the event of an incident at Callaway Plant Unit 2. The USCG is responsible for officially closing the Missouri River to all commercial traffic. Refer to the Missouri Nuclear Accident Plan-Callaway.

- h. U.S. Army Corps of Engineers: The U.S. Army Corps of Engineers controls barge and boat traffic at locks and dams on navigable waterways in the United States. The Corps will be contacted by the appropriate state agencies in the event of an incident at Callaway Plant Unit 2. The Corps will be responsible for closing their locks and dams to all waterway traffic leading to the affected area, allowing only traffic leaving the area. Refer to the Missouri Nuclear Accident Plan-Callaway.
- i. Federal Bureau of Investigation (FBI): Support from the FBI is available through its statutory responsibility based in Public Law and the US code, and through a memorandum of understanding for cooperation with the NRC. Notification to the FBI of emergencies in which they would have an interest will be through provisions of the Callaway Plant Security Plan, or by the NRC.
- j. National Weather Service (NWS): The NWS in St. Louis, MO is available for additional and backup meteorological information during emergency situations, if required. Data available will include existing and forecasted wind directions, wind speed, and ambient air temperature. Weather forecasts can also be obtained by calling Surface Systems Inc.
- k. Department Of Energy (DOE): Radiation Emergency Assistance Center/Training Site (REAC/TS): DOE REAC/TS provides services of medical and health physics support. REAC/TS advise on the health physics aspects of situations requiring medical assistance.

2. State Agencies

- a. The State of Missouri: The State of Missouri has the statutory responsibility and authority for protecting the health and safety of the public in Missouri. The State has developed a Missouri Nuclear Accident Plan-Callaway for Radiological Accidents. This plan was developed in accordance with the guidance suggested by NUREG 0396 and NUREG 0654/FEMA-REP-1, Rev. 1. The Missouri Nuclear Accident Plan-Callaway has received 44 CFR 350 unconditional approvals from FEMA. Missouri Nuclear Accident Plan-Callaway describes State and local agency roles and interfaces for carrying out protective and parallel actions in a 10-mile-radius plume zone and 50-mile-radius ingestion zone from the Callaway Plant Unit 2 site. Various State agencies have roles in emergency planning and emergency response for emergencies at a nuclear power plant. The "key" State agencies are discussed below. For details of the roles of other participating State agencies, refer to the Missouri Nuclear Accident Plan-Callaway.
- ◆ Governor of Missouri: The Governor of the State has overall command authority of state resources for both the radiological and non-radiological aspects of the state response. The Governor's Office or his representative in the Joint Public Information Center (JPIC) will make press releases and public information

reports. The local governments (Counties and City of Fulton) are responsible for making final recommendations for protective action.

- ◆ Missouri State Emergency Management Agency (SEMA): SEMA serves as the lead agency for developing and maintaining State emergency response plans and assists local jurisdictions in the development of local plans. SEMA, in cooperation with the Missouri Department of Health (DOH), develops and conducts emergency response training for State and local agencies with emergency response roles.

State response and support operations in the emergency areas will be initiated through decisions made jointly by the Director, State Emergency Management Agency and the Department of Health and Senior Services' Director or their duly appointed representatives, or on request of affected governmental officials.

The plant notifies SEMA of any declaration of any emergency at the Callaway Plant. SEMA, after verification of the emergency, notifies Missouri Department of Health (DOH) and any other State agencies that may be required to respond. If a liquid radioactive release is involved, the State Department of Natural Resources is also contacted directly by Callaway Plant. SEMA will contact the DHS. Information obtained from Callaway Plant and local authorities is utilized to evaluate the support required by the state for emergency response.

SEMA operates from the State Emergency Operations Center (EOC) in Jefferson City, Missouri. A Forward Command Post (FCP) may be established at the Callaway Plant's Emergency Operations Facility. The FCP staff normally consists of representatives from SEMA and the DOH. Local agencies may also send representatives to the EOF to provide face-to-face communications with Callaway Plant and State authorities. The FCP relays pertinent information to the State EOC and local EOCs. SEMA may exercise control of the State's response from either the State EOC or the FCP.

Callaway Plant Protective Action Recommendations for the general public are made to SEMA and local authorities. DOH evaluates the recommendations and provides independent recommendations to local authorities.

SEMA continues to coordinate the support of state agencies until DOH determines that state assistance is no longer required.

Callaway Plant has provisions for receiving SEMA representatives at the EOF at the ALERT (or higher) emergency classification level.

- ◆ Missouri Department of Health (DOH): DOH serves as the lead state technical assistance agency and works with SEMA in the development and maintenance of State emergency response plans and radiological response training programs. DOH develops and establishes State Protective Action Guides. DOH is also responsible for establishing a medical record system for personnel exposed to radiation in state responses to emergencies.

As the lead state agency for technical response, DOH performs radiological monitoring and dose projections, advises state and local agencies about

protective actions, determines exposure levels for state response personnel, determines the need for decontamination, coordinates emergency medical support and provides information and guidance for the public through SEMA.

SEMA notifies DOH of emergencies at the Callaway Plant. DOH representatives operate from the FCP in the EOF. Upon mobilization, DOH establishes communication with Callaway Plant and SEMA. Initial off-site radiological assessment by DOH is based on information provided by Callaway Plant. Subsequent evaluation of off-site radiological conditions is based on information provided by Callaway Plant as well as current data obtained by state field monitoring teams, changes in meteorological conditions and any available dosimetry data. This information is used by DOH when recommending protective actions to SEMA and local authorities.

DOH continues directing technical response for the state, including off-site monitoring and surveillance, until off-site conditions are at acceptable levels as defined by State Protective Action Guides Restorative Actions.

Callaway Plant has provisions for receiving DOH representatives at the EOF at the ALERT (or higher) emergency classifications.

- b. Essential elements of the 50-Mile Ingestion Exposure emergency plans: Initially, responsibility for responding to a radiological emergency, including evacuation, rests with local governments and their emergency services. Notification, by either local authorities or legal possessors of uncontrolled materials, to the state SEMA that a radiological emergency exists will bring in the resources of other state agencies to assess and evaluate the situation and determine protective actions. State agency notification for assistance and coordination of response operations of the state agencies in support of local government will be performed by the SEMA as determined by the Governor.

3. County/City Government Agencies

Callaway Plant Unit 2 and the surrounding communities that comprise the Plume Exposure Pathway EPZ have developed integrated emergency response programs that call upon the resources of their community. The community organizations are responsible for implementing and coordinating the community response to an emergency and have prepared for 24 hour per day operations during emergencies.

All or part of Callaway County, Montgomery County, Osage County, Gasconade County and the City of Fulton are within the 10 mile Emergency Planning Zone for the Callaway Plant Unit 2.

The County Emergency Operations Centers (EOCs) serve as the primary coordinating center for local government response within the county's jurisdiction and for coordination between counties.

Upon the declaration of an emergency at the Callaway Plant Unit 2, the Plant notifies the dispatch centers of the four counties.

The plant makes off-site Protective Action Recommendations to local authorities. The County Commissioners and the Mayor of Fulton, who are responsible for

directing EOC activities, evaluate these recommendations and implement protective actions for protection of individuals within their jurisdiction. This may include activation of the public alert system.

The plant has provisions for receiving local authorities at the EOF at the ALERT (or higher) emergency classification. The local authorities work closely with the state and Licensee authorities in coordinating off-site activities. Office space and communication facilities are provided in the EOF.

The plant dispatches Technical Representatives to the local Emergency Operations Centers, if requested. These individuals provide supplemental information to assist in interpretation and explanation of technical information pertaining to the Callaway Plant Unit 2 as requested. These Technical Representatives provide supplemental information and do not replace the communication or notification chain.

The plant has obtained agreements with specific local organizations as described in Appendix 3.

b. During an emergency condition classified as an Alert, Site Area Emergency, or General Emergency, the site's ERO replaces the normal plant organization. The ERO consists of three major response sub-organizations:

1. The Onsite Organization, directed by the Emergency Coordinator, provides for:

- ◆ Control and operation of the plant.
- ◆ Mitigation of the emergency condition.
- ◆ Protection of site personnel.
- ◆ Emergency event classification.
- ◆ Emergency support for operations, engineering, maintenance, fire fighting, material acquisition, security, and first aid.

The Onsite Organization is made up primarily of personnel from the sites day to day management team, Department Heads, Operations, Health Physics, Chemistry, Engineering, Maintenance, Security and other site support personnel.

2. The Offsite Organization, directed by the Recovery Manager provides for:

- ◆ Emergency notifications to Federal, State and local agencies.
- ◆ Offsite radiological accident assessment and Protective Action Recommendations to offsite authorities.
- ◆ It serves as the primary interface between AmerenUE and outside organizations responsible for the protection of the public.
- ◆ Obtaining offsite support for the plant organization needed to mitigate effects of event.

The Offsite Organization is made up primarily of personnel from the site and Corporate Management.

3. The Public Information Organization, directed by the Company Spokesperson, coordinates with public information officers from other organizations to provide information to the public through the news media.

- c. Interrelationships between major Licensee organizations and sub-organizations in the total response effort are illustrated in a block diagram in Figures A-1 and A-2. For a more detailed diagram of the ERO, see Figures B-1a to B-1d.
- d. The Recovery Manager is a senior Licensee employee with overall responsibility for coordinating emergency response actions in support of the site, the Emergency Public Information Organization, and state and local agencies. The Shift Manager serves in this capacity until relieved by the Emergency Coordinator and the Recovery Manager.
- e. Procedures for training and maintenance of the emergency organization are in place to ensure 24-hour per day staffing for emergency response, including established communication links.

2. STATE AND LOCAL FUNCTIONS AND RESPONSIBILITIES

The state and county governments have emergency response plans that specify the responsibilities and functions for the major agencies, departments, and key individuals of their emergency response organizations. This information is located in the four county plans.

3. AGREEMENTS IN PLANNING EFFORT

Written commitments establishing the concept of operations developed between the Licensee and other support organizations having an emergency response role within the EPZs have been developed. Letters of commitment from each of the offsite agencies providing direct support to Callaway Plant Unit 2 are contained in Part 11 of the COLA. These commitments provide reasonable assurance that binding agreements will be in place after the decision to construct Unit 2 is made. A defined binding agreement, including possible assistance for any required additional resources to support Unit 2, will be executed according to the timeline provided in the Introduction to COLA Part 5. These agreements identify the emergency measures to be provided, the mutually accepted criteria for implementation, and the arrangements for exchange of information. Agreement letters are not necessary with Federal Agencies who are legally required to respond based on Federal law; however, agreements are necessary if the agency was expected to provide assistance not required by law. Letters of Agreement with private contractors and others who provide services in support the station shall be obtained. Letters of Agreement, as a minimum, state that the cooperating organization will provide their normal services in support of an emergency at the affected site. A contract/purchase order with a private contractor is considered acceptable in lieu of a Letter of Agreement for the specified duration of the contract.

In addition to the specific agreements described in Appendix 3, general agreements between members of the nuclear industry and government agencies exist. These agreements are used to coordinate emergency response efforts for a major event.

4. CONTINUOUS COVERAGE

Callaway Plant Unit 2 maintains 24-hour emergency response capability. The normal on-shift complement provides the initial response to an emergency. This group is trained to handle

emergency situations (e.g. initiate implementation of the E-Plan, make initial accident assessment, emergency classification, notifications, communications, and protective action recommendations) until the augmented ERO arrives. The ERO is composed of a broad spectrum of personnel with specialties in operations, maintenance, engineering, radiochemistry, health physics, material control, fire protection, security, and emergency planning and are available and trained to augment on-shift personnel in an emergency. Procedures for training and maintenance of the emergency organization are in place to provide the capability of continuous (24-hour) operations.

The Recovery Manager, located in the EOF, has the authority and responsibility for assuring continuity of resources (technical, administrative, and material) in the event of the activation of the ERO.

Figure A-1—Licensee Emergency Response Organization Interrelationships

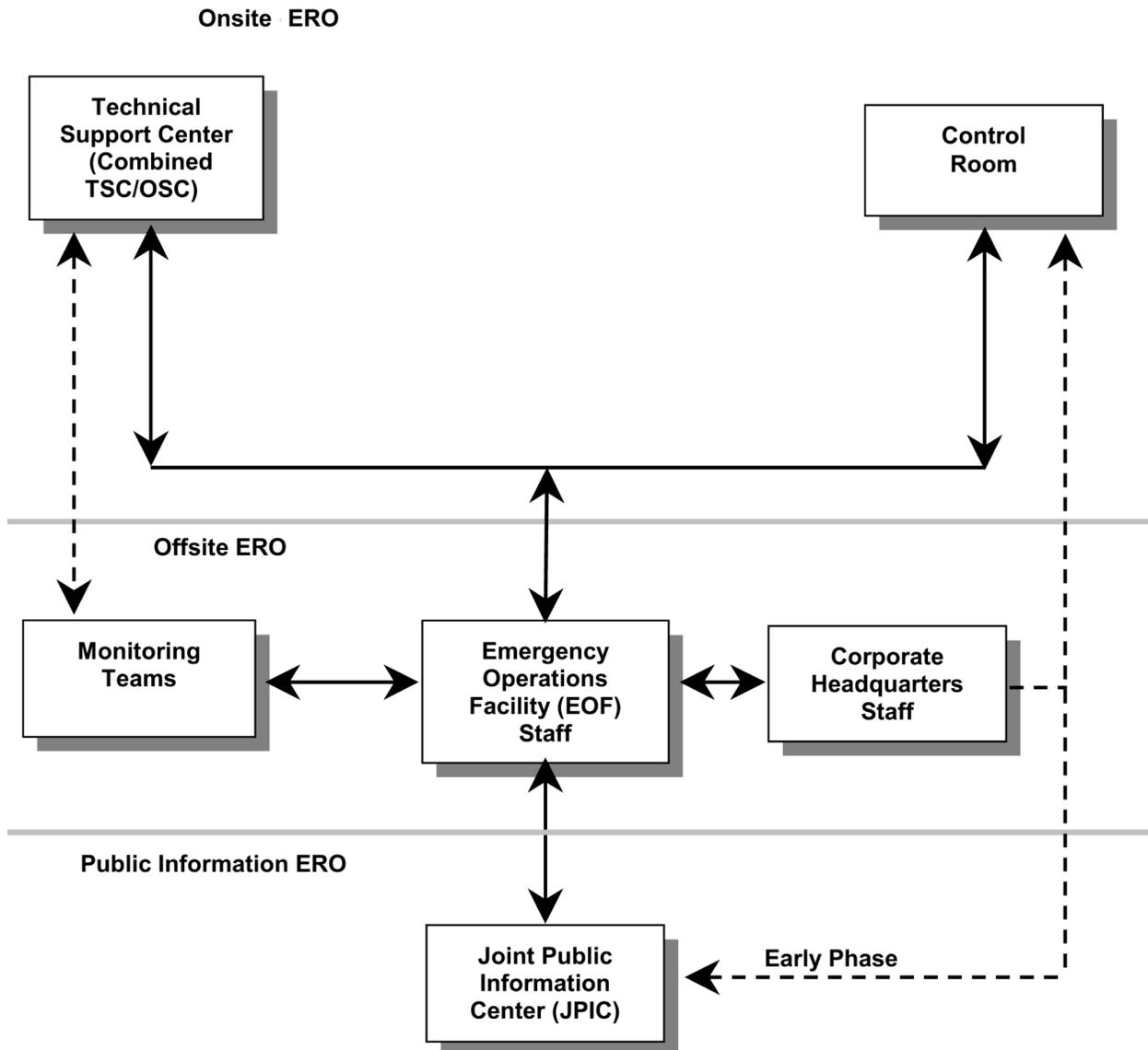
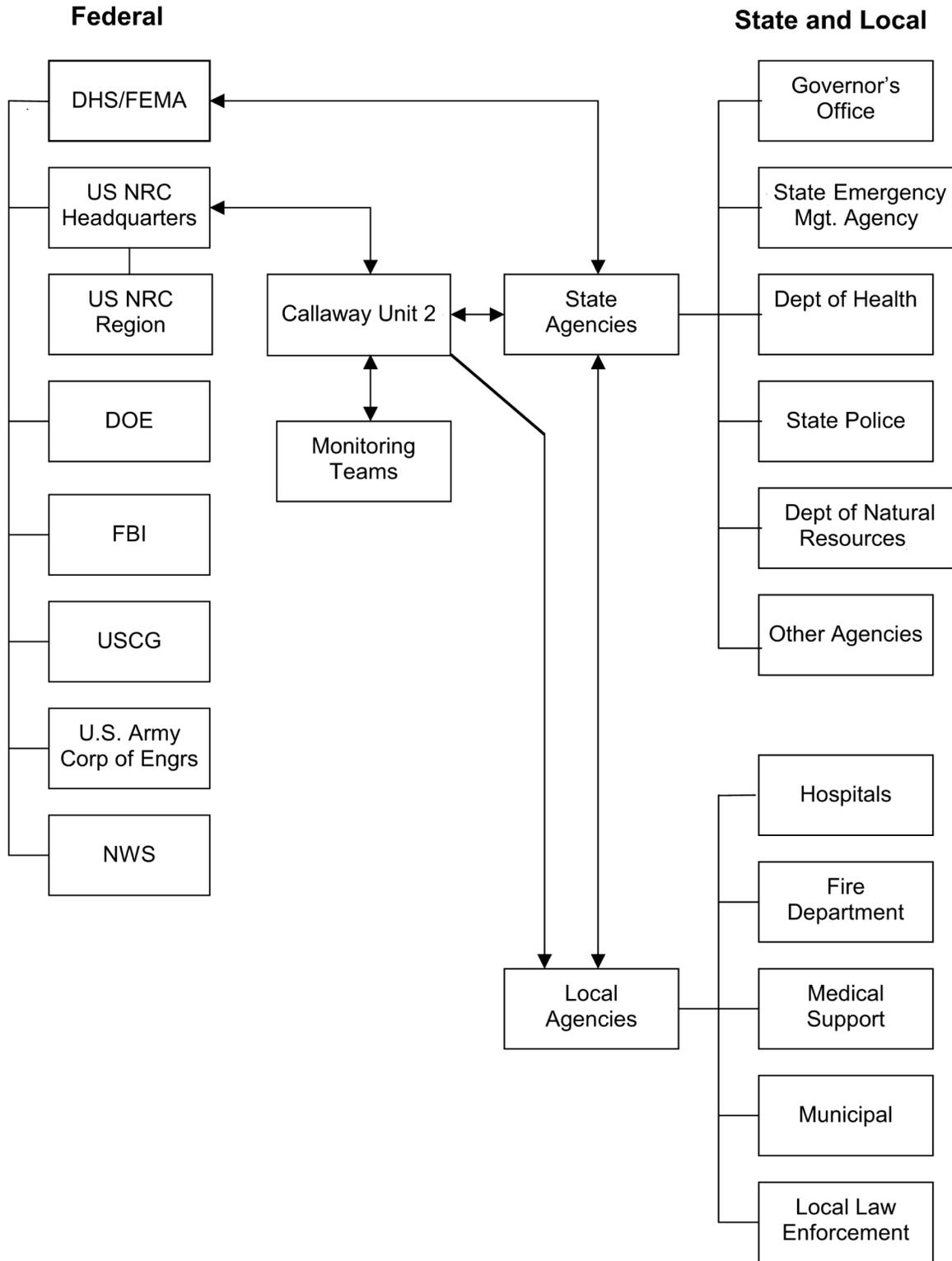


Figure A-2—Agency Response Organization Interrelationships



Part 5: E Plan

SECTION B: EMERGENCY RESPONSE ORGANIZATION (ERO)

This section describes the Callaway Plant Unit 2 ERO, and its key positions and associated responsibilities. It outlines the staffing requirements, which provide initial emergency response actions and provisions for timely augmentation of on-shift personnel when required. It also describes interfaces among AmerenUE emergency response personnel and specifies the offsite support available to respond to the nuclear generating unit.

1. ON-SHIFT EMERGENCY RESPONSE ORGANIZATION ASSIGNMENTS

The normal plant personnel complement is established with the Senior Vice President and Chief Nuclear Officer, AmerenUE (SVPC) having overall authority for site operations. The SVPC directs the site organization in the management of the various departments while the Shift Manager retains the responsibility for actual operation of plant systems. Emergency Preparedness must consider the capabilities of the normal plant organization, the Licensee Offsite Emergency Response Organizations and the non-Licensee Emergency Response agencies. The initial phases of an emergency situation at a nuclear site will most likely involve a relatively small number of individuals. These individuals must be capable of (1) determining that an emergency exists; (2) providing initial classification and assessment; and (3) promptly notifying other groups and individuals in the emergency organization. The subsequent phases of the emergency situation may require an increasing augmentation of the emergency organization.

The site has personnel on shift at all times that can provide an initial response to an Emergency Event. Table B-1a, contained in the Callaway Plant Unit 2 Annex, outlines the plant on-shift emergency organization and its relation to the normal staff complement. Members of the on-shift organization are trained on their responsibilities and duties in the event of an emergency and are capable of performing all response actions in an Unusual Event or the initial actions of higher classifications.

On Shift Personnel

Shift Personnel have the capability at all times to perform detection, mitigation, classification, and notification functions required in the early phases of an emergency. (Refer to Section A.1.b.1.) Shift augmentation and further ERO involvement will be determined by the extent and magnitude of the event. When a transition to Severe Accident Management Guidelines (SAMG) is initiated, the shift crew assumes the duties and responsibilities of the SAMG Implementers.

Shift Manager: The Shift Manager will take immediate action during an emergency and will activate the Site ERO, as appropriate. In the Shift Manager's absence or incapacitation, the line of succession is defined by Unit's Operations and E-Plan implementing procedures.

The Emergency Duty Officer (EDO) is a predesignated senior plant management representative "on-call" (not required to be on-site) and available to provide the Shift Manager with management guidance and directives during normal and emergency operations. At ALERT or higher Emergency Classification Levels, the EDO assumes Emergency Coordinator onsite responsibilities from the Shift Manager and directs emergency response after being briefed on the emergency situation. Similarly, the Recovery Manager assumes offsite responsibilities from the Shift Manager.

Shift Technical Advisor (STA): The Shift Manager is provided technical assistance by an Operating Supervisor or Engineer who meets the qualifications for Shift Technical Advisor (STA) as required by the NRC.

Control Room Operators: At least two qualified Reactor Operators are assigned to each shift. They are responsible for operating plant equipment from the Control Room.

Equipment Operators: At least two non-licensed operators are assigned to each shift. They are responsible for operating plant equipment throughout the plant.

Radiation Protection: The Station Radiation Protection personnel are responsible for the handling and monitoring of radioactive materials. Included in this organization are Health Physicists, Rad/Chem Supervisors and Technicians.

Chemistry: The Station Chemistry personnel are responsible for sampling of system effluents, and the chemical and radio-analytical analysis of those samples. Included in this organization are Chemists, Rad/Chem Supervisors and Technicians.

Security: The Station Security personnel are responsible for the physical security of the site. Included in this organization are Security Supervisors and Security Guards.

A Unit Fire Brigade is established by designating trained individuals from the above listed groups as brigade members.

The Shift Manager or other qualified personnel acts as the Control Room Communicator. This individual can notify station personnel, State and Local agencies and the NRC. The Control Room Communicator will maintain communications as necessary until relieved by members of the on-call Emergency Response Organization (ERO).

2. AUTHORITY OVER THE EMERGENCY RESPONSE ORGANIZATION

The Shift Manager, Emergency Coordinator or Recovery Manager in Command and Control, is the designated Licensee individual who has overall authority and responsibility, management ability, and technical knowledge for coordinating all emergency response activities.

Control Room:	The Shift Manager is initially in command until relieved by the EDO/Emergency Coordinator. When relieved, the Shift Manager will resume normal duties in directing Plant Operations from the Control Room.
TSC:	The Emergency Coordinator may relieve the Shift Manager of all Onsite Command and Control Responsibilities.
EOF:	The Recovery Manager assumes Offsite Command and Control responsibilities and assumes overall command and control of Callaway Plant Unit 2 emergency response.

3. CRITERIA FOR ASSUMING COMMAND AND CONTROL (SUCCESSION)

Emergency personnel assume responsibility for their positions upon receiving notification to activate. The responsibility for initial assessment of and response to an emergency rests with the Shift Manager. The Shift Manager has the Emergency Coordinator/Recovery Manager responsibilities and authority until relieved by a qualified Emergency Coordinator and the Recovery Manager. The Emergency Coordinator, after relieving the Shift Manager, is responsible for continued assessment of the severity of the emergency and for the functions as part of the Onsite ERO as appropriate in accordance with the guidance provided in the E-Plan, the Unit Annex, and the emergency implementing procedures. Final succession is achieved when the

Recovery Manager assumes overall Command and Control after being briefed by the Emergency Coordinator, and directs the overall Callaway Plant Unit 2 Emergency Response activities. However, the Emergency Coordinator continues to direct and control on-site personnel and make all emergency declarations. The Recovery Manager concentrates on offsite ERO responsibilities and make all notifications.

The Shift Manager is relieved of Command and Control as soon as possible after the declaration of an Alert (or higher classification if Alert not declared). Both the Emergency Coordinator (TSC) and the Recovery Manager (EOF) activate simultaneously after declaration of an Alert or higher. The Emergency Coordinator assumes onsite Command and Control and the Recovery Manager assumes offsite Command and Control.

Command and Control does not transfer until the following criteria have been met:

- ◆ Adequate staff levels are present in support of the non-delegable responsibilities.
- ◆ The staff has been fully briefed as to the status of the event.
- ◆ A turnover between the Shift Manager relinquishing Command and Control and the Emergency Coordinator and Recovery Manager assuming Command and Control has been made.

Although Callaway Plant Unit 2 ERO fulfills all regulatory requirements for emergency response, it may be altered by the Recovery Manager or Emergency Coordinator. This type of alteration will be based upon identified needs within the ERO, event dependent criteria, and identified needs of the company as a whole to respond to the event. Alterations will be in compliance with regulatory requirements.

4. NON-DELEGABLE RESPONSIBILITIES

Non-delegable responsibilities include the following functions:

- ◆ Event classification.
- ◆ Decision making for implementing strategies identified in the Severe Accident Management Guidelines.
- ◆ Protective Action Recommendations (PARs) for the general public.
- ◆ Authorizing notification of offsite authorities (approval of State/local and NRC notifications).
- ◆ Authorization of emergency exposure controls in excess of 5 Rem (0.05 Sv) TEDE and the issuance of potassium iodide (KI), for Callaway Plant Unit 2 emergency workers.

The Shift Manager is responsible for the initial classification of an event and assumes the position as Emergency Coordinator. In this capacity, the Shift Manager has responsibility for performing the non-delegable responsibilities until relieved.

The Emergency Coordinator will assume overall authority and responsibility for performing the non-delegable duties for event classification, onsite emergency exposure authorization and SAMG Decision-making from the Shift Manager. The Recovery Manager (EOF) will relieve the Shift Manager of overall Command and Control and assume the non-delegable responsibilities

for PAR determination, notifications to offsite authorities and offsite emergency exposure authorization.

Transition of “Non-Delegable” Responsibilities

Control Room	TSC	EOF
<u>(Shift Manager)</u>	<u>(Emergency Coordinator)</u>	<u>(Recovery Manager)</u>
Classification	Classification	
PARs	-->	PARs
Notifications	-->	Notifications
Emergency Exposure Controls	Emergency Exposure Controls (Onsite Personnel)	Emergency Exposure Controls (EOF Field Teams when directed from EOF)
SAMG Decision-making	SAMG Decision-making	

5. EMERGENCY RESPONSE ORGANIZATION POSITIONAL RESPONSIBILITIES

Table B-1b outlines ERO positions required to meet minimum staffing and full augmentation of the on-shift complement at an Alert or higher classification, and the major tasks assigned to each position. Positions in the ERO that are considered minimum staffing to activate Emergency Response Facilities are defined as RAPID RESPONDERS and are designated in Table B-1b and below. The full augmentation staffing levels are used as a planning basis to cover a wide range of possible events. For extended events (one which lasts for more than 24 hours), actual staffing will be established by the Recovery Manager based on the event and personnel availability. However, additional staffing or reduced staffing will only occur after discussion with the Emergency Coordinator concerning the impact on plant operations and emergency response.

The overall Callaway Plant Unit 2 ERO is made up of three sub organizations:

- ◆ The first is called the Onsite Emergency Response Organization. It is responsible for onsite emergency response activities. These activities include protecting plant personnel, mitigating the results of the event and keeping the offsite organization informed of onsite events and actions being taken.
- ◆ The second is called the Offsite Emergency Response Organization. It is responsible for the licensee's offsite emergency response activities. These activities include providing information to offsite authorities, monitoring offsite results of the event, supporting the onsite organization and obtaining outside resources to support emergency response efforts.
- ◆ The third is called the Public Information Emergency Response Organization. It is responsible coordinating with other Emergency Response Organizations (Federal, State and Local) and for providing accurate information to the public about the event through the news media.

Specific responsibilities for each sub-organization and related positions are as follows:

a. Onsite Emergency Response Organization:

The Onsite ERO is the onsite group that is activated during an emergency. It functions under the Emergency Coordinator, who is responsible for organizing and coordinating the emergency efforts at and within the immediate vicinity of the site (including carrying out all onsite emergency efforts).

The Onsite ERO consists of site personnel who are involved with emergency response efforts necessary to control the plant during an incident. This organization operates out of the Control Room and the Technical Support Center (TSC). Collectively, members of the Onsite ERO provide for the following activities during an emergency:

- ◆ Plant systems operations
- ◆ Radiological survey and monitoring
- ◆ Firefighting
- ◆ Rescue operations and First Aid

- ◆ Decontamination
- ◆ Security of plant and access control
- ◆ Repair and damage control
- ◆ Personnel protection including Assembly, Accountability and Evacuation
- ◆ Communications

When plant conditions warrant entry into the Severe Accident Management Guidelines (SAMGs), the Emergency Coordinator assumes the role of SAMG Decision-Maker. The Technical Assessment Coordinator and/or another qualified individual(s) assumes the role of SAMG Evaluator (at least 2 are required), and the Control Room staff assumes the role of SAMG Implementers. Control Room personnel will perform mitigating actions for severe accidents per EOPs prior to TSC activation.

All Plant ERO personnel shall have the authority to perform assigned duties in a manner consistent with the objectives of this plan. In addition to maintaining adequate documentation of the event, position responsibilities include:

1. Shift Manager (Emergency Coordinator) Control Room

A Shift Manager is on duty 24 hours a day and is the Emergency Coordinator in a declared emergency until relieved of this function by the Emergency Duty Officer. While serving in this capacity the Shift Manager is responsible for:

- ◆ Activating the ERO (as deemed appropriate or as procedurally required).
- ◆ Initiating the NRC Emergency Response Data System (ERDS).
- ◆ Performing those duties outlined in Section B.5.a.2 and Section B.5.b.1 for the Emergency Coordinator/Recovery Manager.

The on-duty Shift Manager directs the activities of the operating crew and is responsible for the safe operation of the plant in compliance with the site NRC operating license and the site operating procedures. The Shift Manager, after relinquishing Command and Control, functionally reports to the Emergency Coordinator in the TSC.

The Shift Manager's responsibilities, when not in Command and Control, are described below:

- ◆ The authority and responsibility to shutdown the reactor when determined that the safety of the reactor is in jeopardy or when operating parameters exceed any of the reactor protection system set-points and automatic shutdown does not occur;
- ◆ To ensure a review has been completed to determine the circumstance, cause, and limits under which operations can safely proceed before the reactor is returned to power following a trip or an unscheduled or unexplained power reduction;

- ◆ The responsibility to be present at the plant and to provide direction for returning the reactor to power following a trip or an unscheduled or unexplained power reduction;
- ◆ The responsibility to adhere to the station Technical Specifications and to review routine operating data to assure safe operation;
- ◆ The responsibility to identify applicable EALs and emergency classifications;
- ◆ The responsibility to adhere to plant operating procedures and the requirements for their use. During an emergency, operations personnel may depart from approved procedures where necessary to prevent injury to personnel, including the public, or damage to the facility consistent with the requirements of 10 CFR 50.54(x) and (y);
- ◆ Supervise the activities of the Control Room Crew;
- ◆ Act as or supervise Emergency Communicators in the Control Room; and
- ◆ Organize and direct medical response efforts for injured personnel.

2. Emergency Coordinator (RAPID RESPONDER) TSC

The Emergency Coordinator reports to the Recovery Manager and supervises and directs the Onsite ERO. The Emergency Coordinator's responsibilities include organizing and coordinating the onsite emergency efforts. Additionally, the Emergency Coordinator has the requisite authority, plant operating experience and qualifications to implement in-plant recovery operations.

a. Emergency Coordinator Responsibilities while in Command and Control:

- ◆ Perform all non-delegable responsibilities as the Emergency Coordinator. At the Alert or higher, both TSC and EOF are activated. Therefore certain non-delegable responsibilities are transferred to the Recovery Manager (EOF) and some remain with the Emergency Coordinator (TSC).
- ◆ Assume the duties and responsibilities of SAMG Decision-Maker when a transition to Severe Accident Management Guidelines (SAMGs) is initiated.
- ◆ Conduct personnel assembly/accountability and evacuation of non-essential personnel as conditions warrant.
- ◆ If the emergency involves a hazardous substance and/or oil discharges, ensure that appropriate notifications and responses have been made.

b. Emergency Coordinator Responsibilities while not in Command and Control:

- ◆ Event Classification;
- ◆ Emergency exposure controls;
- ◆ Protective actions for all onsite personnel;

- ◆ Supervision of the Onsite ERO;
- ◆ Request the formation of emergency teams;
- ◆ Ensure that ERO is kept up-to-date on emergency conditions;
- ◆ Ensure that site-wide announcements are made on the Plant PA system;
- ◆ Inform the Recovery Manager and onsite NRC as to the status of the plant;
- ◆ Assist the Recovery Manager in the acquisition of Onsite information for the State/Local notifications, NRC Notification and offsite agency updates;
- ◆ Provide Onsite information and recommendations to the Recovery Manager;
- ◆ Implement plans, procedures and schedules to meet emergency response objectives as directed by the Recovery Manager;
- ◆ Request from the Offsite ERO any additional material, personnel resources or equipment needed to implement response plans and operations;
- ◆ Act as the AmerenUE Liaison to any NRC Site Team Representatives.
- ◆ Ensure that the NRC Site Team Representatives are directed to their appropriate counterparts; and
- ◆ Supervise the activities of the Emergency Notification System (ENS) Communicator in the TSC.

3. Emergency Communicators

CR/TSC/EOF

The Shift Manager/CR Communicator, CR/TSC Liaison, ENS (TSC) Communicator (RAPID RESPONDER) and EOF Communicator are responsible for transmitting/receiving information to and from the TSC, EOF, Control Room and Offsite Authorities. General responsibilities assigned to all Communicators include:

- ◆ Establish communications with appropriate parties as directed;
- ◆ Transmit information that has been reviewed and/or approved by the responsible Manager or Coordinator;
- ◆ Document time, date and information being transmitted or received on appropriate forms;
- ◆ Record and relay inquiries and the responses to those inquiries;
- ◆ Assist appropriate Managers and Coordinators in maintaining proper records and logs of emergency related activities; and
- ◆ Gather, record and post appropriate information.

- a. Specific responsibilities assigned to the Shift Manager/CR Communicator located in the CR include:
 - ◆ Initiate notifications of offsite authorities prior to the EOF accepting Command and Control;
 - ◆ Monitor offsite communications until relieved by the Off-site Liaison Coordinator/EOF Communicator; and
 - ◆ Maintain communications with NRC via the ENS line until relieved by the TSC Communicator.
- b. Specific responsibilities assigned to the CR/TSC Liaison located in the CR include:
 - ◆ Relay requests from the Control Room for the dispatching of- Emergency Teams;
 - ◆ Inform the Control Room, TSC, and EOF of significant changes in event status (e.g. changes in classification, command and control, initiation of station assembly, accountability, evacuation, etc.);
 - ◆ Appraise the TSC and EOF staff of the overall plant condition and significant changes to system and equipment status; and
 - ◆ Appraise the Control Room of the status of Emergency Team activities.
- c. Specific responsibilities assigned to the ENS (TSC) Communicator located in the TSC include:
 - ◆ Notify the NRC of changes in event classification. Ensure all required notifications to NRC are timely and accurate;
 - ◆ Record and relay inquiries to the Emergency Coordinator. In addition, record responses to such inquiries prior to transmission;
 - ◆ Assist the Emergency Coordinator in maintaining proper records;
 - ◆ Transmitting appropriate data to the NRC;
 - ◆ Responding to NRC inquiries;
 - ◆ Provide real time updates of significant changes to plant and system status and responses to NRC inquiries; and
 - ◆ Maintain continuous communications with the NRC, if requested, via the NRC ENS phone or commercial telephone line.
- d. Specific responsibilities assigned to the EOF Communicator located in the EOF include:
 - ◆ Transmit Protective Action Recommendations and emergency notification updates to State and local agencies and other off-site authorities.

- e. Specific responsibilities assigned to the R/C Support Staff located in the TSC, with regard to communications, include:
 - ◆ Maintain continuous communications with the NRC, if requested, via the NRC Health Physics Network (HPN) phone or commercial telephone line;
 - ◆ Communicate current Health Physics information to NRC representatives, as requested; and
 - ◆ Coordinate the communications of radiological information to the NRC between the TSC and the EOF (onsite vs. environmental data).

4. Operations Support Coordinator

TSC

The Operations Support Coordinator reports to the Emergency Coordinator. Major functions include determining the extent of site emergencies, initiating corrective actions, and implementing protective actions for onsite personnel. In the event that the Emergency Coordinator becomes incapacitated and can no longer fulfill the designated responsibilities, the Operations Support Coordinator will normally assume the responsibilities until relieved by another qualified Emergency Coordinator.

Responsibilities include:

- ◆ Coordinate TSC efforts in determining the nature and extent of emergencies pertaining to equipment and plant facilities in support of Control Room actions;
- ◆ Initiate immediate corrective actions to limit or contain the emergency invoking the provisions of 10 CFR 50.54(x) if appropriate, and specifically when addressing Severe Accident Management Guidelines (SAMG);
- ◆ Recommend equipment operations checks and miscellaneous actions to the Control Room in support of restoration and accident mitigation;
- ◆ Approve emergency special procedures, and implement as required under the provisions of 10 CFR 50.54(x);
- ◆ Determine the priority assigned to Emergency Team activities;
- ◆ Ensure adequate staffing of the Control Room and TSC subordinates;
- ◆ Ensure adequate staffing of the Emergency Teams;
- ◆ Ensure the Emergency Coordinator is informed of Emergency Team staffing utilization and activities;
- ◆ Ensure the Shift Manager is informed of Emergency Team staffing utilization and activities;
- ◆ Identify steps or procedures that the Operations staff should be utilizing to properly respond to the emergency condition;
- ◆ Assist the Emergency Coordinator in evaluating changes in event classification;

- ◆ Act as the Operations liaison with the appropriate NRC Site Team Representative;
- ◆ Direct the total onsite maintenance and equipment restoration effort;
- ◆ Request additional equipment in order to expedite recovery and restoration;
- ◆ In coordination with the Emergency Coordinator, determine the priority assigned to Emergency Team activities;
- ◆ Assist in rescue operations; and
- ◆ Identify required procedures that need to be written or implemented in support of the response efforts.

5. Technical Assessment Coordinator (RAPID RESPONDER) TSC

The Technical Assessment Coordinator reports to the Emergency Coordinator and directs a staff in performing technical assessments of site emergencies and assists in recovery planning. Responsibilities include:

- ◆ Accumulate, tabulate and evaluate data on plant conditions;
- ◆ Activate, or verify activation of the Emergency Response Data System (ERDS);
- ◆ Evaluate plant parameters during an emergency to determine the overall plant condition;
- ◆ Coordinate core damage assessment activities;
- ◆ Identify data points and control parameters that the Operations staff should monitor;
- ◆ Ensure that current and adequate technical information is depicted on status boards.
- ◆ Identify and direct staff in the development of special procedures needed to effect long-term safe shutdown or to mitigate a release;
- ◆ Supervise the total onsite technical staff effort through the Lead Engineer;
- ◆ Act as the Engineering liaison with state and appropriate NRC Site Team representatives;
- ◆ Assist the Health Physics Coordinator for onsite radiological/technical matters;
- ◆ At the direction of the Emergency Coordinator, assume the duties and responsibilities of the Evaluator when transition to Severe Accident Management Guidelines (SAMG) is initiated; and
- ◆ Assist the Emergency Coordinator in monitoring changes in event classification.

6. TSC Lead Engineer and TSC Engineering Staff TSC

The TSC Lead Engineer and TSC Engineering Support Staff report to the Technical Assessment Coordinator and consists of the following desired staff engineering positions:

- ◆ Electrical Engineer
- ◆ Mechanical Engineer
- ◆ Reactor Engineer
- ◆ I & C Engineer

In addition, station engineering support will be augmented on an as needed basis to support accident assessment and mitigation activities.

7. Engineering Status Board/Logkeepers TSC

The Engineering Status Board/Logkeepers report to the Technical Assessment Coordinator and are responsible for maintaining the logs and status boards for the Technical Assessment Group.

8. Administrative Coordinator TSC

The Administrative Coordinator reports to the Emergency Coordinator and provides administrative services in support of emergency/recovery operations. Responsibilities include:

- ◆ Coordinate shift relief and continual staffing of the site.
- ◆ Verify that qualified individuals are filling Emergency Communicator positions in the Control Room and TSC.
- ◆ Arrange for clerical staff at the TSC and Control Room.
- ◆ Assist the Security Coordinator in coordinating ERO and site activities in support of on-going security contingency, accountability or site/area evacuation efforts.
- ◆ Support the processing of special procedures and interim reports during an emergency.
- ◆ Ensure that event status and priority logs are being maintained in the TSC.
- ◆ Coordinate record-keeping efforts for the emergency event.
- ◆ Arrange for food, sleeping facilities and other necessary accommodations for onsite emergency workers.
- ◆ Arrange for specialized training of emergency response personnel as needed.

9. Health Physics Coordinator (RAPID RESPONDER) TSC

The Health Physics Coordinator reports to the Emergency Coordinator and supervises the activities of the R/C Support Staff. The TSC Health Physics Coordinator directs a staff in determining the extent and nature of radiological or hazardous material problems onsite. Responsibilities include:

- ◆ Accumulate, tabulate and evaluate data on plant conditions such as meteorological and radiological monitoring readings, and other pertinent data.
- ◆ Act as the Radiological liaison with the appropriate NRC Site Team representative.
- ◆ Ensure use of protective clothing, respiratory protection, and access control within the plant as deemed appropriate to control personnel exposures.
- ◆ Ensure that appropriate bioassay procedures have been implemented for onsite personnel when a radioactivity incident has occurred.
- ◆ Ensure that personnel are decontaminated, if necessary.
- ◆ Authorize personnel exposures below 5 Rem (0.05 Sv) TEDE (EPA-400 lower limit).
- ◆ Assist the Emergency Coordinator in determining if exposures in excess of the 5 Rem (0.05 Sv) TEDE (EPA-400 lower limit) or emergency CDE Thyroid limits are necessary.
- ◆ Advise the Emergency Coordinator of situations when the use of KI should be considered.
- ◆ Assist the Emergency Coordinator in evaluating changes in radiological event classification.
- ◆ Advise the Emergency Coordinator and Dose Assessment Coordinator (in EOF) of changes in radiological release status.
- ◆ Assist the Operations Support Coordinator in planning rescue operations and provide monitoring services as required, including the transfer of injured and/or contaminated personnel.
- ◆ Coordinate with the Security Coordinator to determine the routes to be used for evacuation of non-essential personnel.
- ◆ Assure additional radiation protection personnel and/or equipment is arranged for, as necessary in support of station activities and staff relief.
- ◆ Upon request, provide in-plant health physics data to Emergency Public Information personnel.

10. Chemistry Coordinator

TSC

The Chemistry Coordinator reports to the Technical Assessment Coordinator and coordinates the chemistry interface between the technical support engineering efforts. Responsibilities include:

- ◆ Evaluate plant environmental factors regarding hazardous material conditions.
- ◆ Evaluate hazardous material surveys and chemistry sample results as appropriate.
- ◆ Direct the performance of sampling activities in support of operations and core damage estimates as necessary.
- ◆ Coordinate chemistry information with the TSC Engineering Staff in support of core damage assessment.

11. Rad/Chem Support Staff

TSC

The Rad/Chem Support Staff reports to the Health Physics Coordinator. The Rad/Chem Support Staff coordinates site and in-plant Radiation Protection response activities through the Emergency Team Coordinator. Responsibilities include:

- ◆ Support the Emergency Team Coordinator in the dispatching of Emergency Teams.
- ◆ Monitor area and process radiation monitors to identify trends and potential hazards within the plant.
- ◆ Evaluate plant environmental factors regarding radiological conditions.
- ◆ Evaluate radiological survey results as appropriate.
- ◆ Coordinate radiological information with the TSC Engineering Staff in support of core damage assessment.
- ◆ Monitor plant radiological conditions and advise the Health Physics Coordinator of any adverse trends or potential release pathways that may impact existing event classification.
- ◆ Assist the Operations Support Coordinator in planning radiological controls for personnel dispatched from the Control Room.
- ◆ Ensure the proper use of protective clothing, respiratory protection, and access controls in the plant as appropriate to control personnel exposure.
- ◆ Monitor habitability concerns impacting access to plant and site areas.
- ◆ In coordination with the Emergency Team Coordinator, assemble and dispatch the Monitoring Teams as required.
- ◆ Maintain continuous communications with the NRC, if requested, via the NRC Health Physics Network (HPN) phone or commercial telephone line.
- ◆ Provide updates and respond to inquiries from the NRC on offsite environmental data, release status, dose projections and changes to PARs for the general public.
- ◆ Obtain release and dose assessment data from the Health Physics Coordinator/TSC and Dose Assessment Coordinator/EOF and Monitoring Team data from the Dose Assessment Staff/EOF.

- ◆ Communicate current Health Physics information to NRC representatives, as requested.
- ◆ Assist the EOF Dose Assessment Staff in the acquisition of information for the off-site agency updates.

12. Security Coordinator

TSC

The Security Coordinator reports to the Emergency Coordinator and maintains plant security and personnel accountability at the site. Responsibilities include:

- ◆ Maintain plant security and account for all personnel within the protected area.
- ◆ Assist the Emergency Coordinator in evaluating changes in security related threats and event classifications.
- ◆ Identify any non-routine security procedures and/or contingencies that are in effect or that require a response.
- ◆ Expedite ingress and egress of emergency response personnel.
- ◆ Coordinate with the Health Physics Coordinator in controlling ingress and egress to and from the Protected Area if radiological concerns are present.
- ◆ Provide for access control to the Control Room, TSC and EOF, as appropriate.
- ◆ Expedite entry into the Protected Area, as necessary, for the NRC Site Team.
- ◆ Act as the Security liaison with the appropriate NRC Site Team representative.
- ◆ Assist the Health Physics Coordinator in determining personnel evacuation routes as necessary.
- ◆ Coordinate the evacuation of site non-essential personnel with the appropriate Local Law Enforcement Agencies (LLEAs).

13. Emergency Team Coordinator

TSC

The Emergency Team Coordinator reports to the Operations Support Coordinator and supervises the activities of Emergency Team personnel. The Emergency Team Coordinator is responsible at all times for the safety of team personnel. The Fire Brigade and MERT continue to report and take direction from the Shift Manager in the Control Room. Responsibilities include:

- ◆ Assign tasks to designated Staff as available:

Operations

Mechanical Maintenance

Electrical/I&C Maintenance

Radiation Protection

Chemistry

- ◆ Dispatch Operations personnel to support Control Room and Emergency Team activities.
- ◆ Notify the Control Room and TSC prior to dispatch of any Emergency teams into the plant.
- ◆ Maintain Emergency Team resources including personnel, material, and equipment.
- ◆ Maintain accountability for all individuals dispatched from the TSC.
- ◆ Conduct periodic briefings on the overall plant status, emergency response activities, and site priorities.
- ◆ Conduct adequate pre-dispatch briefings.
- ◆ Ensure adequate protective equipment and measures have been identified.
- ◆ Track Emergency team activities while dispatched.
- ◆ Debrief team personnel upon return to the TSC.

14. Emergency Team Members-Support Area Personnel

TSC-Support Area

Technicians and operations personnel form an Emergency Team Pool. Emergency Team Pool personnel form the teams that perform emergency mitigation tasks in the plant. Individuals from operations, maintenance, chemistry and operations are always available as part of the Emergency Team Pool. Individuals from other plant organizations may also be called to assist in emergency mitigation efforts.

b. Offsite Emergency Response Organization:

The Offsite ERO is part of the overall Plant ERO group that is activated during an emergency. It functions under the Recovery Manager, who is responsible for organizing and coordinating the overall emergency efforts. The Offsite ERO focuses on the offsite interfaces and support of the Onsite ERO efforts.

The Offsite ERO is activated in the Emergency Operations Facility (EOF) at an Alert. The EOF Organization is responsible for evaluating, coordinating and directing the overall company activities involved in the emergency response.

The Offsite ERO consists of site personnel who are involved with emergency response efforts necessary to coordinate Callaway Plant Unit 2 emergency response with offsite agencies response efforts. This organization operates out of the Emergency Operations Facility (EOF). Collectively, members of the Offsite ERO provide for the following activities during an emergency:

- ◆ Perform Notifications and Communications with offsite authorities;

- ◆ Coordinate Emergency Response activities with offsite Emergency Responders;
- ◆ Prepare Protective Action Recommendations;
- ◆ Conduct Offsite Radiological survey and monitoring;
- ◆ Support the Public Information Organization; and
- ◆ Obtain offsite support for onsite mitigative actions.

All Offsite ERO personnel shall have the authority to perform assigned duties in a manner consistent with the objectives of the E-Plan. In addition to maintaining adequate documentation of the event, position responsibilities include:

1. Recovery Manager (RAPID RESPONDER) EOF

Although the Recovery Manager has overall authority for all aspects of the Licensee's emergency response efforts, most of his/her efforts are focused on the interface between the company's ERO and offsite authorities and ensuring the Onsite ERO receives the support necessary to mitigate results of the event.

- a. When the Recovery Manager has Command and Control, the ongoing responsibilities include:
- ◆ Assume overall Command and Control of emergency response activities and the non-delegable responsibilities for PAR determination, the notification of offsite authorities and authorizing offsite personnel exposure in excess of 10CFR20 limits. The TSC and EOF are simultaneously activated at the Alert or higher emergency classification. The Emergency Coordinator assumes command and control of onsite activities and the Recovery Manager assumes overall Command and Control, but focuses on offsite activities.
 - ◆ Ensure that Federal, State and local authorities and industry support agencies remain cognizant of the status of the emergency situation. If requested, dispatch informed individuals to offsite governmental Emergency Operation Centers (EOCs).
 - ◆ Coordinate all Licensee activities involved with the emergency response.
 - ◆ Ensure off-site agency updates are periodically communicated as required/requested.
 - ◆ Request assistance from non-Licensee emergency response organizations, as necessary.
 - ◆ Direct and coordinate the activation and response efforts of the EOF staff.
 - ◆ Evaluate the need to augment the EOF staff based on events in progress.
 - ◆ Monitor information flow within the EOF to ensure that facility activities remain coordinated.

- ◆ Coordinate with the Logistics Support Coordinator for continual shift staffing requirements.

2. Protective Measures Coordinator

EOF

The Protective Measures Coordinator reports to the Recovery Manager and directs the activities of the Plant Assessment and Dose Assessment Staffs. Responsibilities include:

- ◆ Assist the Recovery Manager in determining plant-based PARs when necessary.
- ◆ Prepare State/Local notification forms with the assistance of the Dose Assessment Coordinator and the Plant Assessment Coordinator.
- ◆ Provide the Recovery Manager information concerning the status of plant operations, and recommendations for mitigating the consequences of the accident.
- ◆ Assist the Recovery Manager, State officials and Federal officials in the interpretation of any plant related data.
- ◆ Ensure the Dose Assessment Coordinator is informed of changes in plant status that impact or potentially impact the offsite environment or PARs.
- ◆ Assist in the development of post-accident recovery measures.

3. Plant Assessment Coordinator

EOF

The Plant Assessment Coordinator reports to the Protective Measures Coordinator and is responsible for obtaining and analyzing plant status information and EALs to verify the adequacy of existing PARs and ensuring that plant information is disseminated. Specific responsibilities include:

- ◆ Monitor the Technical Assessment Bridge Line to keep apprised of:
 - Control Room activities including progress on Emergency Operating Procedures.
 - Significant changes in plant system/equipment status and critical parameters.
 - Possible changes in event classification.
- ◆ Identify and track critical parameters for the identification and trending of current plant status information.
- ◆ Provide technical information on facility and system design.
- ◆ Assist the plant in identifying Operations resources from corporate staff or the unaffected plant for direct support of plant shift operations personnel.

- ◆ Assist the TSC Communicator in the completion of the NRC Event Notification Worksheet and in responding to NRC inquiries.
- ◆ Ensure that the Dose Assessment Coordinator is informed of changes in plant status that impact or potentially impact the offsite environment or PARs.
- ◆ Monitor the TSC Communicator to remain aware of TSC technical support activities, strategies and priorities.
- ◆ Assist the Dose Assessment Coordinator in acquiring technical information pertaining to release pathway and core damage assessment.

4. Plant Assessment Staff EOF

The Plant Assessment Staff reports to the Plant Assessment Coordinator in the EOF. They are knowledgeable in plant equipment, systems and operations. They may provide additional technical expertise while maintaining the status boards displaying plant conditions.

5. Dose Assessment Coordinator (RAPID RESPONDER) EOF

The Dose Assessment Coordinator reports to the Protective Measures Coordinator and directs the activities of the EOF Dose Assessment staff. Specific responsibilities include:

- ◆ Perform dose projections using the Dose Assessment computer models as directed by the Protective Measures Coordinator.
- ◆ Interpret radiological data and provide PARs based upon dose projections to the EOF Protective Measures Coordinator.
- ◆ Recommend changes in event classification and PARs based upon effluent releases or dose projections.
- ◆ Assist the Protective Measures Coordinator in the evaluation of the significance of an emergency with respect to the public.
- ◆ Direct Field Monitoring Team dispatch.
- ◆ Remain cognizant of forecast and meteorological data and ensure the status is updated periodically.
- ◆ Notify the Protective Measures Coordinator of meteorological changes that may impact identification of downwind areas.
- ◆ Advise the Protective Measures Coordinator of protective actions taken by the station for plant personnel.
- ◆ Advise the Protective Measures Coordinator on the need for emergency exposures or for issuance of KI to the Monitoring Teams or Licensee personnel required to enter the plume.

- ◆ Determine the need for and contact Occupational Health/Industrial Safety Services personnel for assistance.
- ◆ Assist in the completion and review of the State/Local notification form.
- ◆ Maintain cognizance of environmental sampling activities.
- ◆ Ensure State authorities are provided information pertaining to AmerenUE Monitoring Team activities and sample results.
- ◆ Assist the site in the following areas:
 - Planning and coordination of activities associated with the evacuation of non-essential personnel.
 - Acquisition of additional instrumentation, dosimetry, protective equipment and radiological support personnel.
- ◆ Upon request, provide environmental data and dose assessment data to Emergency Public Information personnel and the R/C Support Staff (HPN) in the TSC.
- ◆ Ensure communications are established with the TSC to obtain information on the accident conditions, meteorological conditions and estimates of radioactive material releases.
- ◆ Evaluate and coordinate additional equipment and personnel as necessary from the unaffected unit to augment and/or relieve plant Monitoring Teams.

6. Dose Assessment Staff

EOF

The Dose Assessment Staff reports to the Dose Assessment Coordinator and is responsible for Field Monitoring Team communications and updates to radiological status boards. Responsibilities include:

- ◆ Maintain cognizance of Field Monitoring Team exposure. When warranted, ask the Dose Assessment Coordinator to initiate an evaluation of the need for administering KI to the Licensee workers.
- ◆ Determine needs of the Dose Assessment Coordinator and the EOF Communicator for updates on Field Monitoring Team data and ensure distribution of new data to them in accordance with those needs.
- ◆ Establish and maintain contact with the dispatched Monitoring Teams.
- ◆ Document the Dose Assessment Coordinator's instructions and then relay this information to the Field Monitoring Teams.
- ◆ Document environmental data reported by the Field Monitoring Teams.
- ◆ Periodically obtain and document information on Field Monitoring Team radiological exposure.

- ◆ Promptly report new environmental or Field Monitoring Team exposure data to the Dose Assessment Coordinator.
- ◆ Document questions and answers directed to and received from the Field Monitoring Teams. Ensure the Dose Assessment Coordinator is cognizant of these information requests and relay replies to these requests.
- ◆ Advise the Dose Assessment Coordinator of changes in event classification based on Field Monitoring Team results.
- ◆ Remain cognizant of forecast and meteorological data and ensure the status is updated periodically.
- ◆ Notify the Dose Assessment Coordinator of meteorological changes that may impact identification of downwind areas.

7. Field Monitoring Teams

EOF

Field Monitoring Teams are dispatched within the Emergency Planning Zone under the direction of the Dose Assessment Coordinator. They are responsible for making direct radiation measurements and collecting air samples to provide data for off-site dose assessment. In cooperation with the State Department of Health, Field Monitoring Teams also assist in collection of environmental sample media.

8. Logistical Support Coordinator

EOF

The Logistical Support Coordinator reports to the Recovery Manager and directs the activities of the Logistical Support Staff. Responsibilities include:

- ◆ Ensure contact is made and communications are maintained with appropriate non-Licensee personnel whose assistance may be required to terminate the emergency conditions and to expedite the recovery.
- ◆ Advise the Recovery Manager concerning the status of activities relating to governmental interfaces.
- ◆ Obtain support from Human Resources, the Comptroller's Office, the Legal Department, Accounting Department and others as required.
- ◆ Implement the Licensee Fitness for Duty Program.
- ◆ Ensure that NRC Site Team Representatives are directed to the Off-site Liaison Coordinator upon arrival at the EOF.
- ◆ Assist in obtaining and coordinating additional technical expertise to support station requests, including the Licensee Corporate staff, the unaffected unit and vendor/contractors.
- ◆ Act as purchasing agent in support of the TSC for contract negotiation / administration.

- ◆ Coordinate the overall Licensee engineering support from corporate staff and other outside sources.
- ◆ Interface with Industry and contractor engineering support organizations.
- ◆ Coordinate maintenance of EOF equipment as necessary.
- ◆ Ensure shift relief and continual staffing for the EOF.
- ◆ Direct the activities of the Logistical Support Staff.
- ◆ Direct the clerical staff and ensure the clerical requirements for the other EOF staff are met.
- ◆ Obtain clerical support for the EOF.
- ◆ Coordinate shift relief and continual staffing for the EOF.
- ◆ Obtain services as appropriate to support operation of the EOF.
- ◆ Obtain additional resources to support access control measures needed at the EOF.

9. Logistical Support Staff-Material Eng. Buyer, Stores, Clerical, etc. EOF

The Logistical Support Staff reports to the Logistical Support Coordinator. Responsibilities include:

- ◆ Assist the Logistical Support Coordinator with his/her duties.
- ◆ Develop specifications for repair parts, equipment and services.
- ◆ Locate materials and services and expedite their delivery to the site.
- ◆ Obtain necessary equipment and supplies to support activities of governmental agencies located in the EOF.
- ◆ Assist any personnel in logging in, initializing or using a desired computer program.
- ◆ Investigate and repair problems encountered with communications equipment and computer equipment/applications.

The Logistical Support staff may be dispatched to assist other emergency facilities personnel as needed.

10. Off-Site Liaison Coordinator (RAPID RESPONDER) EOF

The Off-Site Liaison Coordinator reports to the Recovery Manager, assumes offsite notification responsibilities from the CR Communicator and directs the EOF Communicator and Liaison Communicator. Responsibilities include:

- ◆ Coordinate interfaces between site personnel and governmental agencies within the EOF.
- ◆ Coordinate and dispatch EOC Liaisons as needed or requested.
- ◆ Establish and maintain periodic contact with each location where the Licensee EOC Liaisons have been dispatched.
- ◆ Ensure EOC Liaisons are provided event information and notifications.
- ◆ Ensure that updates and information are provided to the offsite officials present in the EOF.
- ◆ Ensure that the Recovery Manager is made aware of issues and questions raised by offsite agencies and then relay the replies to these requests.
- ◆ Direct the activities of the EOF Communicator.

11. EOF Communicator

EOF

The EOF Communicator reports to the Off-Site Liaison Coordinator. Responsibilities include:

- ◆ Communicate and receive information via the State / County notification system or commercial telephone line with appropriate State and County agencies.
- ◆ Ensure that all required notifications to offsite government agencies (State/Local) are timely and accurate.
- ◆ Ensure that the Off-Site Liaison Coordinator is made aware of issues and questions raised by offsite agencies and then relay the replies to these requests.

12. County EOC Liaison(s)

EOF

The County EOC Liaison(s) will be dispatched to County Emergency Operations Centers (EOCs) based on established agreements with the counties. The County EOC Liaisons use the Off-Site Liaison Coordinator as their contact at the EOF. Responsibilities include:

- ◆ Monitor and report County EOC activities to the EOF.
- ◆ Conduct briefings and answer questions.
- ◆ Provide simplified explanations to EOC personnel of technical details distributed through approved channels.
- ◆ Assist with confirmation/verification of information distributed through approved channels.
- ◆ Provide media at the EOC with approved Licensee press releases.

- ◆ Assist Emergency Public Information personnel in rumor control and media monitoring.

13. State EOC Liaison(s)

EOF

At the request of State officials and/or at the discretion of the Recovery Manager, the Licensee will provide Liaison personnel to the State Emergency Operation Center (EOC). The State EOC Liaison uses the Off-Site Liaison Coordinator as the contact at the EOF. Responsibilities include:

- ◆ Monitor and report State EOC activities to the EOF.
- ◆ Conduct briefings and answer questions as requested.
- ◆ Assist Emergency Public Information personnel in rumor control and media monitoring.

c. Public Information Emergency Response Organization:

The Public Information ERO is part of the overall Licensee ERO group that is activated during an emergency. It functions under the Company Spokesperson and reports to AmerenUE Corporate Communications.

The Public Information ERO consists of site personnel who are involved with emergency response efforts necessary to provide accurate information regarding the Callaway Plant Unit 2 emergency response efforts. This organization operates out of the Joint Public Information Center JPIC and/or Emergency Operations Facility (EOF). Collectively, members of the Public Information ERO provide for the following activities during an emergency:

- ◆ Development, approval and issuance of News Releases.
- ◆ Coordination and conduct of Media Briefings
- ◆ Assisting the state with Rumor Control
- ◆ Media Monitoring and correction of mis-information

All Public Information ERO personnel shall have the authority to perform assigned duties in a manner consistent with the objectives of this plan. In addition to maintaining adequate documentation of the event, position responsibilities include:

4. Company Spokesperson

JPIC

The Company Spokesperson reports to AmerenUE Corporate Communications and is responsible for directing the Licensee Public Information Emergency Response Organization and providing news information to the media. Responsibilities include:

- ◆ Maintain command and control of the JPIC.

- ◆ Coordinate with Federal, State and Local agencies, as well as with other organizations involved in the emergency response, to maintain factual consistency of information to be conveyed to the news media/public.
- ◆ Conduct periodic briefings with the news media.
- ◆ Provide the Recovery Manager with an overview of the public and media impacts resulting from Licensee and governmental activities.
- ◆ Act as a liaison between the ERO and AmerenUE's corporate executives.
- ◆ Interface with the Vice President-Corporate Communications.
- ◆ Coordinate and direct responses to media inquiries.
- ◆ Ensure that the composition and timeliness of Licensee News Releases are adequate.
- ◆ Provide for timely exchange of information between other spokespersons.
- ◆ Approve the content of Licensee press releases prior to their being released to the media.
- ◆ Authorize the issuance of news releases.

5. Technical Representative

JPIC

The Technical Representative reports to the Company Spokesperson. Responsibilities include:

- ◆ Assist in obtaining technical and plant status information for use in news releases and media briefings.
- ◆ Assist in obtaining environmental and health physics information for use in news releases and media briefings. Note the State is responsible for offsite radiation protection and dose information dissemination.
- ◆ Assist the Company Spokesperson in presentation of information and answering questions during media briefings as directed.
- ◆ Assist the JPIC Editor in the preparation of news releases.
- ◆ Assist the JPIC Editor in the preparation of a chronological event description log.
- ◆ Prepare briefing papers, which contain additional detail and background not found in the news releases.
- ◆ Provide answers as soon as possible to media questions.
- ◆ Provide a follow-up explanation that corrects misinformation as soon as practicable.

- ◆ Provide approval of the technical content of Licensee Press Releases and information released to the News Media.

6. JPIC Coordinator

JPIC

The JPIC Coordinator reports to the Company Spokesperson to ensure the operability of and to supervise the activities in the JPIC. Responsibilities include:

- ◆ Maintain cognizance of conditions of the plant and environment, and the actions of Licensee and governmental support personnel.
- ◆ Coordinate with the Company Spokesperson regarding information to be released to the public.
- ◆ Coordinate with Federal, State and Local agencies, as well as with other organizations involved in the emergency response, to maintain factual consistency of information to be conveyed to the news media/public.
- ◆ Assist the state, as needed, in rumor control activities.
- ◆ Interface with the Technical Representative located at the JPIC and coordinate information flow between the EOF and the JPIC.
- ◆ Ensure that adequate information flow between the EOF and the JPIC is coordinated through the JPIC Editor.
- ◆ Establish a minimum frequency for addressing news media/public representatives and ensure that some form of communication occurs within that time frame (i.e., an update at least hourly.)
- ◆ Document unanswered questions and serious public misinformation issues. Follow-up on these questions and issues to ensure that they are being adequately addressed.
- ◆ Coordinate the interface between the Licensee and the news media/public, including, as necessary, briefings, news conferences, interviews and responses to information requests.
- ◆ Supervise the activities of the JPIC Editor and media monitoring personnel.
- ◆ Coordinate with the State Media Monitoring Staff to review and access media coverage of the emergency event.
- ◆ Direct, jointly with the State, the activities of the Rumor Control Staff with respect to the function of monitoring rumors from sources other than the media.
- ◆ Ensure that approved News Releases are made available in the JPIC.

7. JPIC Administrator

JPIC

The JPIC Administrator reports to the JPIC Coordinator. Responsibilities include:

- ◆ Ensure the JPIC is activated and operational. This includes ensuring the availability of communications and visual aids.
- ◆ Direct the clerical staff and ensure the clerical requirements for the other JPIC staff are met.
- ◆ Coordinate shift relief and continual staffing for the JPIC.
- ◆ Obtain additional radio and telephone equipment as necessary to meet the needs of the emergency.
- ◆ Obtain services as appropriate to support operation of the JPIC.

8. JPIC Media Host JPIC

The JPIC Media Host reports to the JPIC Administrator and is responsible to provide accommodations and support to the Media.

9. Security JPIC

The State of Missouri National Guard controls JPIC Security.

10. JPIC Editor JPIC or EOF

The JPIC Editor reports to the JPIC Coordinator. Responsibilities include:

- ◆ Obtain the assistance of the Technical Representative, as needed, to develop news releases.
- ◆ Compose draft news releases.
- ◆ Provide the drafted news releases to the Technical Representative for technical review prior to Company Spokesperson approval.
- ◆ Develop a chronological event description log.
- ◆ Obtain the assistance of the Technical Representative, as needed, to develop the event log.
- ◆ Coordinate information flow between the EOF and JPIC.

11. Rumor Control Staff JPIC or EOF

Rumor control is a joint responsibility between AmerenUE and the State of Missouri. The Rumor Control Staff reports jointly to the JPIC Coordinator and the State and acts in support of the JPIC Editor.

Ensure that rumors are reviewed, documented and responded to by Licensee/State personnel as deemed appropriate by the Company Spokesperson and the State of Missouri.

- ◆ Until the JPIC is fully activated, document and respond to rumors as quickly as possible, through Corporate Communications.
- ◆ Ensure that the media is being monitored and that Licensee personnel review the information detailed or contained in media releases.
- ◆ Inform the JPIC Coordinator of all media reports and of actions taken to correct any misinformation or rumors.
- ◆ Inform the JPIC Coordinator/State when rumors representing serious misinformation are encountered.

The above listed ERO positions form the base of the Licensee emergency response; all company personnel and resources can and will be utilized to ensure the safety of offsite populations, station personnel and protection of station equipment needed to maintain nuclear safety.

6. EMERGENCY RESPONSE ORGANIZATION BLOCK DIAGRAM

Table B-1.a, located in the Callaway Plant Unit 2 Annex, and Table B-1.b lists the key positions of the ERO and the supporting positions assigned to interface with federal, state, and local authorities. Figures B-1a through B-1d illustrates the overall ERO. Section B.5 discusses specific responsibilities and the interrelationships for key positions.

7. OFFSITE CORPORATE EMERGENCY RESPONSE ORGANIZATION

Corporate management personnel can be called upon to support the Offsite ERO and the Emergency Public Information Organization, but are not officially part of the ERO.

In addition to corporate management personnel supporting the ERO, the Licensee will provide necessary company resources to aid the site with the following items:

- a. Logistics support for emergency personnel, including procurement of transportation, communications, lodging, meals and any other special needs to ensure ongoing staffing of emergency facilities.
- b. Arrangements for technical support and necessary resources for reentry/recovery operations.
- c. Interface with high-level government authorities, not normally part of emergency response activities.
- d. Assist in release of information to the news media.

8. INDUSTRY/PRIVATE SUPPORT ORGANIZATIONS

The Licensee retains contractors to provide supporting services to nuclear generating stations. A contract/purchase order with a private contractor is acceptable in lieu of an agreement letter for the specified duration of the contract. Among services currently provided are the following:

- a. Institute of Nuclear Power Operations (INPO):

Experience has shown that a licensee may need resources beyond in-house capabilities for the recovery from a nuclear plant emergency. One of the roles of the Institute of Nuclear Power Operations (INPO) is to assist affected licensees by quickly applying the resources of

the nuclear industry to meet the needs of an emergency. INPO has an emergency response plan that enables it to provide the following emergency support functions:

- ◆ Assistance to the affected licensee in locating sources of emergency personnel, equipment and operational analysis.
- ◆ INPO, Electric Power Research Institute (EPRI) and Nuclear Energy Institute (NEI) maintain a coordination agreement on emergency information with their member utilities.
- ◆ INPO provides the "Nuclear Network", or its replacement, electronic communications system to its members, participants, NEI, and EPRI to coordinate the flow of media and technical information about the emergency.
- ◆ The Licensee may obtain industry information and assistance from any party to this agreement through the coordination of INPO.

To support these functions, INPO maintains the following emergency support capabilities:

- ◆ A dedicated emergency call number.
- ◆ Designated INPO representative(s) who can be quickly dispatched to the licensee ERO to coordinate INPO support activities and information flow.
- ◆ The 24-hour per day operation of an Emergency Response Center at INPO headquarters.

The Licensee will notify INPO (via the designated emergency call number) for all situations involving an Alert, Site Area Emergency, or General Emergency declaration per the Callaway Plant Unit 2 Reportability Procedures.

INPO has coordinated the preparation of a Voluntary Assistance Agreement for Transportation Accidents. The Licensee has signed this agreement which establishes the rights and responsibilities of electric utilities in requesting or providing assistance for response to a nuclear materials Transportation Accident.

- b. Nuclear Energy Institute (NEI): NEI may assist with public information efforts during a declared emergency.
- c. American Nuclear Insurers (ANI): In early 1982, ANI issued Bulletin #5B (1981) "Accident Notification Procedures for Liability Insurers" which provides revised criteria for the notification of the Pools in the event of a nuclear emergency at one of the liability insured nuclear power reactor sites. This revision brings the ANI/MAELU (Mutual Atomic Energy Liability Underwriters) notification criteria into alignment with the standard emergency classification system adopted by the nuclear industry. This document also identifies a suitable channel for follow-up communication by ANI after initial notification.
 - ◆ ANI/MAELU Emergency Assistance: In the event of an extraordinary nuclear occurrence (as defined in the Price-Anderson Act) ANI and MAELU (the insurance

pools) have plans prepared to provide prompt emergency funding to affected members of the public.

- ◆ ANI/MAELU Emergency Assistance (Claims Handling Procedures): The pools' emergency assistance arrangements contemplate the mobilization and dispatch of emergency claims teams to directly dispense emergency assistance funds to affected members of the public.

The pools should be notified in the event of a nuclear emergency requiring notification of state or Federal governmental agencies, or if the insured believes that offsite persons may be affected and financial assistance of a nature discussed may be required. In these instances, ANI expects notification as soon as possible after the initiation of the emergency. Notification to the pools in the event of an Alert, Site Area Emergency, or General Emergency will be in accordance with the Station's notification procedures.

Even if it appears to be remote that offsite persons will be affected, the pools should be notified in order that response plans can be initiated to the point of alerting teams of adjusters to stand by. Response activity can be discontinued if it proves less severe and does not require pool response.

All nuclear occurrences of an emergency or non-emergency nature that fall under the nuclear liability policy should be reported formally in writing to ANI by the Licensee.

- ◆ Emergency Notification and Follow-up Procedures: Pre-established lines of communication exist between each licensee and ANI in order to exchange all required information during a developing emergency situation.

ANI maintains 24-hour coverage of an emergency notification number. During normal office hours (8:00 am - 4:00 pm) their number will be answered by the receptionist who will transfer an incoming emergency call to an appropriate individual in the office. Outside of normal office hours, this telephone line is covered by an answering service. The answering service will intercept the call and obtain the name, affiliation and telephone number of the caller. They will then notify a designated ANI staff member who will in turn call back the licensee to obtain appropriate information regarding the nuclear accident.

In order that follow-up information is available to the Insurance Pool the Licensee has established the Recovery Manager or their designee as a Point of Contact that ANI personnel may use to update themselves regarding the status of the emergency.

d. Environmental Monitoring Services:

- ◆ Environmental, Inc. Midwest Laboratory: An environmental lab provides radiological environmental monitoring services in support of the site and emergency Radiological Environmental Monitoring Programs (REMPs). In an emergency situation, Environmental, Inc. Midwest Laboratory field personnel, at a minimum, would continue to maintain AmerenUE air samplers and exchange TLDs under the supervision of the Dose Assessment Coordinator. The Environmental, Inc.

Midwest Laboratory would analyze the environmental samples for their radioactivity content and report results to Callaway Plant Unit 2.

- e. Department Of Energy (DOE) Radiation Emergency Assistance Center/Training Site (REAC/TS): DOE REAC/TS provides services of medical and health physics support. REAC/TS advise on the health physics aspects of situations requiring medical assistance.
- f. Manufacturer Design and Engineering Support: Under established contracts, AREVA provides design engineering expertise, specialized equipment and other services identified as needed and deemed appropriate to assist in an emergency situation:

9. SUPPLEMENTAL EMERGENCY ASSISTANCE TO THE ERO

Agreements are maintained with outside support agencies who do not take part in the organizational control of the emergency that provide assistance when called on during an emergency or during the recovery phase. These agreements identify the emergency measures to be provided, the mutually accepted criteria for implementation, and the arrangements for exchange of information. These support agencies (named in Appendix 3) provide services of:

- a. Law enforcement;
- b. Fire protection;
- c. Ambulance services;
- d. Medical and hospital support

Support groups providing transportation and treatment of injured station personnel are described in Section L of this plan.

Table B-1b: Minimum Staffing Requirements for the Callaway Plant Unit 2 ERO

Functional Area	Major Tasks	Emergency Positions	Minimum Staffing		
			*100 Minute Augmentation	Other On-Call	Full Augmentation
1. Plant Operations and Assessment of Operational Aspects	Control Room Staff	See table B-1a located in Unit Specific Annex for Shift Staffing. ^(e)			
2. Emergency Direction and Control	Command and Control	Emergency Coordinator (TSC) Recovery Manager (EOF)	1#		
3. Notification & Communication	Emergency Communications	Off-Site Liaison Coordinator/ EOF Communicator (One needed for facility activation) (EOF)	1#		
		TSC/EOF Communicators	1#		
		ENS TSC Communicator (TSC) HPN Communications (TSC) manned by R/C Support Staff EOF Communicator (EOF)	(f)		1
4. Radiological Assessment	Plant Status Technical Activities	CR/TSC Liaison (CR)	1		
		Protective Measures Coordinator (EOF)	1		
		Plant Assessment Coordinator (EOF)	1		1
		Plant Assessment Staff [(EOF)]	2		(b)
		Engineering Statusboard/ [(TSC)] Logkeepers	3		
		Operations Support Coordinator TSC	1		
		State EOC Liaison (State EOC)			
		County EOC Liaison (County EOC)			
		Off-Site Liaison Coordinator (EOF)			
		Dose Assessment Coordinator (EOF)			
5. Plant System Engineering, Repair, and Corrective Actions	Technical Support / Accident Analysis	Dose Assessment Staff (EOF)	2 (1#)		1
		Field Monitoring Team Personnel	2 (a)(f)		
		Onsite Monitoring Team (TSC-SA)	2 (a)(f)		
		Personnel-Rad/Chem Support Personnel	(f)		(b)
		R/C Support Personnel ^(e) (TSC-SA)	(f)		(b)
		Chemistry Coordinator (TSC)	1		
		R/C Support Personnel ^(e)	(f)		(b)
		Health Physics Coordinator (TSC)	1#		
		Dose Assessment Coordinator (EOF)			
		Technical Assessment Coordinator (TSC)			
TSC Lead Engineer (TSC)			1#		
Reactor Engineer (TSC)			1		
Mechanical Engineer (TSC)			1		
Electrical Engineer (TSC)			1		
I & C Engineer (TSC)			1		
Protective Measures Coordinator (EOF)			1		

Table B-1b: Minimum Staffing Requirements for the Callaway Plant Unit 2 ERO

Functional Area	Major Tasks	Emergency Positions	Minimum Staffing	
			*100 Minute Augmentation	Other On-Call
6. In-Plant Protective Actions 7. Fire Fighting 8. 1 st Aid and Rescue Operations 9. Site Access Control and Personnel Accountability	Repair and Corrective Actions	Operations Support Coordinator (TSC)	2	
		Emergency Team Coordinators, 1-Mechanical, 1-Electrical (TSC)		
		Support Area Personnel (TSC-SA)	14	(b)
		Rad/Chem Support Mechanics	2	
		Electricians I & C Technicians	2 1	
10. Resource Allocation and Administration	Radiation Protection	Rad/Chem Support Personnel ^(e) (TSC-SA)	(f)	(b)
	--	Fire Brigade	(f)	(c)
	--	Plant Personnel	(f)	(b)
	Security & Accountability	Security Team Personnel	(d)	
	Logistics	Security Coordinator (TSC)	1	
	Administration	[Logistical Support Coordinator] (EOF)	1	
	Facility Support	Administrative Coordinator (TSC)	1	
	Media Interface	Clerical Support (TSC/EOF)		(b)
	Information Development	Material Eng. Buyer, etc. (EOF)	2	
	Media Monitoring and Rumor Control	Stores Personnel (TSC)	1	
	Facility Operation and Control	Company Spokesperson (JPIC)		1
		Technical Representatives (JPIC)		2
		JPIC Coordinator (JPIC)		1
		Technical Representatives (JPIC)		1
		JPIC Editor (JPIC)		1
		JPIC Media Host (JPIC)		1
		JPIC Editor (JPIC)		1
		JPIC Coordinator (JPIC)		1
		JPIC Administrator (JPIC)		1
		Rumor Control Staff (JPIC)		1
		Clerical Staff (JPIC)		1

(Rapid Responders) Minimum positions needed for facility activation. A facility is considered activated when designated minimum personnel are ready to assume their responsibilities.

* Response time is based on optimum travel conditions. Facility activation will be done as soon as practical. Facility activation goals for the TSC and EOF are 100 minutes for off hours and 30 minutes during normal working hours (assumes 15 minutes from arrival at the facility). The JPIC minimum augmentation time goal is 2 hours.

- (e) May be provided by personnel assigned other functions.
- (b) Personnel numbers depend on the type and extent of the emergency.
- (c) Fire Brigade per FSAR/Technical Specifications, as applicable.
- (d) Per Security Plan.
- (e) All Shift ERO positions are listed in Table B-1a, contained in Unit 2 Annex.
- (f) See Support Area Personnel under Repair and Corrective Actions.

Figure B-1 a—Overall ERO Command Structure

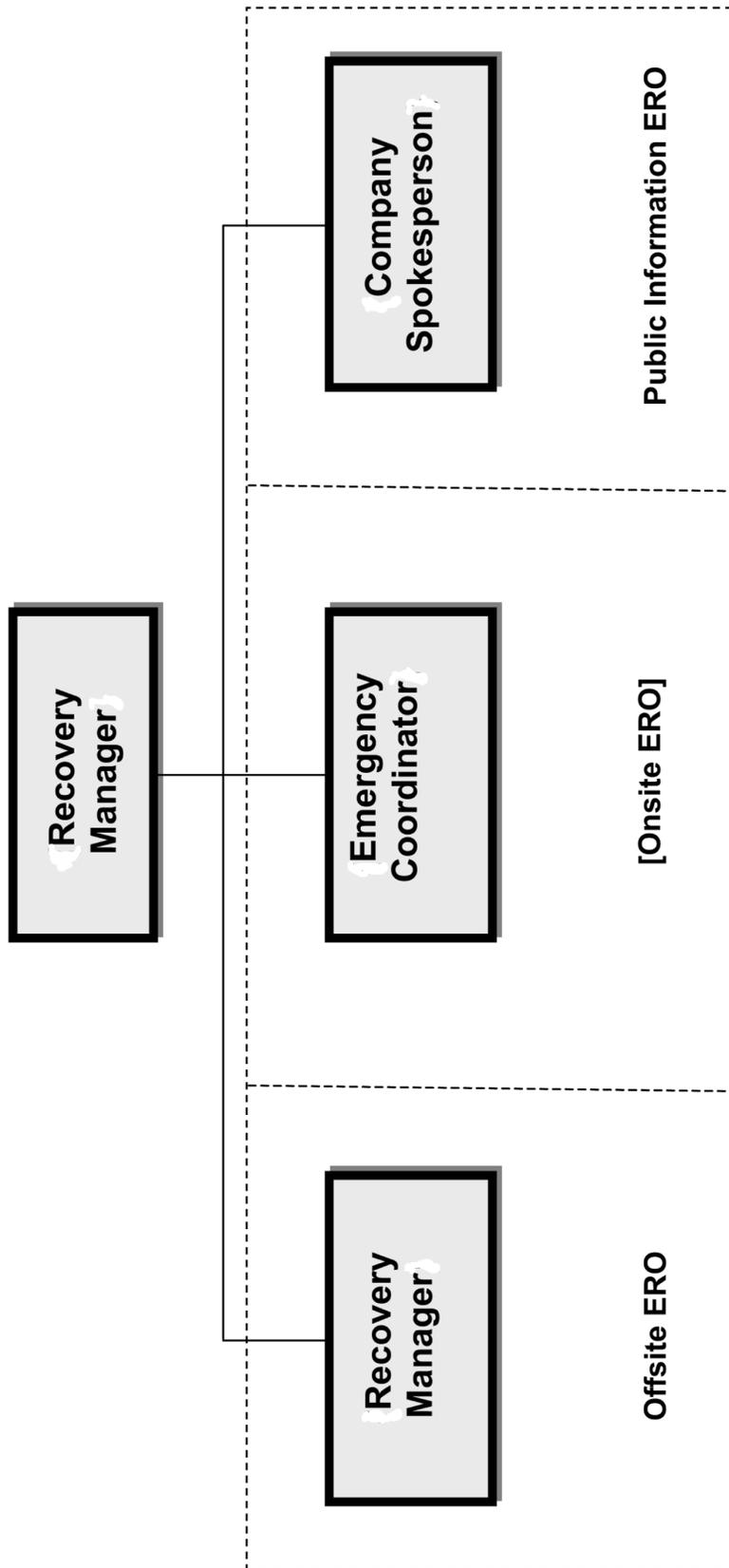
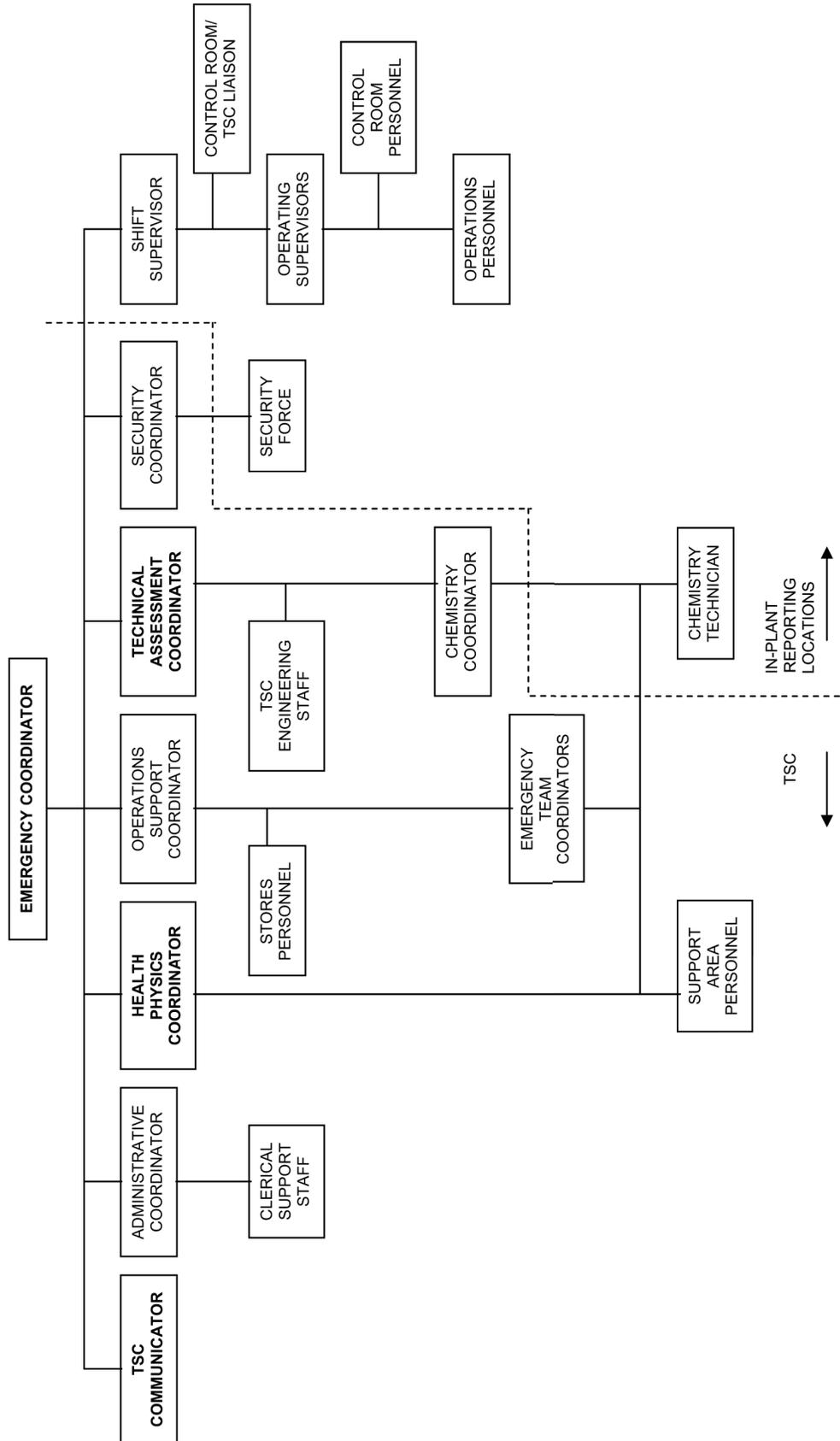
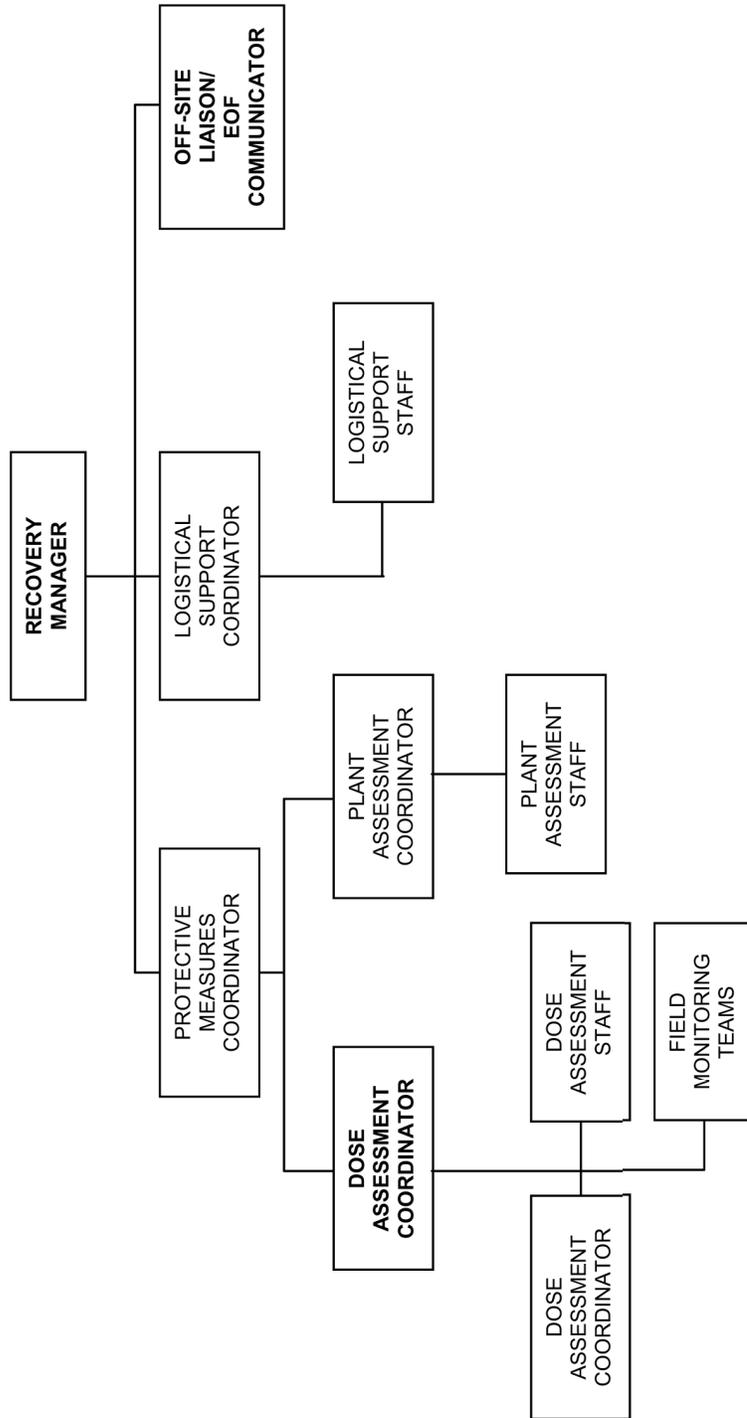


Figure B-1b—Emergency Onsite Organization



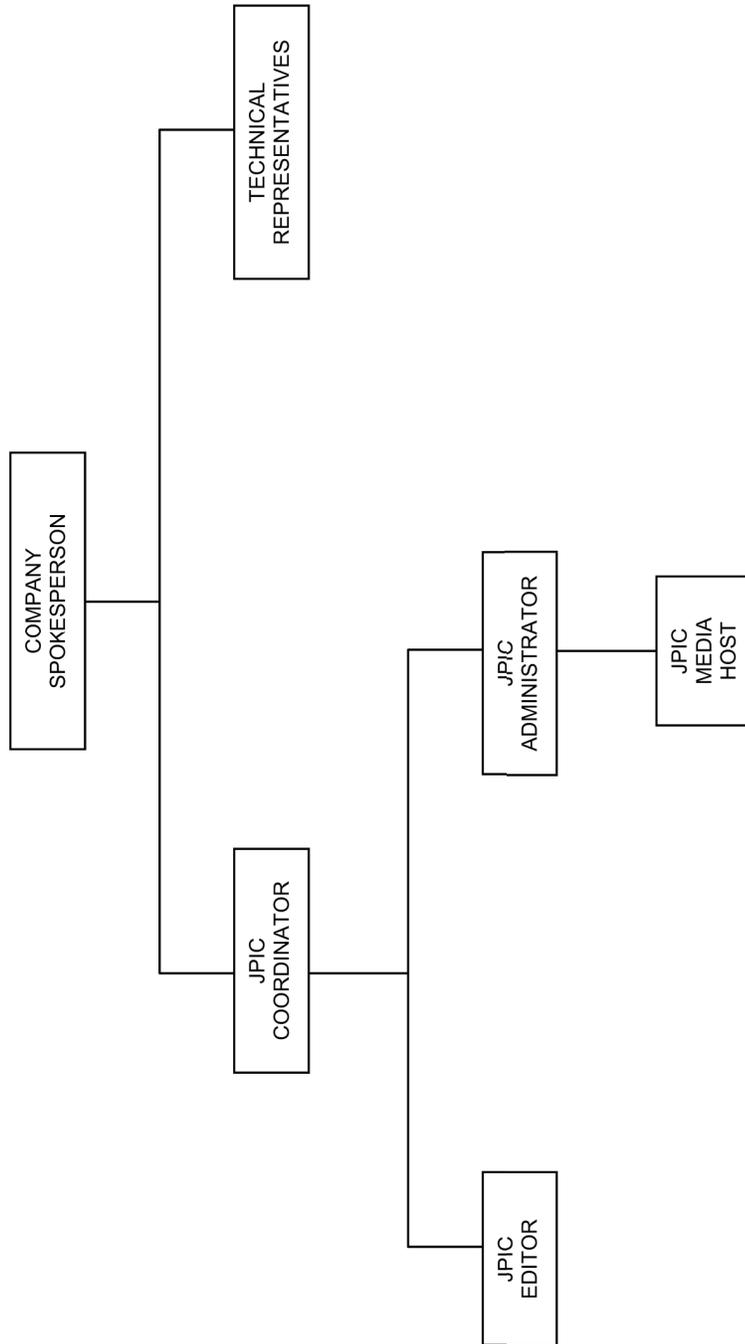
Bold text indicates positions filled by Rapid Response Personnel.

Figure B-1c—Emergency Offsite Organization



Bold text indicates positions filled by Rapid Response Personnel.

Figure B-1d—Emergency Public Information Organization JPIC



SECTION C: EMERGENCY RESPONSE SUPPORT AND RESOURCES

This section describes the provisions for requesting and effectively utilizing support resources and for accommodating offsite officials at the Licensee emergency response facilities.

1. FEDERAL RESPONSE SUPPORT AND RESOURCES

Assistance is available from federal agencies through the National Response Plan (NRP). The lead federal agency who provides direct assistance to Licensee during an emergency is the Nuclear Regulatory Commission (NRC). Other federal agencies, such as the Federal Emergency Management Agency (FEMA) and the Department of Energy (DOE), provide assistance to the state through implementation of the NRP.

- a. Sections A and B of this plan identify the specific individuals by title who are authorized to request federal assistance.
- b. Federal agencies that may provide assistance in direct support of the Licensee in the event of an accident are identified in Section A of this plan. If needed, federal resources are made available to the Licensee in an expeditious and timely manner.
- c. Each emergency response facility has the equipment and communications capability necessary for a continuous high level of response, interaction, and communication among key personnel during emergency conditions. The emergency facilities are able to accommodate federal representatives with working areas provided for their use. Accommodations for the expected site response teams assume the following approximate numbers for each facility:

Facility	Accommodations
EOF	16
TSC	5
CR	1
JPIC	10

2. LIAISONS

- a. The NRC, FEMA, and the state may dispatch representatives to the EOF where accommodations have been provided.
- b. At the Alert level and above, Licensee personnel may be assigned as liaisons to the requesting state and/or local Emergency Operations Center (EOC). These representatives act as technical liaisons to interpret emergency action levels and protective action recommendations made by the Plant's ERO.

3. RADIOLOGICAL LABORATORIES

An onsite laboratory provides support of the radiation monitoring and analysis effort. The onsite laboratory is the central point for receipt and analysis of all onsite samples and includes equipment for chemical analyses and for the analysis of radioactivity. Offsite environmental samples are collected and may be analyzed at the EOF laboratory.

Additional facilities for counting and analyzing samples can be provided by contracted laboratory services or arrangements with other nuclear facilities. These laboratories can act as backup facilities in the event that the plant's counting room and laboratory become unusable or the offsite radiological monitoring and environmental sampling operation exceeds the

capacity of the station capabilities during an emergency. Additional outside analytical assistance may be requested from state and federal agencies.

The laboratories have the capability of analyzing terrestrial, aquatic, and air samples. Their common instrumentation includes a multi-channel analyzer used to determine the isotopic content in a sample, a liquid scintillation counter for tritium analyses, and gas proportional counter for gross alpha, and gross beta activity.

4. OTHER ASSISTANCE

Through INPO, other companies' operating nuclear facilities are available to provide certain types of assistance and support, including technicians, engineering, design, consultation, whole body counting, and dosimetry evaluation and equipment. Additional facilities, organizations, and individuals, as listed in the Emergency Telephone Directory, are available and may be used in support of emergency response. In addition, American Nuclear Insurers (ANI) provides insurance to cover the Licensee legal liability up to the limits imposed by the Price-Anderson Act, for bodily injury and/or property damage caused by the nuclear energy hazard resulting from an incident at the plant.

SECTION D: EMERGENCY CLASSIFICATION SYSTEM

This section describes the classification and emergency action level scheme used to determine the minimum response to an abnormal event at the site. This scheme is based on plant systems, effluent parameters, and operating procedures. The initial response of federal, state, and county agencies is dependent upon information provided by the ERO. The plant's Emergency Preparedness Staff works closely with the state and local agencies to ensure consistency in classification schemes and procedural interfaces.

1. EMERGENCY CLASSIFICATION SYSTEM

The E-Plan provides for classification of emergencies into four (4) categories or conditions, covering the postulated spectrum of emergency situations. They are: Notification of Unusual Event (referred to as Unusual Event), Alert, Site Area Emergency, and General Emergency. Each classification is characterized by Emergency Action Levels (EALs) or event initiating conditions and address emergencies of increasing severity.

a. Unusual Event

Event(s) are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate that a security threat to facility protection has been initiated. No release of radioactive material requiring offsite response or monitoring is expected unless further degradation of safety systems occurs.

This is the least severe of the four (4) levels. The purpose of this classification is to bring response personnel and offsite agencies to a state of readiness in the event the situation degrades and to provide systematic handling of information and decision-making. The Shift Manager, as Emergency Coordinator, will classify an Unusual Event.

Required actions at this classification include:

- ◆ Notifications to site management.
- ◆ Notification, within 15 minutes, of the state and local communities.
- ◆ At the discretion of the Recovery Manager or station management, full or selective staffing of the TSC and EOF may be initiated.
- ◆ Notification of the Nuclear Regulatory Commission (NRC) as soon as possible but within 60 minutes of classification.
- ◆ Assessment of the situation and response as necessary, which may include escalating to a higher classification if conditions warrant.
- ◆ When the event is terminated, closeout is performed over communication links to offsite authorities participating in the response (i.e., NRC, state, local), followed by formal transmission of a State/Local notification form within 24 hours.

b. Alert

- Event(s) are in progress or have occurred which indicate 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 EPA Protective Action Guideline exposure levels.

The purpose of this classification is to ensure that emergency response personnel are readily available and to provide offsite authorities with current status information. An Alert will be classified as the initiating event or as escalation from an Unusual Event. In either case, the classification will most likely be made by the Shift Manager as Emergency Coordinator prior to the transfer of Command and Control.

Required actions at this classification include:

- ◆ Notifications to station management.
 - ◆ Notification, within 15 minutes, of the state and local communities. The EOF will assume state update responsibilities.
 - ◆ Activation of the TSC and the EOF. The JPIC organization may be activated at the Alert level.
 - ◆ Transfer of Command and Control.
 - ◆ Notification of the NRC as soon as possible but within 60 minutes of classification.
 - ◆ Notification of INPO and ANI.
 - ◆ Assessment of the situation and response as necessary, which may include escalating to a higher classification if conditions warrant.
 - ◆ On-site and off-site Monitoring Teams are sent to staging areas or dispatched to monitor for releases of radiation to the environment.
 - ◆ Keeping offsite authorities informed of plant status by providing periodic updates to include meteorological and radiological data.
 - ◆ When the event is terminated, notification is performed over communication links followed by an Initial Incident Report to offsite authorities participating in the response (i.e., NRC, state, local) within 8 hours.
- c. Site Area Emergency - Event(s) are in progress which involves actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts: (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 exceed EPA Protective Action Guideline (PAG) exposure levels except near the site boundary.

The purpose of this classification, in addition to those of the Alert level, is to ensure that all emergency response centers are manned and provisions are made for information updates to the public through offsite authorities and the news media. The classification will most likely be made by the Emergency Coordinator following activation of the TSC.

Required actions at this classification, in addition to those listed under the Alert level, include:

- ◆ Activation of the JPIC.
- ◆ If not previously performed, Assembly/Accountability shall be performed and Site Evacuation of non-essential personnel shall be initiated.
- ◆ Keeping offsite authorities informed of plant status by providing periodic updates to include meteorological data and projected or actual doses for any releases that have occurred.

- d. General Emergency - Event(s) 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 offsite for more than the immediate site area.

The purpose of this classification, in addition to those of the Site Area Emergency level, is to initiate predetermined protective actions for the public and provide continuous assessment of information from monitoring groups. The classification will most likely be made by the Emergency Coordinator following activation of the TSC.

Required actions at this classification, in addition to those listed under the Alert and Site Area Emergency, include:

- ◆ The plant will recommend evacuation for the public within a two-mile radius and five miles downwind, as a minimum. Sheltering should only be considered for the following situations:
 1. Travel conditions that would present an extreme hazard, or
 2. For controlled releases from containment if there is assurance that the release is short term and the area near the plant cannot be evacuated before plume arrival.
- ◆ Assessment of the situation and response as necessary.

- e. Classification Downgrading:

The Licensee policy is that emergency classifications shall not be downgraded to a lower classification. Once declared, the event shall remain in effect until no Classification is warranted, a higher classification is required or until such time as conditions warrant entry into Event Closeout or the Recovery Phase.

- f. Guidance for Termination of an Emergency:

The purpose of terminating an emergency is to provide an orderly turnover of plant control from the Emergency Response Organizations to the normal Callaway Plant Unit 2 plant organization. Termination of the emergency is authorized by the Recovery Manager in Command and Control. The considerations discussed in Section M.1.b must be performed prior to exiting the emergency event. Consultation with governmental

agencies and other parties should be conducted prior to termination of an event classified as Site Area or General Emergency. Notifications shall be transmitted to appropriate agencies to terminate an event. When an event classified at an ALERT or higher is terminated a Recovery Phase will be entered.

Recovery Phase: That period when the emergency phase is over and activities are being taken to return the situation to a normal state (acceptable condition). The plant is under control and no potential for further degradation to the plant or the environment is believed to exist.

Entry into the Recovery Phase will be authorized by the Recovery Manager after consultation with the Emergency Coordinator and offsite authorities.

Required actions at this classification include:

- ◆ The state and the NRC should be consulted prior to entry into Recovery.
- ◆ Notifications will be made to station management, state, local authorities and NRC.
- ◆ A Recovery organization will be established to manage repairs to return the Unit to an acceptable condition, and support environmental monitoring activities as requested in coordination with Federal and state efforts.
- ◆ INPO and ANI are notified of Recovery phase.

g. Nuclear Security Plan:

AmerenUE has a Security Plan that complies with the requirements of 10 CFR 73. The interface between the E-Plan and the Security Plan is one of parallel operation. The plans are compatible. The E-Plan response measures, once initiated, are executed in parallel with measures taken in accordance with the Security Plan. During a classified event the individual in overall command and control has responsibility for both operations.

Threats made to the Licensee facilities are evaluated in accordance with established threat assessment procedures and the respective Security Plans. The Security Plan identifies situations that could be initiating conditions for EAL classifications. Contingency events include bomb threats, attack threats, civil disturbances, protected area intrusions, loss of guard/post contact, vital area intrusions, bomb devices discovered, loss of guard force, hostages, extortion, fire/explosions, internal disturbances, security communications failure, and obvious attempts of tampering. The Security Plan provides guidance for decisions and actions to be taken for each security contingency event. As guidance, the Security Plan allows for differing responses depending upon the assessment of the actual situation within each contingency event classification.

The assessment of any security contingency event and the decision to initiate, or not to implement the E-Plan, will be the responsibility of the Shift Manager or Emergency Coordinator. All identified security contingency events have the potential of being assessed as initiating conditions for a radiological emergency declaration.

Determination of a credible security threat may require the staffing of emergency response facilities based on the classification of an Unusual Event per the Emergency Action Levels (EALs).

2. EMERGENCY ACTION LEVELS

The Callaway Plant Unit 2 Annex includes Unit Specific Emergency Action Levels (EALs) consistent with the general class descriptions and provided in NEI guidance documentation in accordance with Regulatory Guide 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors." Where possible, these EALs will be related to plant instrumentation readings.

Emergency classifications are characterized by Emergency Action Levels (EALs). The Threshold Values are referenced whenever an Initiating Condition is reached. An Initiating Condition is one of a predetermined subset of unit conditions where either the potential exists for a radiological emergency, or such an emergency has occurred. Defined in this manner, an Initiating Condition is an emergency condition, which sets it apart from the broad class of conditions that may or may not have the potential to escalate into a radiological emergency. Initiating Conditions are arranged in one of the Recognition Categories.

EALs are for unplanned events. A planned evolution involves preplanning to address the limitations imposed by the condition, the performance of required surveillance testing, and the implementation of specific controls prior to knowingly entering the condition. Planned evolutions to test, manipulate, repair, perform maintenance or modifications to systems and equipment that result in an EAL Threshold Value being met or exceeded are not subject to classification and activation requirements as long as the evolution proceeds as planned. However, these conditions may be subject to the reporting requirements of 10 CFR 50.72 and/or 10 CFR 50.73.

An emergency is classified after assessing abnormal plant conditions and comparing them to EAL Threshold Values for the appropriate Initiating Conditions. Classifications are based on the evaluation of each unit for multi-reactor sites. Matrix tables organized by recognition categories are used to facilitate the comparison. The matrix tables are used when the unit is in the Technical Specification defined modes of Power Operations (for classification purposes, startup evolutions are included in the Power Operations mode), Hot Standby, Hot Shutdown and Cold Shutdown or Refueling (for classification purposes a defueled plant will be considered in the Refueling mode).

All recognition categories should be reviewed for applicability prior to classification. The initiating conditions are coded with a letter and/or number designator. All initiating conditions, which describe the severity of a common condition (series), have the same initial designator.

3. OFFSITE CLASSIFICATION SYSTEMS

The Licensee works with the state to ensure consistency between classification schemes. The initial EALs will be discussed with and agreed upon by the state and county authorities and approved by the NRC. Thereafter, the content of the EALs shall be reviewed with the state and local authorities on an annual basis and significant changes approved by the NRC. Concurrence is obtained from state and local authorities for EAL changes that significantly impact the Initiating Conditions or technical bases.

4. OFFSITE EMERGENCY PROCEDURES

The Licensee works with the state and local authorities to ensure that procedures are in place that provide for emergency actions to be taken which are consistent with the protective

actions recommended by the site, accounting for local offsite conditions that exist at the time of the emergency.

SECTION E: NOTIFICATION METHODS AND PROCEDURES

This section describes the notification of state and local response organizations and Callaway Plant Unit 2 emergency response personnel. It outlines the content of initial and follow-up messages to response organizations within the Plume Exposure Pathway Emergency Planning Zone (EPZ).

1. BASES FOR EMERGENCY RESPONSE ORGANIZATION NOTIFICATION

The Licensee, in cooperation with state and local authorities, has established mutually agreeable methods and procedures for notification of offsite response organizations consistent with the emergency classification and action level scheme. Notifications to offsite agencies include a means of verification or authentication such as the use of dedicated communications networks, verification code words, or providing call back verification phone numbers.

Notification/Classification for Multi-Unit Emergencies: When the classification involves both units of Callaway Plant (i.e., tornado or earthquake), the classification shall be reported as affecting all units.

In situations when both units of Callaway Plant are affected by emergency events, but the events are not related or the classification for each unit is different, notification will be made for the highest classification. Clarification of the relationship between the classification levels determined for the units should be provided in the periodic state and NRC updates.

In situations when one unit is affected by unrelated events, notification will be made for the highest classification via the state/local notification and the second event information provided in the periodic state updates.

Notification for Transportation Accidents: A Transportation Accident is defined in 49 CFR 171.15 and 49 CFR 171.16. If a Transportation Accident involving material in the custody of Callaway Plant Unit 2 occurs, the Licensee will notify the appropriate internal and offsite agencies in accordance with Licensee procedures.

2. NOTIFICATION AND MOBILIZATION OF EMERGENCY RESPONSE PERSONNEL

Emergency implementing procedures are established for notification and mobilization of emergency response personnel as follows:

a. Onsite:

When an emergency is declared, reclassified, or terminated an announcement is made over the plant public address system or by other means that includes the emergency classification declared and response actions to be taken by site personnel.

At the Unusual Event classification, select ERO augmentation personnel are notified and requested to remain available to respond. At an Alert classification or higher ERO augmentation personnel are notified for activation of the TSC, EOF, and, if determined appropriate, the JPIC using the Callaway Plant Emergency Callout System or via established back-up methods. The JPIC is activated at the Site Area Emergency.

b. Offsite:

Notifications are promptly made to offsite emergency response organizations as follows:

1. State/Local Agencies: A notification shall be made within fifteen (15) minutes of:
 - ◆ The initial emergency classification.
 - ◆ Classification escalation.
 - ◆ The issuance of or change to a Protective Action Recommendation (PAR) for the general public.
 - ◆ Changes in radiological release status, occurring outside of an event classification or PAR notification, based on an agreement with the State.

The State Emergency Management Agency and the local Emergency Communication Centers (ECCs) are notified using the SENTRY Notification System. If a backup notification is needed the Backup Radio System (BURS) or telephone is used to notify the ECCs.

During off-normal hours, notification to the state will be made using the State Notification Point Telephone.

The State Department of Natural Resources receives direct notification from Callaway Plant whenever an emergency is declared that involves a release of radioactive liquid.

Periodic updates are made to the state and local authorities upon activation of the State and local Emergency Operations Centers. These follow-up notifications should be made whenever significant changes in Plant status occur, or approximately every half-hour when conditions are relatively stable. When conditions are relatively stable and the plant remains at an Unusual Event status, the follow-up notification frequency may be reduced with the consensus of SEMA and the EPZ counties. Updates and notifications should be shared with state and local authorities present in the EOF.

A notification will also be initiated to cognizant State/Local government agencies as soon as possible but within one hour of the termination of an event classification, or entry into Recovery Phase.

2. Nuclear Regulatory Commission (NRC):

An event will be reported to the NRC Operations Center immediately after notification of the appropriate state or local agencies but not later than one (1) hour after the time of initial classification, escalation, termination or entry into the Recovery Phase. The NRC is notified by a dedicated telephone system called the Emergency Notification System (ENS). If the ENS is inoperative, the required notifications are made via commercial telephone service, other dedicated telephone service, or any other method that shall ensure that a report is made as soon as practical.

Specific requirements for the notifications to the NRC for classified emergency events are detailed in 10 CFR 50.72 with guidance provided in the site's notification procedures.

The computerized data link to the NRC, referred to as the Emergency Response Data System (ERDS), will be initiated within one hour of the declaration of an Alert classification or higher.

Mobilization of federal, state, and local response organizations is performed in accordance with their applicable emergency plan and procedures. At a minimum, mobilization of federal response organizations and activation of state and county EOCs is expected to occur at the declaration of a Site Area Emergency.

The state and local authorities are responsible for the process of notification of the general public.

c. Support Organizations:

When an emergency is initially classified, escalated or terminated, notifications are promptly made to the following support organizations:

- ◆ Medical, rescue, and fire fighting support services are notified for assistance as the situation dictates.
- ◆ The Institute of Nuclear Power Operations (INPO) is notified at an Alert or higher classification with requests for assistance as necessary.
- ◆ The American Nuclear Insurers (ANI) notified at an Alert or higher classification with requests for assistance as necessary.
- ◆ Vendor and contractor support services are notified for assistance as the situation dictates.

3. INITIAL NOTIFICATION MESSAGES

The Licensee, in conjunction with state and local authorities, has established the contents of the initial notification message form transmitted during a classified emergency. The contents of the form include, as a minimum:

- ◆ Designation ("This is a Drill" or "Actual Event").
- ◆ Identity of site.
- ◆ Event classification.
- ◆ EAL number.
- ◆ Non-technical event description (as agreed upon with State authorities).
- ◆ Date and time of declaration (or entry into Recovery Phase or Termination).
- ◆ Whether a release is taking place (Note: "Release" means a radiological release attributable to the emergency event.)
- ◆ Wind direction and speed.
- ◆ Whether offsite protective measures may be necessary.

- ◆ Potentially affected Sectors when a General Emergency is declared.

Notification approval, transmittal date and time, and offsite agencies contacted are recorded either on the notification form or in an event logbook.

4. FOLLOW-UP MESSAGES

For all emergency classifications, update messages to state authorities will be provided at the time of the notification on a prearranged frequency. The facility in Command and Control is responsible for ensuring that the updates are completed. State updates contain the prearranged information plus any additional information requested at the time of the notification.

Follow-up notifications are provided to the NRC Operations Center as soon as possible, but not later than one (1) hour after significant new information is available involving:

- a. location of incident and name and telephone number (or communications channel identification) of caller;
- b. date/time of incident;
- c. class of emergency;
- d. type of actual or projected release (airborne, waterborne, surface spill), and estimated duration/impact times;
- e. estimate of quantity of radioactive material released or being released and the points and height of releases;
- f. chemical and physical form of released material, including estimates of the relative quantities and concentration of noble gases, iodines and particulates;
- g. meteorological conditions at appropriate levels (wind speed, direction (to and from), indicator of stability, precipitation, if any);
- h. actual or projected dose rates at site boundary; projected integrated dose at site boundary;
- i. projected dose rates and integrated dose at the projected peak and at 2, 5 and 10 miles (3.2, 8, and 16 kilometers), including sector(s) affected;
- j. estimate of any surface radioactive contamination in plant, onsite or offsite;
- k. licensee emergency response actions underway;
- l. recommended emergency actions, including protective measures;
- m. request for any needed onsite support by offsite organizations; and
- n. prognosis for worsening or termination of event based on plant information.

If requested by the NRC, an open, continuous communications channel will be maintained with the NRC Operations Center over the Emergency Notification System (ENS) and/or Health Physics Network (HPN) Circuits.

5. STATE AND COUNTY INFORMATION DISSEMINATION

The state and local emergency response plans describe procedures for state and local officials to make a public notification decision promptly (within about 15 minutes) on being informed by the plant of an emergency. The system for disseminating information to the public includes notification by pre-scripted messages through appropriate broadcast media such as the Emergency Alert System (EAS).

6. NOTIFICATION OF THE PUBLIC

The capability exists for the prompt notification of the general public within the Plume Exposure Pathway Emergency Planning Zone (EPZ) for Callaway Plant Unit 2 under this plan.

This notification capability consists of two principal elements: (1) the Public Alert System (PAS) and (2) the Emergency Alerting System (EAS) radio station.

- ◆ The Public Alert System (PAS) consists of fixed sirens and tone alert receivers. Activation of the PAS sirens by the civil authorities will alert the public to turn on their radios to the local EAS radio station for detailed information on the emergency situation.
- ◆ The Emergency Alerting System (EAS) is a network of local radio stations prepared to transmit or relay emergency information and instructions from the civil authorities to the general public

The PAS is operated by local governmental agencies and maintained by the Licensee. The County Commissioners for each county and the Mayor of Fulton have the authority to activate the Public Alert System in their jurisdictions. To assure the PAS is maintained in an operational readiness posture, the local agencies have agreed to test the system (by sounding the sirens) on a periodic basis that meets or exceeds FEMA guidance and to report inoperable equipment to AmerenUE. The goal of the testing and maintenance program is to identify inoperable equipment in a timely manner and to restore equipment to a functional status commensurate with operability requirements as referenced in FEMA-REP-10, "Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants" Section E.6.2.1. In addition to this routine test and repair program, preventive maintenance of the PAS will be performed on an annual basis.

The activation of the PAS sirens and operation of the system is discussed in detail in the Missouri Nuclear Accident Plan-Callaway and the respective local Emergency Plans.

7. MESSAGES TO THE PUBLIC

Missouri and local government have developed EAS messages for the public consistent with the classification scheme. These draft messages are included as part of the Missouri Nuclear Accident Plan-Callaway and the local Emergency Response Plans and contain instructions with regard to specific protective actions to be taken by occupants and visitors of affected areas. Messages may include instructions such as: take shelter and go indoors, close windows and doors, turn off ventilation systems; directions given for evacuation; directions to stay tuned to specific stations for further information, ad-hoc respiratory protection, (e.g., handkerchief over mouth, etc.). The Licensee will provide support for the content of these messages when requested.

SECTION F: EMERGENCY COMMUNICATIONS

This section describes the provisions utilized for prompt communications among principal emergency response organizations, communications with the ERO and communications with the general public.

1. COMMUNICATIONS/NOTIFICATIONS

The Licensee has extensive and reliable communication systems installed at Callaway Plant Unit 2. Examples of the communications network include systems such as normal and bridge telephone lines on landlines, microwave and fiber-optic voice channels, cell phones, satellite phones, mobile radio units, handi-talkies and computer peripherals. This network provides:

- ◆ Voice communication through normal telephone, bridge line conference call capability, speakerphones, and operator assistance where required.
- ◆ Communications between emergency vehicles and appropriate fixed locations, as well as with state mobile units and fixed locations.
- ◆ Facsimile, computer network, and modem transmission.

Figure F-1 depicts the initial notification paths and the organizational titles from the Licensee Emergency Response Facilities (ERFs) to federal, state and local emergency response organizations, and industry support agencies. The primary and alternate methods of communication, and the NRC communications network, are illustrated on Figure F-2.

- a. The Licensee maintains the capability to make initial notifications to the designated offsite agencies on a 24-hour per day basis. The offsite notification system provides communications to state and county warning points and Emergency Operations Centers from the CR, TSC, and EOF. Backup methods include facsimile and commercial telephone lines. State and county warning points are continuously staffed.
- b-d. The Licensee has established several communication systems that ensure reliable and timely exchange of information necessary to provide effective Command and Control over any emergency response; (1) between the plant and state and local agencies within the EPZ, (2) with federal emergency response organizations, (3) between the plant, the EOF, and the state and local EOCs, and (4) between Emergency Response Facilities and Monitoring Teams. A general description of the systems is as follows:
 1. SENTRY System: The SENTRY System is a dedicated communications system that has been installed for the purpose of notifying state and local authorities of declared nuclear emergencies. This system links together the station Control Room, the EOF, TSC and State and local authorities as appropriate. It allows a notification form to be completed on screen and transmitted to the local agencies and the State Emergency Operations Center. Backup is the Back-UP Radio System (BURS).
 2. Back-Up Radio System (BURS): BURS is a communication link between Callaway Plant and off-site emergency response agencies. The primary use of this system is the backup notification of off-site agencies and the coordination of off-site activities during a radiological emergency.

The system uses 800 MHz radios. There are radio control base units in the Plant Control Room, TSC and EOF, as well as each local EOC and the state EOC.

The back up to this system is the commercial touchtone telephone system. Notifications may also be initiated through the Callaway County/City of Fulton EOC via the security radio.

3. **Public Address System:** The PA system is used for communications between the emergency teams, Control Room, TSC and EOF. A multi-tone generator capable of producing a number of alarms is incorporated within the PA system. These alarms can be heard throughout the plant area. In high noise areas a blue flashing light is activated with the alarm. The alarms are activated from the Control Room as directed by the Shift Manager. The alarms are as follows:

- ◆ Plant Fire Alarm – A “siren” used only in the event of fire emergencies;
- ◆ Plant Emergency Alarm – A “yelp” sound used to alert site personnel of unusual or abnormal conditions;
- ◆ Containment Evacuation Alarm – A “pulse” used to alert site personnel that conditions in containment necessitate immediate evacuation of containment.

These alarms are followed by a clarifying announcement.

4. **Touchtone Telephone System:** The touchtone telephone system consists of telephone stations located throughout the plant site (including the EOF and Intake Structure. Information concerning the telephone system design and operation is contained in Chapter 9 of the FSAR.

This system is the primary means of communications between members of the Emergency Response Organization and with outside organizations that may provide emergency response resources.

5. **Cellular Phone:** Mobile communications with the EDO is provided by a cellular telephone. The cellular telephone is accessed through the touchtone telephone system.

During an emergency, the cellular telephone system may be utilized to contact and maintain communications with the EDO and Corporate personnel, and used as a backup for Field Monitoring Teams.

6. **Cellular Paging/Cell Phone System:** The Emergency Response Organization will wear Pagers/Cell Phones in order to ensure adequate and timely response to the Plant during an emergency situation.
7. **Independent Bridge Telephone Lines:** Three independent telephone systems are available for backup communications between the emergency response facilities. Each system operates independently from the other systems and allows for conference calls among the members of that bridge line group. These bridge lines have a normal power supply and in the event of a loss-of-power, they are supplied by the ERF’s backup power supply.
 - a. **Technical Assessment Bridge Line:** The Technical Assessment Line is a bridge telephone line among the Control Room, Technical Support Center and

Emergency Operations Facility. This line is used to relay information concerning the Plant status. This line is normally used by the following:

- ◆ Control Room/TSC Liaison;
 - ◆ Technical Assessment Group;
 - ◆ Protective Measures Group;
 - ◆ Operations Support Coordinator.
- b. Dose Assessment Bridge Line: The Dose Assessment Line is a bridge telephone line among the Control Room, Technical Support Center, Plant Computer Room and Emergency Operations Facility. This line's primary use is to relay information concerning dose assessment activities. This line is normally used by the following:
- ◆ Health Physics Technical Support Technician;
 - ◆ Health Physics Group;
 - ◆ Dose Assessment Group.
- c. Emergency Management Bridge Line: The Emergency Management Line is a bridge line connecting the Emergency Operations Facility to the Technical Support Center and the Control Room. This line's primary use is communication among emergency management personnel. This line is normally used by the following:
- ◆ Recovery Manager;
 - ◆ Emergency Coordinator;
 - ◆ Control Room Shift Manager.
8. Emergency Response Data System (ERDS): The ERDS will supply the NRC with selected plant data points on a near real time basis. ERDS is activated by the ERO as soon as possible but not later than one hour after declaration of an Alert, Site Area Emergency or General Emergency. The selected data points are transmitted via modem to the NRC at approximately 1-minute intervals.
9. Monitoring Team Communications: A plant radio system that is in routine use is available for use during an emergency. The system is used to allow coordinated environmental monitoring and assessment during an emergency. This system consists of the necessary hardware to allow communication among the Control Room, TSC, EOF, and mobile units and the Licensee vehicles. Commercial cell phones or other means are available as back up to the primary monitoring team communications system.

In addition, site communication links exist to ensure appropriate information transfer capabilities during an emergency. The site may also utilize its Public Address System,

Video Conferencing Systems, station radios and pagers to augment its emergency communications.

- e. Callaway Plant Automatic Callout System: The Callaway Plant Automatic Callout System is an alpha/numeric paging system used to notify the Emergency Response Organization.
- f. NRC Communications (ENS and HPN)

Communications with the NRC Operations Center will be performed via the NRC ENS and HPN circuits or commercial telephone line. Information is normally communicated from an approved NRC Event Notification Worksheet prior to establishing an open ENS and/or HPN line.

Installation and use of these NRC telephones is under the direction of the NRC (see Figure F-2).

1. Emergency Notification System (ENS): Dedicated telephone equipment is in place between the site's Control Room and the NRC, with an extension of that line in the TSC. A separate line is available in the EOF with the capability of being patched with the site through the NRC. This line is used for NRC event notifications and status updates.
2. Health Physics Network (HPN): There also exists a separate dedicated telephone between the NRC, the TSC, and EOF for conveying health physics information to the NRC as requested or as an open line.

2. MEDICAL COMMUNICATIONS

Communications are established with the primary and backup medical hospitals and transportation services via commercial telephone that is accessed by site personnel.

3. COMMUNICATIONS TESTING

Communications equipment is checked in accordance with Section H.10. Communications drills between the Licensee and state and local government facilities are conducted in accordance with Section N.2.a. In addition, minimum siren testing is performed as follows:

- Equipment Test As needed following preventive or corrective maintenance
- Full Volume Test Monthly

Figure F-1—Notification Scheme (For Full Augmentation)

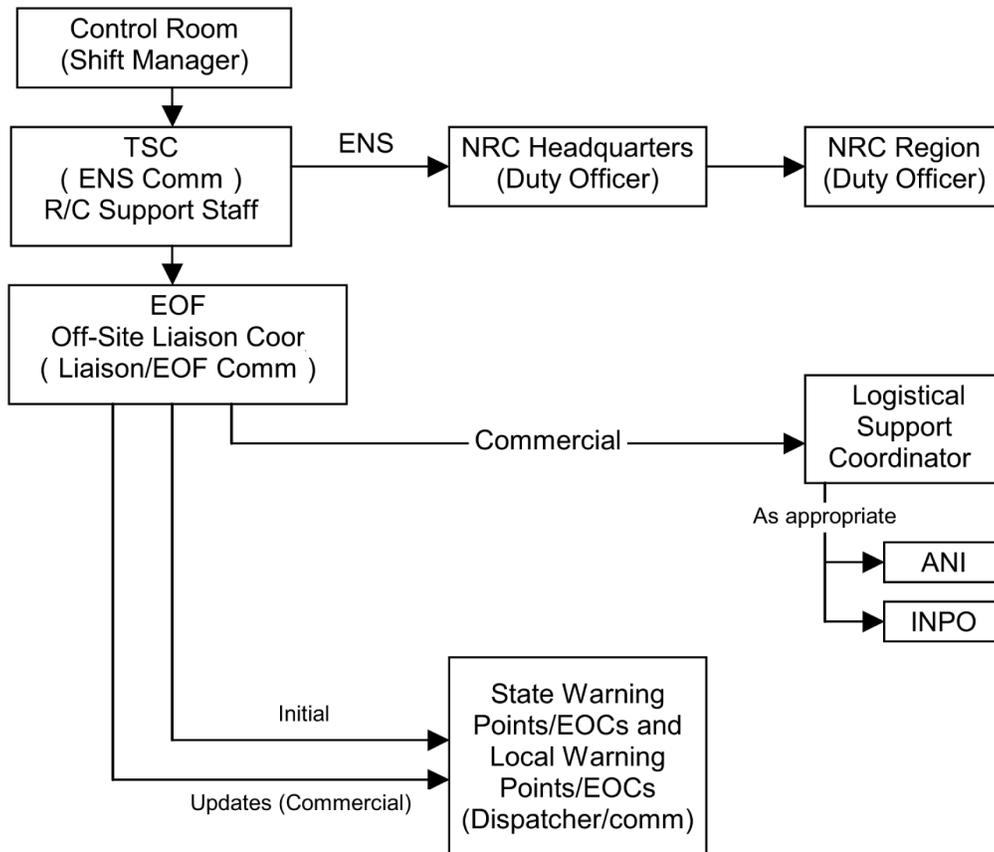
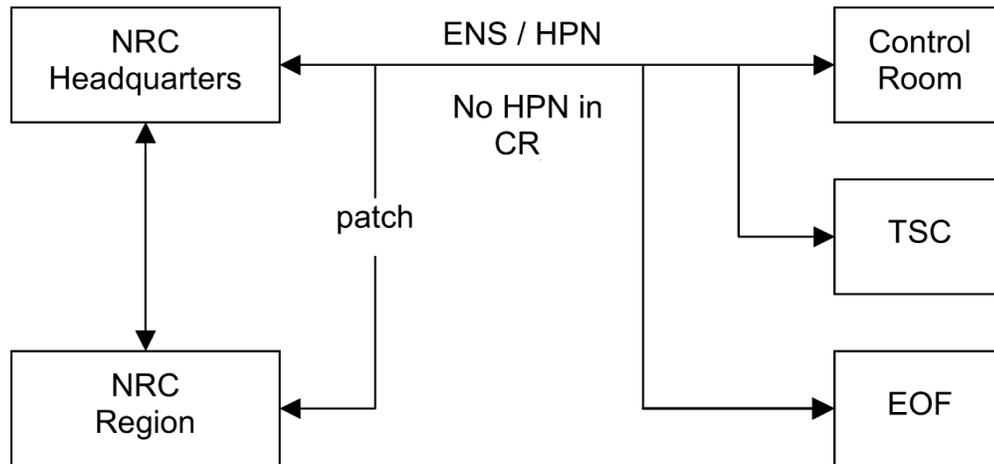


Figure F-2—NRC Communications for Nuclear Respos



NOTE: ENS and HPN circuits may use the Federally maintained system, company tie lines or PBX as dedicated primary communications systems and have commercial backups.

SECTION G: PUBLIC EDUCATION AND INFORMATION

This section describes the Licensee public education and information program. It outlines the methods for distributing public information materials on an annual basis and describes how the public is informed in the event of an emergency.

1. PUBLIC INFORMATION PUBLICATION

The Licensee has developed a Public Information Program to adequately inform those individuals located within the Plume Exposure Pathway EPZ.

A variety of public information materials have been developed and distributed to appropriate locations throughout the EPZ. These materials have been prepared through a joint effort with State and local authorities and are updated as appropriate. These materials may include:

- ◆ Public information materials distributed to each residence within the EPZ and placed in locations frequented by transient populations;
- ◆ Information placed in high visibility publications such as local newspapers;
- ◆ Informational signs posted in areas frequented by transient populations such as the Reform Wildlife Management Area and Missouri River Accesses;
- ◆ Information booklets distributed with Tone Alert Radios.

At least annually, Callaway Plant, in conjunction with state and local authorities, reviews and updates the public information material and distributes it to individuals residing in the Plume Exposure Pathway EPZ.

2. PUBLIC EDUCATION MATERIALS

Public information publications instruct the public to go indoors and turn on their radios when they hear the PAS sirens operating. These publications also identify the local radio station to which the public should tune in for information related to the emergency.

3. MEDIA ACCOMMODATIONS

- a. AmerenUE Corporate Communications is notified when an Unusual Event or higher Emergency condition exists. They will handle public and media inquires in the early stages of the event (until the JPIC is activated) by distributing background information and news releases, and providing information to company management.
 1. The Public Information ERO: The Public Information ERO may be activated at any time at the discretion of station management. However, normally when there is a procedural requirement to activate the EOF, the Public Information ERO may also be activated. It is required to be activated at a Site Area or General Emergency.

The primary purpose of the Public Information ERO is to disseminate information from the Licensee's ERO about the emergency events to the public, via the news media. However, the authority for issuance of news releases for the classification of an Unusual Event or prior to ERO activation will always reside with AmerenUE Corporate Communications. Upon activation, the Public Information ERO has the responsibility and authority for issuance of news releases to the public.

The Public Information ERO is comprised of senior personnel from the Licensee who will function as spokespersons, and other Licensee individuals. The spokespersons disseminate information to the news media/public concerning the emergency events from a Joint Public Information Center (JPIC).

2. The Joint Public Information Center (JPIC): The JPIC is the facility in which media personnel gather to receive information related to the emergency event. The JPIC is the location where approved news releases will be provided to the media for dissemination to the public. News releases are coordinated between the EOF and JPIC personnel and State, Local and/or Federal representatives in the JPIC. Public information personnel operate from the EOF and the JPIC, which is under the direction of the Company Spokesperson and functions as the single point of contact to interface with Federal, State, and local authorities who are responsible for disseminating information to the public.

The site has a designated JPIC. The JPIC is equipped with appropriate seating, lighting and visual aids to allow for public announcements and briefings to be given to the news media. Additionally, the JPIC is equipped with commercial telephone lines for making outgoing calls. The Public Information ERO functions from the JPIC and EOF in preparing and releasing licensee information about the emergency event.

Functions of the JPIC include:

- ◆ Serving as the primary location for accumulating accurate and current information regarding the emergency conditions and writing news releases.
 - ◆ Providing workspace and phones for public information personnel from the state, local, NRC, DHS, and industry-related organizations.
 - ◆ Providing telephones for use by the news media personnel.
 - ◆ Providing responses to media inquiries through personnel monitoring telephones that the media can call for information about an emergency.
- b. The news media is not normally permitted into the EOF during an emergency; however, the EOF can accommodate state and local media staff, if deemed necessary.

4. COORDINATION OF PUBLIC INFORMATION

- a. The JPIC is staffed by Licensee and government public information representatives who will be the source of public information during an emergency at the site. The Company Spokesperson is the primary spokesperson for the Licensee. The Company Spokesperson has direct access to all necessary information (see Section B.5).
- b. The JPIC is staffed by federal, state, local, and licensee personnel to assure timely, periodic exchange and coordination of information. Representatives coordinate information prior to conducting news briefings.
- c. Rumors or misinformation are identified during an emergency by the media/rumor control monitors. They respond to public and news media calls and monitor media reports.

5. MEDIA ORIENTATION

Orientation of the news media is aimed at acquainting them with the emergency plans and definitions, points of news media contact in emergencies, identification of Public Information personnel, basic Callaway Plant information, basic radiation information, and other matters of interest. Orientation is conducted on an annual basis.

SECTION H: EMERGENCY FACILITIES AND EQUIPMENT

Onsite and offsite facilities are available for emergency assessment, communications, first aid and medical care, and damage control. Of particular importance are the Emergency Response Facilities (ERFs); the Control Room (CR), the Technical Support Center (TSC), the Emergency Operations Facility (EOF), and the Joint Public Information Center (JPIC).

This section describes the emergency facilities and equipment used by the Emergency Response Organization and outlines the requirements which aid in timely and accurate response actions. It also describes the surveillance programs used to monitor and ensure that these facilities and equipment are maintained in a high degree of constant readiness.

1. CONTROL ROOM AND TECHNICAL SUPPORT CENTER

The Licensee has established a TSC which is activated upon declaration of an Alert or higher classification. Until it becomes operational, required functions of this facility are performed by Shift Personnel and directed from the Control Room.

a. Control Room:

The Control Room is the centralized onsite location from which the Nuclear Site's reactor and major plant systems are operated. The Control Room is equipped with instrumentation to supply detailed information on the reactor and major plant systems. The Control Room is continuously staffed with qualified licensed operators. The Control Room is the first onsite facility to become involved with the response to emergency events. Control Room personnel must evaluate and effect control over the emergency and initiate activities necessary for coping with the emergency until such time that support centers can be activated. These activities shall include:

- ◆ Reactor and plant control.
- ◆ Initial direction of all plant related operations.
- ◆ Accident recognition, classification, mitigation and initial corrective actions.
- ◆ Alerting of onsite personnel.
- ◆ Activation of emergency response facilities and ERO notification.
- ◆ Notification of offsite agencies.
- ◆ Notification of appropriate individuals and activation of ERDS.
- ◆ Continuous evaluation of the magnitude and potential consequences of an incident.
- ◆ Initial dose projections.
- ◆ Recommendations for immediate protective actions for the public.

As other ERFs become activated, they will supply support to the Control Room. Overall Command and Control of the emergency will transfer to the TSC and the EOF when they are properly staffed and ready to take over these responsibilities. Throughout all

emergencies, the Control Room maintains emergency activation status until normal operational status may be resumed.

b. Technical Support Center (TSC):

The Licensee has established a TSC for use during emergency situations by site management, technical, and engineering support personnel. The TSC is located within the Protected Area adjacent to the Service Building for Callaway Plant Unit 1. It has adequate shielding and ventilation to ensure habitability during Design Basis Accidents. An emergency diesel generator allows facility operation during loss of offsite power. The TSC is activated for all emergencies classified as Alert or higher. Activation for other events is optional. When activated the TSC functions include:

- ◆ Support for the Control Room's emergency response efforts.
- ◆ Performance of the non-delegable functions when in Command and Control.
- ◆ Continued evaluation of event classification.
- ◆ Assessment of the plant status.
- ◆ Coordination of emergency response actions.
- ◆ Notification of appropriate company and site management.
- ◆ Notification and update of the NRC via Emergency Notification System (ENS) including activation of Emergency Response Data System (ERDS).

The TSC is the onsite location utilized to support the Control Room for assessment of plant status and for implementation of emergency actions. The TSC provides technical data and information to the EOF.

Figure B-1b illustrates the staffing and organization of the TSC.

The TSC provides reliable voice communications to the Control Room, the EOF, the NRC, and state and local Emergency Operations Centers. Additional communications capabilities are also available in the TSC (see Section F.1).

The TSC is sized to accommodate a minimum of 25 spaces and supporting equipment. This includes provisions for five NRC representatives.

Personnel in the TSC shall be protected from radiological hazards, including direct radiation and airborne contaminants under accident conditions with similar radiological habitability as Control Room personnel. To ensure adequate radiological protection, permanent radiation monitoring systems have been installed in the TSC and/or periodic radiation surveys are conducted. These systems indicate radiation dose rates and airborne radioactivity inside the TSC while in use. In addition, protective breathing apparatus (full-face air purifying respirators) and KI are available for use as required.

The TSC has access (either electronically or actual hard copies) to a complete set of as-built drawings and other records, including general arrangement diagrams, P&IDs,

and the electrical schematics. The TSC has the capability to record and display vital plant data, in real time, to be used by knowledgeable individuals responsible for engineering and management support of reactor operations, and for implementation of emergency procedures.

The TSC includes a Support Area (SA) where station support personnel report during an emergency and from which they will be dispatched for assignments or duties in support of emergency operations. The SA is activated whenever the TSC is activated. Licensee disciplines reporting to the SA include, but are not limited to:

- ◆ Operating personnel not assigned to the Control Room,
- ◆ Radiation Protection Personnel,
- ◆ Chemistry Personnel,
- ◆ Maintenance Personnel (mechanical, electrical and I&C).SA.

Communication links are the same as that for the TSC (see Section F). A limited inventory of supplies will be kept for the SA. This inventory will include respirators, protective clothing, flashlights and portable survey instruments.

2. EMERGENCY OPERATIONS FACILITY (EOF) AND BACKUP EOF

a. Emergency Operations Facility (EOF)

The EOF is the location where the Recovery Manager will direct the ERO in evaluating and coordinating the overall company activities involved with an emergency. The EOF is located approximately 1 mile west of the Plant and houses the Recovery Center and offices for governmental representatives, the NRC and a room that can accommodate small briefings. The EOF is designed to be habitable under Design Basis Accidents. Activation of the EOF is mandatory upon declaration of an Alert or higher classification. The EOF provides for:

- ◆ Management of overall emergency response.
- ◆ Coordination of radiological and environmental assessments.
- ◆ Determination of recommended public protective actions.
- ◆ Management of recovery operations.
- ◆ Coordination of emergency response activities with Federal, state, and local agencies.

The EOF was designed with the following considerations:

- ◆ The location provides optimum functional and availability characteristics for carrying out overall strategic direction of the Licensee onsite and support operations, determination of public protective actions to be recommended to offsite officials, and coordination with Federal, state and local organizations.
- ◆ It is of sufficient size to accommodate about 50 people.

- ◆ It is equipped with reliable voice communications capabilities to the TSC, the Control Room, NRC, and state and local emergency operations centers. In addition, the EOF has facsimile and computer transmission capabilities.
- ◆ Equipment is provided to gather, store, and display data needed in the EOF to analyze and exchange information on plant conditions with the Site. The EOF technical data system receives, stores, processes, and displays information sufficient to perform assessments of the actual and potential onsite and offsite environmental consequences of an emergency condition.
- ◆ The EOF has ready access (either through hard copies or electronic media) to plant records, procedures, and emergency plans needed for effective overall management of the Licensee emergency response resources.

b. Backup EOF

This facility is set up when needed in the State's Emergency Operations Center at the Ike Skelton Training Site southeast of Jefferson City, Missouri. In the event the EOF becomes uninhabitable, EOF resources are distributed between the TSC and the Backup EOF.

3. EMERGENCY OPERATIONS CENTERS

EOCs operated by the state and local communities have been established to perform direction and control of emergency response functions.

The state EOC is capable of continuous (24-hour) operations for a protracted period. This center contains sufficient communications (radio, telephone and Fax machines) equipment, maps, emergency plans, and status boards to provide the necessary interfaces with other federal, local, and site emergency facilities.

The local government EOCs serve as Command and Control headquarters for local emergency response activities as well as a center for the coordination of communications to field units and to the state EOCs. These EOCs have the equipment necessary (such as facsimile machines, telecommunications equipment, radio gear, photocopiers, wall maps, etc.) to carry out their emergency responsibilities.

4. ACTIVATION

The Licensee has put into place plans and procedures to ensure timely activation of its emergency response facilities. The Shift Manager (as Emergency Coordinator) will initiate a call-out in accordance with the implementing procedures. The ERO augmentation process identifies individuals who are capable of fulfilling the specific response functions that are listed in Table B-1a (located in the Callaway Plant Unit 2 Annex) and Table B-1b. These tables were developed based on the functions listed in NUREG-0654, Table B-1.

Although the response time will vary due to factors such as weather and traffic conditions, a goal of 100 minutes for minimum staff, following the declaration of an Alert or higher emergency classification, has been established for the ERO personnel responding to the site emergency facilities and the EOF. Additionally, plans have been developed to ensure timely functional activation and staffing of the JPIC (2 hours) when the classification of Site Area Emergency is declared or at the direction of the Recovery Manager.

The Recovery Manager, Emergency Coordinator or Company Spokesperson may elect to activate the EOF, TSC or JPIC, respectively, without meeting minimum staffing; if it has been determined that sufficient personnel are available to fully respond to the specific event (this would not constitute a successful minimum staff response).

5. MONITORING EQUIPMENT ONSITE

The site is equipped with instrumentation for seismic monitoring, radiation monitoring, fire protection and meteorological monitoring. Instrumentation for the detection or analysis of emergency conditions is maintained in accordance with plant Technical Specifications, if applicable, or commitments made to the NRC. Additional details, if required, of the equipment will appear in the Callaway Plant Unit 2 Annex. This equipment includes but is not limited to the following:

a. Geophysical Monitors

1. Meteorological Instrumentation: A permanent meteorological monitoring station is located near the station for display and recording redundant wind speed, wind direction, and aspirated temperature sensors located at 196 ft (60 m) and 33 ft (10 m) above ground level for use in making offsite dose projections. Meteorological information is presented in the CR, TSC, and EOF. This information is interrogated remotely using a computer or other data access terminal.

The National Weather Service (NWS) in St. Louis, MO, or Surface Systems Inc. may be contacted during severe weather periods.

2. Seismic Monitoring: The seismic monitoring system measures and records the acceleration (earthquake ground motion) of selected structures. Earthquakes produce frequency dependent accelerations which, when detected by the remote sensing devices, are permanently recorded as information which defines the seismic input. The system remains in a standby condition until an earthquake above a preset target acceleration causes the remote unit(s) to activate the recording circuits and signals the Main Control Room that a seismic event is being recorded.
3. Hydrological Monitors: The design basis flood, maximum precipitation, and other improbable, conceivable extremes in hydrologic natural phenomena can be used to show hydrological conditions are below or above any design limits for the unit as detailed in the FSAR.

b. Radiological Monitors and Sampling

1. The Radiation Monitoring system: In-plant radiological measurements provide information that may help determine the nature, extent and source of emergency conditions. The radiological monitoring system is available to give early warning of a possible emergency and provides for a continuing evaluation of the situation in the Control Room. Radiation monitoring instruments are located at selected areas within the facility to detect, measure, and record radiation levels. In the event the radiation level should increase above a preset level, an alarm is initiated in the Control Room. Certain radiation monitoring instruments also alarm locally in selected areas of the facility. The radiation monitoring system is divided into 3 subsystems:

- a. Area Radiation Monitors (ARMs) are used for the direct measurement of in-plant exposure rates. The ARM readings allow in-plant exposure rate determinations to be made remotely without requiring local hand-held meter surveys. This information may be used, initially, to aid in the determination of plant area accessibility. In addition to permanent monitors, portable Continuous Air Monitors (CAMs) measure airborne particulate and airborne iodine activities at various locations within the operating areas.
- b. Process Radiation Monitors (PRMs) are used for the measurement of radioactive noble gas, iodine, and particulate concentrations in plant effluent and other gaseous and fluid streams.
- c. The accident, or high range, radiation monitoring system monitors radiation levels at various locations within the operating area. These are high range instruments used to track radiation levels under accident or post accident conditions. These instruments include the containment high range radiation monitors.

The radiological monitoring system provides the necessary activity or radiation levels required for determining source terms in dose projection procedures. Key radiological monitoring system data are linked to the plant computer, which allows information to be passed to the TSC and EOF. The isotopic mix, including isotopes such as those in Table 3 of NUREG-0654, is based upon a default accident mix. Refer to the plant FSAR for further detail on the radiological monitoring system capabilities and design.

2. Liquid and Gaseous Sampling Systems: The process sampling system consists of the normal sampling system and additional sampling panels located throughout the plant. Sampling systems are installed or can be modified to permit reactor coolant and containment atmosphere sampling even under severe accident conditions.

The sampling systems use a number of manual sampling techniques to enable reactor coolant and containment sampling operations over a wide range of plant conditions to allow operator actions to be taken to mitigate and control the course of an accident. Refer to the FSAR for further detail on sampling capabilities.

3. Portable Radiation Monitoring Equipment: Portable radiation survey instruments are available for a wide variety of uses such as area, sample, and personnel surveys and continued accident assessment. Instruments are stored throughout the plant and in the emergency facilities.

c. Process Monitors:

The Control Room and applicable redundant backup locations are equipped with extensive plant process monitors for use in both normal and emergency conditions. These indications include but are not limited to reactor coolant system pressure and temperature, containment pressure and temperature, liquid levels, flow rates, status or lineup of equipment components. This instrumentation provides the basis for initiation of corrective actions.

1. Plant Monitoring/Information System: A plant monitoring/information system provides the data acquisition and database capability for performing plant monitoring and functions. The system is designed to scan, convert to engineering units, make reasonability and alarm limit checks, apply required transformations, store for recall and analysis, and display the reading of transformed data from plant instrumentation. The system scans flows, pressures, temperatures, fluid levels, radiation levels, equipment, and valve status at required frequencies. Scanned variables are quality tagged. The system provides for short and mid term storage of data for on-line retrieval and fast recall, and long term storage to appropriate media.
2. Safety Parameter Display System (SPDS): SPDS provides a display of plant parameters from which the safety status of operation may be assessed in the Control Room, TSC and EOF (the EOF can access similar data through the use of an alternate computer system). The primary function of the SPDS is to help operating personnel in the Control Room make quick assessments of plant safety status. SPDS and/or other display systems in the TSC and EOF promote the exchange of information between these facilities and the Control Room and assists the emergency organization in the decision-making process.

d. Fire Detection System:

The Fire Detection System is designed to quickly detect visible or invisible smoke (or other products of combustion) and/or heat in designated areas of the plant. The fire alarm communication systems and subsystems are located at strategic points throughout the plant to warn personnel of a nuclear incident or other emergency conditions. Existing plant alarm systems are sufficiently audible to alert personnel in the event of a fire or need for assembly. These alarm communication systems consist of warning sirens and lights (in high noise areas) and the PA system. Refer to the respective unit FSAR for further description of the unit's fire protection system.

6. MONITORING EQUIPMENT OFFSITE

The Licensee has made provisions to acquire data from and have access to the following offsite sources of monitoring and analysis equipment:

- a. Geophysical Monitors: In the event that the onsite meteorological tower or monitoring instrumentation becomes inoperative and the contracted weather provider cannot be contacted, meteorological data may be obtained directly from the National Weather Service or the internet.

A considerable array of seismometers are located in the region. A central point of contact to obtain information about a seismic event is the National Earthquake Information Service in Golden, Colorado.

- b. Radiological Environmental Monitors and Sampling: The Licensee has an extensive offsite environmental monitoring program to provide data on measurable levels of radiation and radioactive materials in the environs. The program (described in the Offsite Dose Calculation Manual), includes:

- ◆ Fixed continuous air samplers.
- ◆ Routine sampling, as applicable, of ground and surface water; milk and fish.

- ◆ A fixed TLD monitoring network.

The TLD program consists of the following elements:

- ◆ A near-site ring of dosimeters covering about a 2-mile radius from the plant.
 - ◆ An outer ring of dosimeters placed 6 – 8 miles from the plant.
- c. **Laboratory Facilities:** External facilities for counting and analyzing samples can be provided by Callaway Plant Unit 1 or contracted laboratories. These laboratories can act as backup facilities in the event that the Callaway Plant Unit 2 counting room and laboratory become unusable or the offsite radiological monitoring and environmental sampling operation exceeds the capacity of the site capabilities during an emergency. It is estimated that these laboratories will be able to respond within several hours from initial notification.

Outside analytical assistance may be requested from state and federal agencies, or through contracted vendors. The NRC mobile laboratory may be made available for Site Area and General Emergencies. The DOE, through the Interagency Radiological Assistance Program (IRAP) has access to any national laboratory (i.e., Brookhaven, Oak Ridge, Lawrence Livermore, etc.).

A general description of the laboratory capabilities is provided in Section C.3.

7. OFFSITE MONITORING EQUIPMENT STORAGE

Callaway Plant Unit 2 maintains a sufficient supply of emergency equipment (such as portable survey, counting, and air sampling instrumentation and other radiological monitoring equipment and supplies) that may be used for environmental monitoring. These supplies meet the initial requirements for two Environmental Monitoring Teams. During subsequent phases of an emergency, additional equipment is available from Callaway Plant Unit 1, vendors, industry, and offsite response organizations.

8. METEOROLOGICAL MONITORING

The site has installed and maintains a meteorological tower equipped with instrumentation for continuous reading of the wind speed, wind direction, air temperature and delta air temperature. Additional capabilities are available to obtain representative current meteorological information from other sources, such as the National Weather Service. A full description of the onsite meteorological capabilities is given in Section H.5.a of this Plan.

9. TSC SUPPORT AREA CAPABILITIES

The TSC provides a Support Area (SA) for coordinating and planning of activities and the staging of personnel. A supply of parts and equipment for normal plant maintenance is maintained. These parts, supplies and equipment are available for damage control use as necessary.

Sufficient radiation protection equipment (i.e., protective clothing, respiratory protection gear, KI, and other health physics equipment and supplies) is stored and maintained near the SA (as well as the other emergency response facilities). Repair team equipment is available near the SA as well as in the maintenance shops. The TSC is stocked with an assortment of first aid and medical treatment equipment and supplies. The TSC maintains reliable voice communications with the CR and EOF. For a complete description of communications equipment, refer to

Section F. When an emergency condition exists at Callaway Plant Unit 2, additional supplies can be obtained from Callaway Plant Unit 1 and any company resources upon request.

10. FACILITY AND EQUIPMENT READINESS

To ensure the operational readiness of emergency supplies and equipment, Plant personnel conduct inspections of emergency equipment and supplies designated for emergency use in accordance with the Plant Preventive Maintenance and Surveillance Programs. Health Physics supplies and equipment contained in the emergency equipment kits are inventoried and maintained by the Radiation Protection Department per procedure. Tool kits available in the TSC contain various mechanical, electrical, and instrument and control tools that may be used during an emergency. The respective departments maintain the tool kits in accordance with the preventive maintenance program. Sufficient reserves of instruments and equipment are maintained to replace those, which are removed from emergency kits or lockers for calibration or repair. The Licensee is responsible for maintaining a supply of KI at the site.

11. GENERAL USE EMERGENCY EQUIPMENT

Inventory procedures identify the equipment within each emergency facility. Table H-1, Typical Emergency Equipment, lists typical portable emergency equipment available to the ERO. In addition, all normal resources available onsite will be used as necessary to support emergency response.

12. COLLECTION POINT FOR FIELD SAMPLES

The EOF lab has been designated as the central point for the receipt and analysis of radiological field monitoring samples. Sampling and analysis equipment is available for activity determination of these samples. Sufficient field monitoring equipment is maintained at the site for initial sampling. Instrumentation and equipment utilized for sample activity determination are routinely calibrated to ensure timely availability.

Table H-1—Typical Emergency Equipment

MS-2 / SPA-3 / Pig / Holder / Source ⁽¹⁾	Low Range (mrem/mSv) Dosimeters
RO-2 Survey Meters ⁽¹⁾	High Range (Rem/Sv) Dosimeters
RM-14 / HP210 Frisker ⁽¹⁾	Electronic Dosimeters
RM-14 / HP210 / SH4 Counter ⁽¹⁾	Dosimeter Chargers
Teletectors	3-Pocket Radiation Area Signs w/ Inserts
Instrument Check Sources	Box of Pens and Box of Grease Pencils
Air Sampler w/Sample Holder	Planchets
Extra Air Sampler Heads	Radioactive Material Tags
Charcoal Filters	Step off Pads – Check Shoes
Silver Zeolite Iodine Cartridges	Step off Pads – White
Particulate Filters	Dirty Shoe Cover Bags
Planchets	Gauze Wipes
Smear Paper	Smears
Package of 14 KI Tablets	Rad Rope
Extension Cords (25')	Extension Cords
Log Books	KI Tablets
Scientific Calculator	Magnetic Door Signs – No Entry
Gauze Wipes	Magnetic Door Signs – TSC Entrance
Anti "C" Clothing Kits	Cloth Coveralls
Writing and other Office Supplies	Paper Coveralls
Full Face Respirators w/Iodine Cartridge	Low Shoe Covers
Self-Contained Breathing Air Apparatus	High Shoe Covers
Portable Communication Equipment (Radios/Cell Phones)	Hoods
	Cotton Liners
	Rubber Gloves

Note 1: or equivalent instruments.

SECTION I: ACCIDENT ASSESSMENT

To effectively coordinate and direct all facets of the response to an emergency situation, diligent accident assessment efforts are required throughout the emergency. All four emergency classifications have similar assessment methods; however, each classification requires a greater magnitude of assessment effort depending upon the plant symptoms and/or initiating event(s).

1. PLANT PARAMETERS AND CORRESPONDING EMERGENCY CLASSIFICATION

Plant system and effluent parameter values are utilized in the determination of accident severity and subsequent emergency classification. Environmental and meteorological events are also determining factors in emergency classification. An emergency condition can be the result of just one parameter or condition change, or the combination of several. The specific symptoms, parameter values or events for each level of emergency classification are detailed in the emergency implementing procedures. Specific plant system and effluent parameters that characterize a classifiable event (EALs) are presented in the EAL Technical Bases document.

In order to adequately assess the emergency condition, each emergency facility has the necessary equipment and instrumentation installed to make available essential plant information on a continuous basis. Evaluation of plant conditions is accomplished through the monitoring of plant parameters both from indication in the Control Room and within the plant. Some of the more important plant parameters to be monitored in the Control Room are assembled into a single display location, which is entitled the "Safety Parameter Display System" (SPDS). The SPDS monitors such parameters as: reactor coolant system pressure, reactor or pressurizer water level, containment pressure and temperature, reactor power, safety system status, containment radiation level and effluent monitor readings. The instrumentation and equipment capabilities available for each emergency facility are described in Section H.

2. ONSITE ACCIDENT ASSESSMENT CAPABILITIES

The resources available to provide initial and continuing information for accident assessment throughout the course of an event include plant parameter display systems, liquid and gaseous sampling system, Area and Process Radiation Monitoring Systems, and Accident Radiation Monitoring Systems (which includes the high range containment radiation monitors). Descriptions of these systems are given in Section H.5.b.

3. SOURCE TERM DETERMINATION

Source term (or core damage) estimations serve several roles within the Callaway Plant Unit 2 Emergency Preparedness Program. For planning purposes, core damage considerations are used as the bases for several of the Emergency Action Level (EAL) Initiating Conditions and as the threshold for the declaration of a General Emergency (the definition of a General Emergency specifies conditions which involve 'substantial' core degradation or melting as one of the bases for classification).

From an implementation perspective, core damage estimations provide a means of realistically differentiating between the four core states (no damage, clad failure, fuel melt, and vessel melt-through) to:

- ◆ Evaluate the status of the fuel barriers and how their status relates to the risks and possible consequences of the accident.

- ◆ Provide input on core configuration (coolable or uncoolable) for prioritization of mitigating activities.
- ◆ Determine the potential quality (type) and/or quantity (%) of source term available for release in support of projected offsite doses and protective action recommendations.
- ◆ Provide information that quantifies the severity of an accident in terms that can be readily understood and visualized.
- ◆ Support the determination of radiological protective actions that should be considered for long-term recovery activities.

The assessment methodologies utilized by Callaway Plant Unit 2 are intended to provide a rapid best estimate of core damage which, when evaluated together, help to develop an overall picture of the extent of core damage. The methods used to estimate the amount or type of core damage occurring under accident conditions include the following:

- ◆ Containment Radiation Monitors: An indirect method used to determine the amount of core damage. Applicable to Loss of Coolant Accident (LOCA) scenarios. Based upon an end-of-life source term and static nuclide ratio assumptions yielding a limited accuracy. Valid any time following an accident.
- ◆ Core Temperatures: Methods such as Core Exit Thermocouple (CET), Peak Core Temperatures and Hot Leg Temperatures provide indirect methods used to indicate the type and/or amount of core damage. Applicable for all types of accidents. Valid any time following an accident.
- ◆ Core Uncovery: Methods such as Core Uncovery Time, Reactor Vessel Level Indication System level and Source Range Monitor count rate provided indirect methods used to indicate the type of core damage (clad failure or fuel melt). Applicable for all types of accidents. Provides a relatively accurate estimate of the state of the core early in the event. Valid any time following an accident.
- ◆ Containment Hydrogen Concentration: An indirect method used to establish the type of core damage. Applicable to LOCA type accidents where all the hydrogen generated by the metal-water reaction is released into containment. Valid any time following an accident.
- ◆ Sample Analysis – Isotopic Ratio Comparison: A direct method used to establish the type of core damage. Compares expected isotopic ratios with a sample to determine a general core state. Applicable under all types of accidents. Valid any time following an accident.
- ◆ Sample Analysis – Presence of Abnormal Isotopes: A direct method used to provide a go/no go indication of fuel melt by the presence of unusually high concentrations of the less volatile fission products. Applicable under all types of accidents. Valid any time following an accident.
- ◆ Sample Analysis – Concentration Evaluation: A direct method that yields the most accurate numerical estimations of the amount of core damage. Applicable for all types of accidents. Requires the sampled system(s) be in a steady state that usually prevents its use until the plant is in a stable condition.

4. EFFLUENT MONITOR DATA AND DOSE PROJECTION

Dose assessment or projection represents the calculation of an accumulated dose at some time in the future if current or projected conditions continue. During an accident, the Unit's Parameter Display System and personal computers will provide the ERO with the timely information required to make decisions. Radiological and meteorological instrumentation readings are used to project dose rates at predetermined distances from the site, and to determine the integrated dose received. Dose assessment methods used by the ERO to project offsite doses include:

- a. Monitored Release Points - This method utilizes the plant's effluent radiation monitors and system flow rates. Effluent release points are used to directly calculate a release rate. The point of the release determines the way the source term is affected and is adjusted by the dose assessment process.
- b. Containment Leakage/Failure - This method uses a variety of containment failures or leak rates in conjunction with available source term estimations to develop a release rate to the environment. A direct vent of containment can be modeled as a failure to isolate.
- c. Release Point Samples - This method uses a sample at the release point and an estimated flow rate to develop a release rate at the point of release.
- d. Monitoring Team Data - This method uses a field survey or sample and the atmospheric model to back calculate a release rate and ratio concentrations of radioactive material at various points up and downwind of plume centerline.

The computer applications used to provide dose calculations are evaluated against the EPA-400 plume exposure Protective Action Guides (PAGs) applicable for the early phase of an accident. These evaluations place an emphasis on determining the necessity for offsite protective action recommendations.

5. METEOROLOGICAL INFORMATION

Local meteorological data are available from an onsite meteorological tower. The data available include wind speed, wind direction, temperature, and delta temperature. These data are used by the site ERO and are provided to the state, and NRC to enable near real-time predictions of the atmospheric effluent transport and diffusion. Meteorological data from the tower are available in the CR, TSC, and EOF. A full description of the onsite meteorological capabilities is given in Section H.5.a.

6. UNMONITORED RELEASE

Dose projections can be made during a release through use of actual sample data in situations where effluent monitors are either off-scale or inoperative or the release occurs by an unmonitored flow path. In the absence of effluent sample data, a dose projection can be performed simply by specifying the isotopic mix as a default. The selection of a default accident category defines the mix, the total curies, and the release pathway(s). The total number of curies from a default mix for each isotope is used to provide an upper bound for release concentration, and hence, an upper bound for the dose rate and dose to the public.

7. ONSITE AND OFFSITE MONITORING

In addition to the capabilities and resources described in Section H.6.b and H.7, the Licensee maintains the ability to take offsite air samples and to directly measure gamma dose rates the event of an airborne or liquid release. The capability to take offsite soil, water, and vegetation samples is also provided by either the Monitoring Teams or a contracted vendor.

The environmental monitoring equipment, as described in Section H, contains portable survey, counting, and air sampling instrumentation and other radiological monitoring equipment and supplies to be used by the Monitoring Teams. Samples are taken at predetermined locations as well as those specified both during and after a release. Environmental measurements are used as an aid in the determination and assessment of protective and recovery actions for the general public.

8. FIELD MONITORING TEAMS

Monitoring Teams are dispatched by the Licensee to perform a variety of functions during conditions that may involve significant releases of radioactive materials from the plant. Radiological survey and sample data are used to define affected area boundaries, verify or modify dose projections and protective action recommendations, and assess the actual magnitude, extent, and significance of a liquid or gaseous release.

In addition to contamination and dose rate measurements, the change out of TLDs and air sampler cartridges can be performed. Other actions may include soil, water and vegetation sampling.

The initial environmental surveys involve simple-to-perform measurements to quickly confirm or modify the dose projections based on plant parameters. Subsequent environmental monitoring efforts will be aimed at further defining the offsite consequences including instituting an expanded program to enable prompt assessments of any subsequent releases from the plant.

The expertise necessary to conduct limited offsite environmental survey and sampling exists onsite 24 hours a day. A minimum of two offsite Monitoring Teams are notified and activated at an Alert or higher classification. Teams composed of two individuals are assembled to test and inventory dedicated survey and sampling equipment and are then dispatched in company or personal vehicles into the surrounding area when a release does or is expected to occur. This capability exists upon EOF activation. Radiological survey and sample data are transmitted to the emergency facilities. Vendor/contractor support can be used to perform collection, shipment and analysis of environmental sample media as described in Section B.8.c.

9. IODINE MONITORING

Monitoring equipment has the capability to detect and measure airborne radioiodine concentrations as low as $1 \times 10^{-7} \mu\text{Ci}/\text{cm}^3$ in the field. Interference from the presence of noble gas and background radiation will be minimized by ensuring that monitoring teams move to areas of low background prior to analyzing the sample cartridge. The collected air sample is measured by hand held survey meter as an initial check of the projection derived from plant data to determine if significant quantities of elemental iodine have actually been released.

10. DOSE ESTIMATES

Specific procedures exist for the correlation of air activity levels to dose rate for key isotopes. Provisions have been established for estimating integrated dose from the projected and actual dose rates and for the comparison of these estimates with the protective action guides.

11. STATE MONITORING CAPABILITIES

The state has the ability to dispatch its own field monitoring teams to track the airborne radioactive plume. The state also has the ability and resources to coordinate with federal and licensee monitoring teams to compare sample results.

SECTION J: PROTECTIVE RESPONSE

Protective response consists of emergency actions, taken during or after an emergency situation, which are intended to minimize or eliminate hazards to the health and safety of the public and/or site personnel. A range of protective actions has been developed for emergency workers and the general public in the Plume Exposure Pathway EPZ. Additionally, guidelines have been established to aid in choosing protective actions during an emergency that are consistent with federal guidance. The Licensee is responsible for onsite actions, while the responsibility for offsite actions rests with the state, local, and other offsite response agencies.

1. NOTIFICATION OF ONSITE PERSONNEL

For all emergency classifications, all personnel within the Protected Area are notified within 15 minutes of the initial classification or escalation of an emergency by recognizable alarms, and/or verbal announcements over the plant Public Address (PA) System. Announcements include the emergency classification and response actions to be taken by personnel onsite (such as ERO, non-ERO, contractor personnel, and visitors). Provisions are made to alert personnel in high noise areas and outbuildings within the Protected Area as applicable.

The plant has identified locations where people might be expected to be present outside the Protected Area but within the Owner Controlled Area. Accountability of persons within the Owner Controlled Area but outside the Protected Area is not required. However, provisions are established for notification of personnel within the Owner Controlled Area any time a Site Evacuation has been initiated, or as otherwise deemed appropriate.

2. EVACUATION LOCATIONS

If a Site Evacuation is required, non-essential personnel are directed to assemble within designated Assembly Areas until radiological conditions and personnel requirements are established. Personnel will be directed to either proceed to their homes or to reassemble at a Reception and Care Center established by the State. Visitors to the site will be escorted to the Security Access Facility and directed to leave the site. Non-essential personnel within the Protected Area will normally exit through the Security Access Facility. Personal transportation (if available) will normally be used and established evacuation routes will be followed. Personnel without transportation will be identified and provided transportation as necessary.

3. RADIOLOGICAL MONITORING OF EVACUEES

Personnel evacuating the Callaway Plant Unit 2 site will be monitored for contamination by the portal monitors as they exit the Protected Area, with portable friskers in Assembly Areas. If radiological and meteorological conditions indicate that personnel or their vehicles may have been contaminated, they will be directed to a Reception and Care Center established by the State for monitoring and, if necessary, decontamination. If there is no release of radioactive materials within Callaway Plant Unit 2, limited monitoring (less than 100% of evacuees) may be utilized to speed the evacuation process.

4. EVACUATION

Evacuation is the primary protective action anticipated for onsite personnel not having immediate emergency response assignments. The site has identified locations that serve as Assembly Areas and offsite Reception and Care Centers for non-essential personnel when they are not instructed to proceed home. The specific locations of these areas are provided in implementing procedures and the Missouri Nuclear Accident Plan-Callaway. Implementing procedures describe equipment, supplies and general operation of these facilities. The Emergency Coordinator and/or Shift Manager will designate personnel within the Site

Boundary as essential or nonessential. Evacuation of non-essential personnel is usually conducted immediately after accountability if a Site Area Emergency or General Emergency has been declared and conditions permit. Evacuation shall commence in accordance with site procedures as directed by the Emergency Coordinator or his/her designee, unless one of the following conditions exist:

- a. Severe weather conditions threaten safe transport.
- b. A significant radiological hazard would be encountered.
- c. There is a security threat occurring, which would have an adverse impact on the personnel while leaving the site.
- d. A condition similar to the above in magnitude, which in the opinion of the Emergency Coordinator would adversely affect the site personnel.

Security forces will be dispatched, when available, to access road(s) to control entry to site facilities. Unauthorized and non-ERO personnel will be denied entry.

The initiation of a site evacuation will be reported to the appropriate state/local agency.

5. ACCOUNTABILITY

The purpose of Accountability is to determine the locations of all personnel inside the Protected Area and to muster emergency personnel at prearranged locations. When Accountability of onsite personnel is determined to be necessary by the Shift Manager or the Emergency Coordinator, all personnel within the protected area shall be accounted for and the names of missing individuals (if any) are determined within thirty (30) minutes of the time the Accountability order is given. Should missing personnel be identified, search and rescue operations are initiated.

Accountability is usually performed in conjunction with Assembly. Accountability of essential personnel takes place in their designated Emergency Response Facility. They will log in utilizing a security badge card reader or by signing on a status board or roster. Non-essential personnel (including emergency response personnel not needed to fill emergency positions) will assemble or evacuate as directed. The movement of personnel for the purposes of Accountability may be delayed if their health and safety could be in jeopardy, such as severe weather or for security concerns.

If it is determined that the prearranged Assembly Area is unfit for personnel, the Shift Manager or the Emergency Coordinator may designate an alternative Assembly Area and direct personnel using appropriate communication systems that are available.

Accountability can be continuously maintained by controlling access, restricting activities, monitoring activities on status boards, and/or utilizing Security access readers.

Security personnel control access and screen personnel at security stations established at access points to the Protected Area and EOF.

The Callaway County Sheriff's Department will provide access control in areas around the plant in support of plant security. Access is authorized for: plant employees having proper identification or driving a company vehicle; state and federal personnel with state or federal

identification or driving an official government vehicle; and emergency vehicles (e.g. ambulance, fire trucks).

6. PROVISIONS FOR ONSITE PERSONNEL

The Licensee maintains an inventory of respiratory protection equipment, anti-contamination clothing, and KI that is made available to emergency workers remaining onsite should conditions warrant. During the course of an emergency, protective actions are considered to minimize radiological exposures or contamination problems associated with all onsite personnel. For those who must work within the affected area of the site, measures that are considered are:

- a. Use of Respirators: On-shift and emergency response personnel use respiratory protection in any environment involving exposure to high level gaseous activity or oxygen deficient atmosphere, or where air quality is in doubt. In the presence of airborne particulates, emergency response personnel may be directed by health physics personnel to use full-face filter type respirators. The criteria for issuance of respiratory protection are described in Radiation Protection procedures.
- b. Use of Protective Clothing: Anti-contamination clothing, located in the TSC and station dress out areas, is available for use by onsite personnel. The criteria for issuance of protective clothing are described in Radiation Protection procedures.
- c. Use of Potassium Iodide (KI): The use of KI may be recommended when a projected dose of 50 Rem (0.5 Sv) Committed Dose Equivalent (CDE) is exceeded for an emergency worker's thyroid. This is the value specified in EPA 400-R-92-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents". The Licensee maintains a supply of KI at the site. The Emergency Coordinator or Recovery Manager has the responsibility for approval of issuing KI to Licensee emergency workers.

7. MECHANISM FOR IMPLEMENTING PROTECTIVE ACTION RECOMMENDATIONS

Plant conditions, projected dose and dose rates, and/or field monitoring data are evaluated to develop PARs for the purpose of preventing or minimizing exposure to the general public. PARs are provided to the local agencies responsible for implementing protective actions for the general public within the 10-mile (16-kilometer) EPZ. PARs are approved by the individual in Command and Control (Shift Manager or Recovery Manager). The responsibility and authority for deciding protective actions for the general public rests with local emergency response organizations according to the Missouri Nuclear Accident Plan-Callaway.

In an emergency that requires immediate protective actions be taken prior to activation of the offsite emergency facilities, PARs are provided directly to the state and local 24 hour warning points by the Shift Manager.

8. EVACUATION TIME ESTIMATES (ETES)

An ETE report has been performed to provide estimates of the time required to evacuate resident and transient populations surrounding the site for various times of the year under favorable and adverse conditions. ETES for evacuation of the plume exposure EPZ are summarized in Appendix 5 and detailed in the referenced ETE report.

9. CAPABILITY OF IMPLEMENTING PROTECTIVE ACTION RECOMMENDATIONS

The responsibility for implementing protective measures based on protective action guides for the offsite population at risk is the responsibility of the local governments according to the Missouri Nuclear Accident Management Plan-Callaway. Detailed procedures for public protective actions are contained in the state and local radiological emergency response plans as appropriate.

The local government authorities evaluate the AmerenUE PARs and recommendations from the State Department of Health (DOH) and in light of any constraints, determine the area(s) to be evacuated and communicate instructions to the public via the Public Alert System and EAS. Implementation of protective actions for the general public is described in the local Radiological Emergency Response Plans.

If the plant conditions are stable and offsite radiological conditions are such that the public health and safety are not endangered, then return to evacuated areas may be discussed with the state and local authorities. State authorities are responsible for actually recommending return and transmitting this recommendation.

10. IMPLEMENTATION OF PROTECTIVE ACTION RECOMMENDATIONS

The licensee, state, and local emergency plans used to implement the protective measures for the plume exposure pathway take numerous factors into consideration. Among these considerations are:

- a. Most of the public evacuees are expected to travel in their own vehicles, leaving the EPZ via designated evacuation routes. The state and local plans contain official maps and information on the locations of off-site centers.
- b. The population distribution around the station. Population distribution for the plume exposure EPZ is illustrated in Appendix 5 of this plan.
- c. As indicated in Section E, offsite agencies are notified if an event is declared. State and local agencies have the capability to notify all members of the transient and resident population within the Plume Exposure Pathway EPZ.
- d. thru l Items addressed separately in state and local emergency plans.
- m. At a General Emergency classification, the Licensee will provide the state and local authorities with recommendations for protective actions for the public. For incidents involving actual, potential, or imminent releases of radioactive material to the atmosphere. EPA 400-R-92-001, the NRC Response Technical Manual (RTM-96) and NUREG-0654, Supp. 3 are used as the basis for the general public PARs.
- n. Plant Based PARs

Figure J-1 has been developed to aid Licensee personnel providing PARs based on the above. Possible plant based PARs issued at a General Emergency include:

- ◆ Shelter of the general public within a two mile (3.2 km) radius and five miles (8 km) downwind (puff release above PAGs) only for the following conditions:
 - ◆ Travel conditions that would present an extreme hazard, or

- ◆ For controlled releases from containment if there is assurance the release is short term and the area near the plant cannot be evacuated prior to plume arrival.
- ◆ Evacuation of the general public within a two-mile (3.2 km) radius and five miles (8 km) downwind.
- ◆ Evacuation of the general public within a five-mile (8 km) radius and ten miles (16 km) downwind.

In addition to the above actions all persons living within 10 miles of the plant are asked to stay tuned to the EAS station to await further instructions.

o. Dose Based PARs

Evacuation is recommended if projected doses reach the minimum EPA PAGs (1 Rem (0.01 Sv) EPA TEDE¹ or ≥ 5 Rem (0.05 Sv) CDE Thyroid).

Shelter is recommended if projected doses reach the minimum EPA PAGs (1 Rem (0.01 Sv) EPA TEDE or ≤ 5 Rem (0.05 Sv) CDE Thyroid) AND a puff release is in progress only for the following conditions:

- ◆ Travel conditions that would present an extreme hazard, or
- ◆ For controlled releases from containment if there is assurance the release is short term and the area near the plant cannot be evacuated prior to plume arrival.

Many assumptions exist in dose assessment calculations, involving both source term and meteorological factors, which make computer predictions over long distances highly questionable. However, in the event dose assessment results indicate the need to recommend actions beyond the outer EPZ boundaries, that is past 10 miles (16 kilometers), Monitoring Teams are dispatched to downwind areas to verify the calculated exposure rates prior to issuing PARs outside the EPZ.

Station personnel normally do not have the necessary information to determine whether off site conditions would require sheltering instead of evacuation. An effort to base PARs on external factors (such as road conditions, traffic/traffic control, weather, or offsite emergency response capabilities) is performed by the State and local authorities.

11. INGESTION PATHWAY PROTECTIVE MEASURES

The responsibility for specifying protective measures to be used for the ingestion pathway rests with the State Department of Health (DOH). These measures have been developed by the state and include the methods for protecting the public from consumption of contaminated water and foodstuffs.

The extent of environmental contamination will be evaluated by DOH, assisted by the Licensee. Protective actions recommended by DOH will be based upon the comparison of field data to

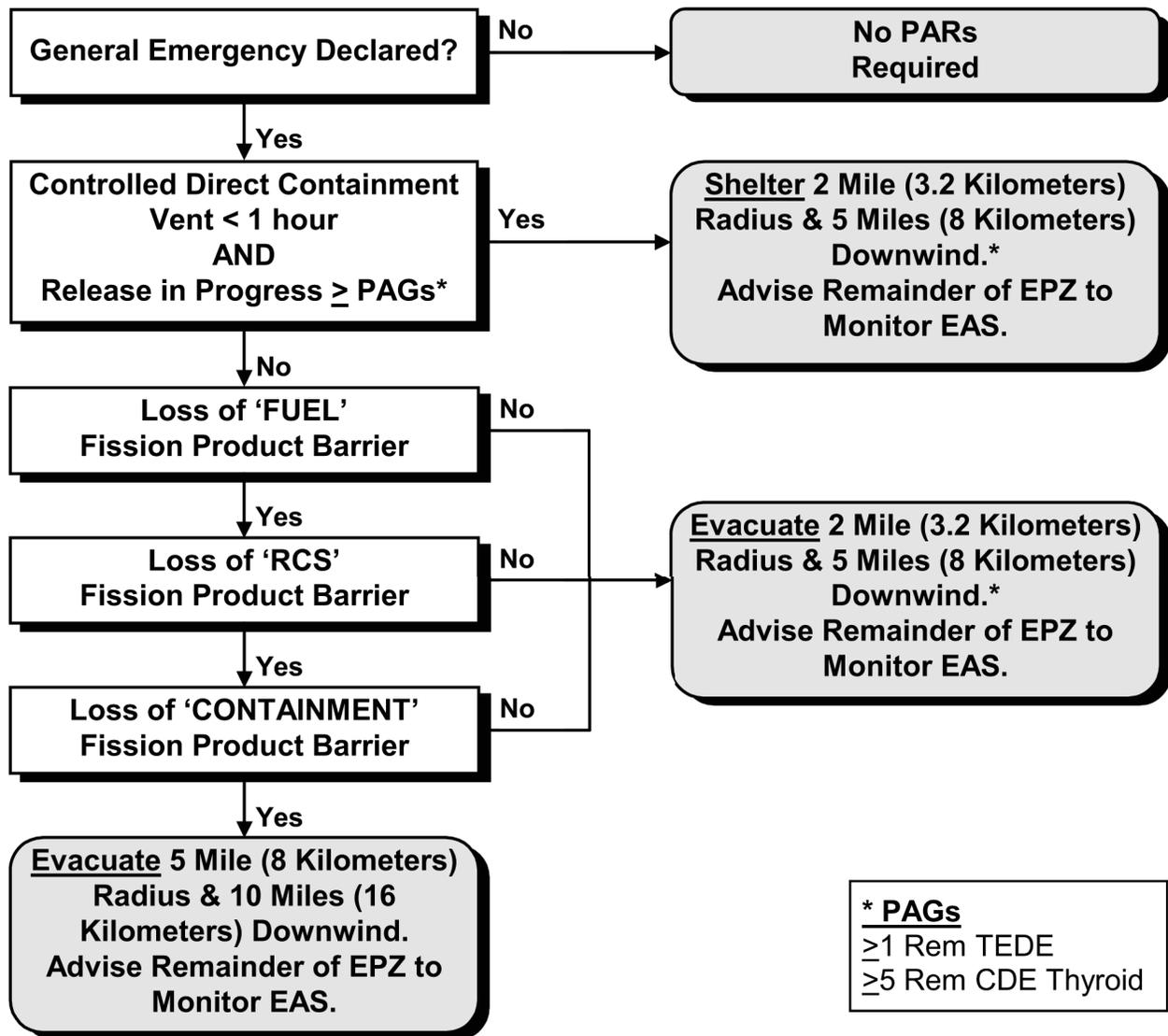
1.EPA TEDE is defined as the sum of the doses from external exposure and inhalation from the plume, and from 4 days of external exposure to deposited materials.

the limits established in EPA-400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents.

12. MONITORING OF EVACUEES

The state and local organizations have the capability to register and monitor evacuees at designated Reception and Care Centers. This capability includes personnel and equipment capable of monitoring residents and transients evacuating from the plume exposure EPZ and arriving at the reception centers, in accordance with FEMA guidelines.

Figure J-1—Generic PAR Flowchart



*** PAGs**
 ≥1 Rem TEDE
 ≥5 Rem CDE Thyroid

Note: LOSS of a fission product barrier as defined in the Emergency Action Level (EAL) Matrix.

*Shelter only for the following conditions:

- ◆ Travel conditions that would present an extreme hazard, or
- ◆ For controlled releases from containment if there is assurance the release is short term and the area near the plant cannot be evacuated prior to plume arrival.

Otherwise, evacuate 2-mile radius and 5 miles downwind.

Part 5: E Plan

SECTION K: RADIOLOGICAL EXPOSURE CONTROL

This section of the plan describes the means for controlling emergency worker radiological exposures during an emergency, as well as the measures and exposure guidelines that are used by the Licensee for removal of injured persons; undertaking corrective actions; performing assessment actions; providing first aid; performing personnel decontamination; providing ambulance service; and providing medical treatment services to persons exposed to radiation and/or radioactive materials.

Exposure guidelines in this section are consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides described in EPA 400-R-92-001.

1. EMERGENCY EXPOSURE GUIDELINES

Being licensed by the NRC, all nuclear power plants maintain personnel exposure control programs in accordance with 10 CFR 20 under normal operating conditions. The Emergency Coordinator or Recovery Manager is assigned the non-delegable responsibility for authorizing personnel exposure levels under emergency conditions per EPA-400. In emergency situations, workers may receive exposure under a variety of circumstances required in order to assure safety and protection of others and of valuable property. These exposures will be justified if the maximum risks or costs to others that are avoided by their actions outweigh the risks to which the workers are subjected. The Emergency Worker Dose Limits are as follows:

Dose Limit (Rem TEDE) (Sv TEDE)	Activity	Condition
0-5 (0-0.05)	All	Personnel should be kept within normal 10 CFR 20 limits during bona fide emergencies, except as authorized for activities as indicated below.
5-10 (0.05-0.1)	Protecting valuable property	Lower dose not practicable.
10-25 (0.1-0.25)	Lifesaving or protection of large populations	Lower dose not practicable.
> 25 (> 0.25)	Lifesaving or protection of large populations	Only on a voluntary basis to persons fully aware of the risks involved.

Limit dose to the lens of the eye to 3 times the above values and doses to any other organ (including skin and body extremities) to 10 times the above values.

Whenever possible, the concurrence of the Health Physics Coordinator should be secured before exposing individuals to dose equivalents beyond the EPA-400 lower limit.

2. EMERGENCY RADIATION PROTECTION PROGRAM

The Health Physics Coordinator is the individual responsible for the implementation of the radiation protection actions during an emergency. Radiation protection guidelines include the following:

- ◆ Volunteers over forty-five years of age are considered first for any emergency response action requiring exposure greater than normal limits. Routine dose limits shall not be extended to emergency dose limits for declared pregnant individuals. As in the case of

normal occupational exposure, doses received under emergency conditions should be maintained as low as reasonably achievable.

- ◆ Persons undertaking any emergency operation in which the dose will exceed 25 Rem (0.25 Sv) TEDE should do so only on a voluntary basis and with full awareness of the risks involved including the numerical levels of dose at which acute effects of radiation will be incurred and numerical estimates of the risk of delayed effects.
- ◆ In the context of the emergency limits, exposure of workers that is incurred for the protection of large populations may be considered justified for situations in which the collective dose avoided by the emergency operation is significantly larger than that incurred by the workers involved.
- ◆ Exposure accountability is maintained and proper personnel radiological monitoring equipment is provided for all personnel during emergency conditions.
- ◆ Access to high radiation areas is only permitted with prior approval of the applicable Health Physics Coordinator. Personnel are not allowed to enter known or potential high radiation areas unless their exposure has been properly evaluated.
- ◆ Periodic habitability surveys of emergency facilities are performed during an emergency. If the facility is determined to be uninhabitable, the facility is evacuated in order to prevent or minimize exposure to radiation and radioactive materials. Alternate assembly areas are established, as necessary, to relocate and monitor evacuated personnel.

3. PERSONNEL MONITORING

- a. Emergency workers will receive TLD badges and personal self-reading dosimeters capable of measuring expected exposures on a real time basis. The capability exists for the emergency processing of TLDs on a 24-hour per day basis, if necessary.
- b. Emergency worker dose records are maintained by the Health Physics Coordinator or designee (as appropriate) in accordance with the emergency and radiological protection procedures. Emergency workers are instructed to read their dosimeters frequently. TLDs may be processed with increased periodicity.

4. NON-LICENSEE PERSONNEL EXPOSURE AUTHORIZATION

The responsibility for authorizing non-Licensee emergency workers (i.e., Federal, state and local agency emergency workers) to receive exposures in excess of the EPA General Public Protective Action Guides rests with the Federal, state and local organizations, even when such emergency workers are onsite.

5. CONTAMINATION AND DECONTAMINATION

During an emergency, the Emergency Coordinator is responsible for preventing or minimizing personnel exposure to radioactive materials deposited on the ground or other surfaces. Special consideration should be given to setting up contamination control arrangements for personnel entering the TSC after completion of assigned activities.

- a. Contamination Limits: During emergency conditions, normal plant contamination control criteria will be adhered to as much as possible. However, these limits may

be modified by the applicable Health Physics Coordinator per existing Radiation Protection procedures, should conditions warrant.

- b. **Contamination Control Means:** Personnel found to be contaminated will normally be attended to at decontamination areas located onsite. Temporary decontamination areas can also be set up inside at various locations. Decontamination showers and supplies are provided onsite with additional personnel decontamination equipment and capabilities. Shower and sink drains in the controlled area are routed to the miscellaneous waste processing system where the liquid is processed and monitored prior to discharge. Potentially contaminated emergency vehicles will be surveyed before they are released from the plant or offsite assembly area for non-emergency use. If the survey area is not suitable for monitoring and decontamination due to radiological or other concerns, vehicles will be surveyed at an alternate location.

6. CONTAMINATION CONTROL MEASURES

Controls are established 24 hours per day to contain the spread of loose surface radioactive contamination.

- a. Contaminated areas are isolated as restricted areas with appropriate radiological protection and access control. Personnel leaving contaminated areas are monitored to ensure they and their clothing are not contaminated. If contamination above acceptable levels is found, they will be decontaminated in accordance with plant procedures. If normal decontamination procedures do not reduce personnel contamination to acceptable levels, the case will be referred to a competent medical authority. Supplies, instruments, and equipment that are in contaminated areas or have been brought into contaminated areas will be monitored prior to removal. If found to be contaminated, they will be decontaminated using normal plant decontamination techniques and facilities or may be disposed of as radwaste. Contaminated vehicles will be decontaminated before being released.
- b. Measures will be taken to control onsite access to potentially contaminated potable water and food supplies. Under emergency conditions when uncontrolled releases of activity have occurred, eating, drinking, smoking, and chewing are prohibited in all site emergency response facilities until such time as habitability surveys indicate that such activities are permissible.
- c. Restricted areas and contaminated items will be returned to normal use when contamination levels have been returned to acceptable levels. Contamination control criteria for returning areas and items to normal use are contained in the plant procedures.

7. DECONTAMINATION OF RELOCATED PERSONNEL

Nonessential onsite personnel may be evacuated to an offsite Reception and Care Center or assembly area, as discussed in Section J. Radiological controls personnel at that location monitor evacuees and determine the need for decontamination. Existing and temporary facilities to limit contamination and exposure will be utilized and established at the site as necessary during an emergency situation. In the event that decontamination of evacuees locally is not possible, personnel will be sent to designated locations for monitoring and decontamination. Provisions for extra clothing are made and suitable decontaminates are

available for the expected type of contaminations, particularly with regard to skin contaminations, including radioiodine contamination of the skin.

SECTION L: MEDICAL AND PUBLIC HEALTH SUPPORT

This section describes the arrangements for medical services for contaminated injured individuals sent from the station.

1. OFFSITE HOSPITAL AND MEDICAL SERVICES

The Licensee assists local hospitals to ensure support hospital personnel have been trained using the standards of FEMA Guidance Memorandum MS-1, "Medical Services". The hospitals are equipped to handle contaminated or radiation injured individuals. Specifically, training of medical support personnel at the agreement hospitals will include basic training on the nature of radiological emergencies, diagnosis and treatment, and follow-up medical care. Site personnel are available to assist medical personnel with decontamination radiation exposure and contamination control. Arrangements, by letter of agreement or contract, are maintained by the Licensee with Callaway Community Hospital for receiving and treating contaminated or exposed persons with injuries requiring immediate hospital care. Backup facilities are provided by University Hospital & Clinics, Columbia, Missouri.

These agreements are verified annually. Refer to section P.4 for details.

2. ONSITE FIRST AID CAPABILITY

The site maintains onsite first aid supplies and equipment necessary for the treatment of contaminated or injured persons. In general, physicians or nurses are not staffed at the site, and as such, medical treatment given to injured persons is of a "first aid" nature. Additionally, the Radiation Protection Technicians at the site are experienced in control of radioactive contamination and decontamination work. Site personnel are also trained and qualified to administer first aid. At least two of these individuals are available on shift at all times. The functions of station personnel in handling onsite injured people are:

- a. Afford rescue;
- b. Administer first aid including such resuscitative measures as are deemed necessary;
- c. Begin decontamination procedures; and
- d. Arrange for suitable transportation to a hospital when required.

Primary attention shall be directed to the actual factors involved in the treatment of casualties, such as: control of bleeding, resuscitation including heart and lung, control of bleeding after resuscitation, protection of wounds from bacterial or radioactive contamination and the immobilization of fractures.

Site personnel provide an initial estimate of the magnitude of surface contamination of the injured and preliminary estimates of total body dose to the injured. Primary rapid and simple decontamination of the surface of the body (when possible and advisable) before transportation to a designated hospital may be carried out as directed or performed by Radiation Protection personnel. When more professional care is needed, injured persons are transported to a local clinic or hospital. Contaminated and injured persons are transported to Callaway Community Hospital with backup facilities provided by University Hospital & Clinics, Columbia, Missouri.

3. MEDICAL TRANSPORTATION

Arrangements are made by the site for prompt ambulance transport of persons with injuries involving radioactivity to designated hospitals. Such service is available on a 24-hour per day basis and is confirmed by letter of agreement with the Callaway County Ambulance District. Radiation monitoring services shall be provided by the Licensee whenever it becomes necessary to use the ambulance service for the transportation of contaminated persons.

A qualified Radiation Protection person shall accompany the ambulance to the hospital. Additional Radiation Protection personnel may be contacted and dispatched to local hospitals to assist in the monitoring and decontamination of the injured victim and hospital and ambulance facilities and personnel.

SECTION M: REENTRY AND RECOVERY PLANNING

This section describes the measures to be taken for reentry into the areas of the nuclear power plant, which have been evacuated as a result of an accident. It also outlines the Licensee Recovery Organization and its concepts of operation.

1. REENTRY AND RECOVERY

a. Evaluating Reentry Conditions

During an emergency, immediate actions are directed toward limiting the consequences of the accident to afford maximum protection to site personnel and the general public. Once corrective measures have been taken and effective control of the plant has been re-established, a more methodical approach to reentry is taken. This E-Plan divides reentry into two separate categories:

- ◆ Reentry during the emergency phase of an accident is performed to save a life, control a release of radioactive material, prevent further damage to plant equipment or restore plant equipment. If necessary, this category of reentry may be performed using emergency exposure limits. Briefings, rather than written radiation protection procedures, may be used when making these entries.

All reentry activities conducted during the emergency are authorized by the Emergency Coordinator and coordinated by the Emergency Team Coordinator and the Health Physics Coordinator.

- ◆ Reentry during the recovery phase of an accident is performed using normal exposure limits. Either normal procedures or procedures that consider existing as well as potential conditions inside affected areas are developed specifically for each reentry.

Reentry activities during the recovery phase are authorized by the Recovery Manager and coordinated by the recovery organization managers in charge of personnel making the reentry.

The following items are considered when planning for any reentry:

- ◆ Review of available radiation surveillance data to determine plant areas potentially affected by radiation and/or contamination.
- ◆ Review of radiation exposure history of personnel required to participate in the accident mitigation or recovery operations.
- ◆ Determination of the need for additional personnel and the sources of these additional personnel.
- ◆ Review of adequacy of radiation survey instrumentation and equipment (types, ranges number, calibration, etc.).
- ◆ Review of non-radiological hazards and required protective measures (e.g., fire, electrical, Hazmat).
- ◆ Pre-planning of activities and briefings for the reentry team that include the following:

- ◆ Personnel knowledge requirements.
- ◆ Methods and procedures that will be employed during the entry.
- ◆ Specific tasks to be performed.
- ◆ Anticipated radiation and contamination levels.
- ◆ Radiation survey equipment and types and ranges of dosimetry required.
- ◆ Shielding requirements and availability.
- ◆ Appropriate communications.
- ◆ Protective clothing and equipment requirements.
- ◆ Access control procedures.
- ◆ Decontamination requirements.
- ◆ De-briefing requirements.
- ◆ Respiratory protection.
- ◆ A review of security controls to prevent unauthorized or unintentional entry into hazardous areas.

b. Evaluating Entry into Recovery

The Recovery Phase is that period when major repairs are being performed to return the plant to an acceptable condition and the possibility of the emergency condition degrading no longer exists. Once the plant has been stabilized, contained and controlled, the Recovery Phase may be entered. It is the responsibility of the Recovery Manager to declare the emergency phase terminated and entry into Recovery after obtaining concurrence from the Emergency Coordinator and consulting with offsite authorities.

Establishment of Recovery can be conducted from any emergency classification level. However, it is possible that the lower classifications of Unusual Event and Alert will conclude with the overall event being terminated. There may be cases where certain EAL initiating conditions remain exceeded, but the station is under control and no further danger of degradation exists. In such a case, it may be appropriate to enter Recovery. Site Area and General Emergencies will require a Recovery Phase to be established prior to event termination. The Licensee may consult with/notify cognizant governmental agencies prior to declaring Recovery or event termination.

Termination/Recovery considerations are contained in the implementing procedures to provide guidance for evaluating the risk of entering Recovery without alleviating the intent of the initiating condition. The purpose of Recovery is to provide the necessary personnel to handle the long-term activities and to return the plant to an acceptable condition.

The following conditions are guidelines for the determination of establishing Recovery (this is not intended to be a complete list and additional criteria may apply, depending on the specifics of the event):

- ◆ In-plant radiation levels are stable or decreasing with time, and
- ◆ The reactor is stable with adequate core cooling capability, and
- ◆ Releases of radioactive materials to the environment are controlled and within radioactive effluent controls limits, and
- ◆ Fire, natural events, security threats, or similar emergency conditions are under control and Plant effects assessed.

It is not necessary that all conditions listed above be met; however, all items must be considered prior to entering the Recovery Phase. For example, it is possible after a severe accident that some conditions remain that exceed an Emergency Action Level, but entry into the Recovery Phase is appropriate.

2. RECOVERY ORGANIZATION

Once plant conditions have been stabilized and the Recovery Phase has been initiated, the Recovery Manager may form a Recovery Organization for long-term operations. These types of alterations should be discussed with the NRC prior to implementation.

- ◆ For events of a minor nature (i.e., for Unusual Event classifications), the normal on shift organization is normally adequate to perform necessary recovery actions.
- ◆ For events where damage to the plant has been significant, but no significant offsite impact resulted (i.e., for Alert classifications), the ERO, or portions thereof, and normal plant organizations (e.g. outage planning, maintenance, etc.) should be adequate to perform the recovery tasks prior to returning to the normal site organization.
- ◆ For events involving major damage to systems required to maintain safe shutdown of the plant and offsite radioactive releases have occurred (i.e., for Site Area Emergency or General Emergency classifications), the site recovery organization is put in place.

The specific members of the site recovery organization are selected based on the sequence of events that preceded the recovery activities as well as the requirements of the recovery phase. The basic framework of the station recovery organization is as follows:

- a. The Recovery Manager: The Recovery Manager is charged with the responsibility for directing the activities of the site recovery organization. These responsibilities include:
 - ◆ Directing the development of a recovery plan and procedures.
 - ◆ Deactivating any of the ERO which was retained to aid in recovery, in the appropriate manner. Depending upon the type of accident and the onsite and offsite effects of the accident, portions of the ERO may remain in place after initiation of the Recovery Phase.
 - ◆ Coordinating the integration of available federal and state assistance into onsite recovery activities.

- ◆ Coordinating the integration of Licensee support with federal, state and county authorities into required offsite recovery activities.
- ◆ Determining when the recovery phase is terminated.
- b. The Operations Coordinator: The Manager, Nuclear Operations or a designated alternate will become the Operations Coordinator. The Operations Coordinator reports to the Recovery Manager and is responsible for:
 - ◆ Coordinating the development and implementation of the recovery plan and procedures.
 - ◆ Directing all onsite activities in support of the station recovery effort.
 - ◆ Designating other Licensee recovery positions required in support of onsite recovery activities.
- c. The Engineering Coordinator: The Engineering Coordinator reports to the Recovery Manager and is responsible for:
 - ◆ Providing and coordinating technical support to operations and recovery activities. This support includes core physics, thermal hydraulics, design activities, procedure development as well as ensuring that specifications for procurement of materials and equipment are met.
 - ◆ Ensuring that adequate engineering activities to restore the plant are properly reviewed and approved.
- d. The Radiological Assessment Coordinator: The Radiological Assessment Coordinator reports to the Recovery Manager and is responsible for:
 - ◆ Coordinating Licensee ingestion exposure pathway EPZ sampling activities and the development of an offsite accident analysis report.
 - ◆ Developing a radiological release report.
 - ◆ Designating other Licensee recovery positions required in support of offsite recovery activities.
- e. The Licensing and Fuels Coordinator: The Licensing and Fuels Coordinator reports to the Recovery Manager and is responsible for:
 - ◆ Providing licensing and technical support to the recovery effort in areas of reactor systems and fuel related concerns.
 - ◆ Providing liaison between the Licensee and the NSSS supplier and other contractors.
- f. Administrative Services Coordinator: The Administrative Services Coordinator reports to the Recovery Manager and is responsible for:

- ◆ Ensuring that sufficient personnel, equipment, or other resources from the Licensee and other organizations are available to support recovery.
 - ◆ Providing liaison with offsite agencies and coordinating Licensee assistance for offsite recovery activities.
- g. Public Information Coordinator: A senior management individual is designated as the Public Information Coordinator. The Public Information Coordinator reports to AmerenUE Corporate Communications and is responsible for:
- ◆ Functioning as the official spokesperson to the press for the Licensee on all matters relating to the accident or recovery.
 - ◆ Coordinating with all public information groups (federal, state, local, etc.).
 - ◆ Coordinating media monitoring and rumor control.
 - ◆ Approving information released by the public information organization which pertains to the emergency or the recovery phase of the accident.
 - ◆ Determining what public information portions of the ERO will remain activated.

The remainder of the recovery organization is established and an initial recovery plan developed at the end of the emergency phase or just after entry into the Recovery Phase. Consideration is given to recovery activity needs and use of the normal site organizations. Individual recovery supervisors may be designated in any or all of the following areas:

- ◆ Training
- ◆ Radiation Protection
- ◆ Chemistry
- ◆ Technical/Engineering Support
- ◆ Quality Assurance and Performance Improvement
- ◆ Operations
- ◆ Security
- ◆ Maintenance
- ◆ Special Offsite Areas (Community Representatives, Environmental Samples, Investigations, etc.)

3. RECOVERY PHASE NOTIFICATIONS

When the decision is made to enter the recovery phase, all members of the ERO are informed of the change. All Licensee personnel are instructed regarding the Recovery Organization and their responsibilities to the recovery effort.

4. TOTAL POPULATION EXPOSURE

Total population exposure calculations are performed and periodically updated during the recovery phase of an accident. A method has been developed for estimating the total population exposure resulting from the accident from data collected in cooperation with the state and federal agencies. Total population exposure is determined through a variety of procedures including:

- ◆ Examination of pre-positioned TLDs.
- ◆ Bioassay.
- ◆ Estimates based on release rates and meteorology.
- ◆ Estimates based on environmental monitoring of food, water, and ambient dose rates.

The Missouri Department of Health (DOH) is the lead agency in the collection and analysis of environmental air, soil, foliage, food, and water samples and for the generation of radiation monitoring reports. The Licensee environmental sampling activities will be coordinated with DOH efforts, as requested, and results shared with cognizant agencies.

SECTION N: DRILL AND EXERCISE PROGRAM

This section describes the Drill and Exercise Program that the Licensee has implemented to:

- ◆ Verify the adequacy of the Emergency Preparedness Program.
- ◆ Develop, maintain, and evaluate the capabilities of the ERO to respond to emergency conditions and safeguard the health and safety of station personnel and the general public.
- ◆ Identify deficiencies in the E-Plan and the associated procedures, or in the training of response personnel, and ensure that they are promptly corrected.
- ◆ Ensure the continued adequacy of emergency facilities, supplies and equipment, including communications networks.

1. EXERCISES**a. Biennial Exercises**

Federally prescribed exercises are conducted at the site in order to test the adequacy of timing and content of implementing procedures and methods; to test emergency equipment and communication networks; and to ensure that emergency personnel are familiar with their duties. Exercises involving offsite agency participation, required under Section F.2.c & d to 10 CFR 50 Appendix E, are conducted at the site based on FEMA guidance and the respective state and local emergency response plans.

Partial participation means appropriate offsite authorities shall actively take part in the exercise sufficient to test direction and control functions to include protective action decision-making related to Emergency Action Levels and communication capabilities among affected state and local authorities and the Licensee.

Full participation exercises will include appropriate offsite local and state authorities and Licensee personnel physically and actively taking part in testing the integrated capability to adequately assess and respond to an accident at the plant. Additionally, full participation exercises will include testing the major observable portions of the onsite and offsite emergency plans and mobilization of state, local, and Licensee personnel and other resources in sufficient numbers to verify the capability to respond to the accident scenario.

Where partial or full participation by offsite agencies occurs, the sequence of events simulates an emergency that results in the release of radioactivity to the offsite environs, sufficient in magnitude to warrant a response by offsite authorities.

b. Off-Year Exercises

An Off-Year Exercise is conducted at the site during the calendar year when an NRC Evaluated Exercise is not scheduled. Off-site responders are invited to participate in Off-Year Exercises. An Off-Year Exercise shall involve a combination of at least two facilities in order to demonstrate at least two of the functions of management and coordination of emergency response, accident assessment, protective action decision-making, or plant system repair and corrective actions. For Off-Year Exercises involving no or limited participation by offsite agencies, emphasis is placed on

development and conduct of an exercise that is more mechanistically and operationally realistic. Players will be able, by implementing appropriate procedures and corrective actions, to determine the outcome of the scenario to a greater extent than when core damage and the release of radioactivity are prerequisites for demonstration of all objectives.

c. Pre-Exercises

Pre-Exercise Drills may be conducted prior to a Biennial Exercise where FEMA evaluation of state and local performance is expected. Pre-Exercise Drills may be conducted prior to Off-Year Exercises that only involve the licensee. The Pre-Exercise is a training and experience tool for the participants to sharpen awareness and practice skills necessary to accomplish specific E-Plan duties and responsibilities.

d. Exercises

Exercises provide an opportunity to evaluate the ability of participating organizations to implement a coordinated response to postulated emergency conditions. Exercises are conducted to ensure that all major elements of the E-Plan and preparedness program are demonstrated at least once in each six-year period and under various weather conditions. Contingent on FEMA review and acceptance, during an exercise cycle, one of the three exercises will consist of a security-based event. The site shall conduct at least one off-hours exercise between 6:00 p.m. and 4:00 a.m. every cycle (6 years). Weekends and holidays are also considered off-hours periods. Provisions will be made for qualified personnel from the Licensee, federal, state, or local governments to observe and critique each exercise as appropriate. The state should fully participate in the ingestion pathway portion of exercises at least once every six years.

2. DRILLS

In addition to the exercises described above, the Licensee conducts drills for the purpose of testing, developing, and maintaining the proficiency of emergency responders. A schedule of drills is maintained by Emergency Preparedness. The schedule contains provisions for the following drills:

a. Communication Drills

Monthly - The capability of the SENTRY notification system to notify the state and local government warning points and EOCs within the plume exposure pathway EPZ is demonstrated. Also, the capability to notify the NRC is demonstrated using the Emergency Notification System (ENS) and the Health Physics Network (HPN) where available.

Quarterly - The capability to notify the NRC Region, FEMA Region, American Nuclear Insurers (ANI) and federal emergency response organizations as listed in the Emergency Telephone Directory is demonstrated from the EOF. A communications drill will be conducted transmitting a simulated emergency notification to ensure the content of the message is understood. Also, computer and critical communications equipment shall be functionally tested.

Annually - The emergency communications systems outlined in Section F are fully tested. This includes (1) communications between the plant and the state and local EOCs and Monitoring Teams, and (2) communications between the CR, the TSC, and the EOF.

Each of these drills includes provisions to ensure that all participants in the test are able to understand the content of the messages. Communications drills may be included as part of other drills or exercises.

- b. **Fire Drills:** Fire drills shall be conducted in accordance with the Fire Protection Plan and/or site procedures.
- c. **Medical Emergency Drills:** A medical emergency drill, involving a simulated contaminated individual, and containing provisions for participation by local support services organizations (i.e., ambulance and support hospital) are conducted annually. The offsite portions of the medical drill may be performed as part of the required biennial exercise.
- d. **Radiological Monitoring Drills:** Plant environs and radiological monitoring drills (onsite and offsite) are conducted annually. These drills include collection and analysis of all sample media (such as water, vegetation, soil, and air), and provisions for communications and record keeping.
- e. **Health Physics Drills:** Health Physics Drills involving a response to, and analysis of, simulated airborne and liquid samples and direct radiation measurements within the plant are conducted semi-annually. At least annually, these drills shall include a demonstration of the sampling system capabilities, or the core damage assessment objectives as applicable.
- f. **Augmentation Drills:** Augmentation drills serve to demonstrate the capability of the process to augment the on-shift staff with a TSC and EOF in a short period after declaration of an emergency. These drills are conducted using the following methods:

Quarterly, an unannounced off-hours ERO augmentation drill where no actual travel is required.

At least once per drill cycle (every 6 years), an off-hours unannounced activation of the ERO Notification System with actual response to the emergency facilities is conducted.

- g. **Accountability Drills:** Accountability drills are conducted once per drill cycle (every 6 years). The drill includes identifying the locations of all individuals within the protected area.
- h. **Security Based Event Drill:** Contingent on FEMA review and acceptance, security based event drills will be conducted in accordance with the guidelines established in NRC Bulletin 2005-02 (ULNRC-05189).

3. CONDUCT OF DRILLS AND EXERCISES

Prior approval by the appropriate unit management is obtained for all drills and exercises conducted in support of the Emergency Preparedness Program. The Licensee shall enable any state or local government located within the plume exposure pathway EPZ to participate in drills when requested by such state or local government.

The scenarios for use in exercises and selected drills include, but are not limited to, the following:

- ◆ Basic objectives, guidelines, and evaluation criteria;
- ◆ Participating organizations, date, time, and places;

- ◆ A sequence of real and simulated events, and associated parameters and data;
- ◆ A narrative summary describing the conduct of the exercises or drills to include such things as: simulated casualties, rescue of personnel, use of protective clothing, and deployment of radiological monitoring teams;
- ◆ A description of the advance arrangements for materials to be provided to observers, controllers, and evaluators.

Drill and exercise scenarios are written to allow a certain amount of free play and decision-making. Controllers are instructed at pre-drill or exercise briefings as to which portions of the scenario permit free play and which portions require control. One person is assigned as the Lead Controller and is responsible for overall drill or exercise control. The drill or exercise controllers should possess the necessary technical expertise to adequately control their respective functional areas. All drills and exercises are conducted and documented in accordance with the implementing procedure for drills and exercises.

4. CRITIQUE AND EVALUATION

Drill and exercise performance objectives are evaluated against measurable demonstration criteria. As soon as possible following the conclusion of each drill or exercise, a critique is conducted to evaluate the ability of the ERO to implement the E-plan and procedures.

A formal written critique evaluation is prepared by Emergency Preparedness following a drill or exercise involving the evaluation of designated objectives or following the final simulator set with ERO participation. The report will evaluate the ability of the ERO to respond to a simulated emergency situation. Weak areas are noted, and corrective actions, including RERP and procedural changes and/or remedial actions, are initiated by the Superintendent, Protective Services, or his designee.

Biennially, representatives from the NRC observe and evaluate the licensee's ability to conduct an adequate self-critical critique. For partial and full offsite participation exercises both the NRC and FEMA will observe, evaluate, and critique.

Critique comments identified by participants during a training drill where objectives are not formally being evaluated will be reviewed and dispositioned by Emergency Preparedness, but do not require a formal report.

5. RESOLUTION OF DRILL AND EXERCISE FINDINGS

The critique and evaluation process is used to identify areas of the Emergency Preparedness Program that require improvement. The Superintendent, Protective Services is responsible for evaluation of recommendations and comments to determine which items will be incorporated into the program or require corrective actions, and for the scheduling, tracking, and evaluation of the resolution to the items.

Whenever exercises and/or drills indicate deficiencies in the E-Plan or corresponding implementing procedures, such documents will be revised as necessary.

If required, Callaway Plant Unit 2 will support remedial exercises if the E-Plan is not satisfactorily tested during the biennial exercise, such that NRC, in consultation with FEMA, cannot find reasonable assurance that adequate protective measures can be taken in the event of a radiological emergency.

SECTION O: EMERGENCY RESPONSE TRAINING

This section describes the emergency response training that is provided to those who may be called upon in an emergency. It outlines the training provided by the Licensee to both its employees and offsite support personnel requiring site access.

1. ASSURANCE OF TRAINING

The E-Plan training program assures the training, qualification, and requalification of individuals who may be called on for assistance during an emergency. Specific emergency response task training, prepared for each E-Plan position, is described in lesson plans and study guides.

Responsibility for RERP training is jointly shared between the Training and Emergency Preparedness Departments. Plant personnel granted unescorted access to the Protected Area receive an orientation on the RERP. In addition, personnel who may be assigned emergency response positions within an Emergency Response Organization, receive additional RERP training, as necessary. Personnel must meet the minimum criteria for the required training as specified for the emergency position and identified in the EIPs. Periodic retraining, typically on an annual basis, is conducted to update the knowledge and skills of on-site and corporate personnel. Personnel who do not complete retraining within the specified period are disqualified.

All classroom training is tracked and documented in accordance with Callaway Plant Training Procedures. A description of the content of the training courses is given in the approved training course catalog.

Offsite training is provided to support organizations that may be called upon to provide assistance in the event of an emergency. Training of offsite emergency response organizations is described in their respective radiological emergency plans. SEMA is responsible for providing this training, with support provided by the Licensee as requested.

Initial and follow-up training of state and local personnel who implement radiological emergency response plans is provided by SEMA. The training is designed to enhance comprehension of the plans and procedures and to orient personnel to their specific emergency response function.

In addition, those emergency response personnel who will conduct activities within the Plume Exposure Pathway (EPZ) receive training on radiological exposure control to include dosimetry, management of total dose through exposure time limitations, reading and recording personal dosimetry data and the use of radioprotective drugs.

Training for offsite firefighting personnel includes radiological hazards that may be encountered while fighting fires in the Plume Exposure Pathway EPZ.

2. FUNCTIONAL TRAINING OF THE ERO

In addition to general and specialized classroom training, members of the Licensee ERO receive periodic performance based emergency response training. Performance based training is provided using one or more of the following methods:

- a. Familiarization Sessions: A familiarization session is an informal, organized tabletop discussion of predetermined objectives.

- b. Walk Throughs: Consists of a facility walk through to familiarize plant ERO personnel with procedures, communications equipment, and facility layout. Walk throughs also provide the opportunity to discuss facility activities, responsibilities and procedures with an instructor.
- c. Drills: A drill is a supervised instruction period aimed at testing, developing and maintaining skills in a particular operation. Drills described in Section N of this plan are a part of training. These drills allow each individual to demonstrate the ability to perform their assigned emergency functions. During drills, on-the-spot correction of erroneous performance may be made and a demonstration of the proper performance offered by the Controller.
- d. Exercises: An exercise is an observed evaluation that tests the integrated capability of the Emergency Response Organization as well as a major portion of the basic elements of the Radiological Emergency Response Plan. Exercises described in Section N of this plan are a part of training.

3. FIRST AID RESPONSE

Selected site personnel are trained in accordance with the Licensee approved First Aid Program. First-Aid teams will likely be augmented with additional personnel such as Fire Brigade Members and other personnel qualified to assist in the rescue.

4. EMERGENCY RESPONSE ORGANIZATION TRAINING PROGRAM

The Licensee ERO personnel who are responsible for implementing this plan receive specialized training. The training program for emergency response personnel is developed based on the requirements of 10 CFR 50, Appendix E and position specific responsibilities as defined in this document.

On-Shift emergency response personnel perform emergency response activities as an extension of their normal duties and are trained annually as part of their duty specific training. Additional Emergency Preparedness information is provided as part of the site General Employee Training.

New ERO personnel receive initial training that familiarizes them with the E-Plan by providing basic information in the following areas as well as specific information as delineated in the sections below:

- ◆ Planning Basis
- ◆ Emergency Classifications
- ◆ Emergency Response Organization and Responsibilities
- ◆ Call-out of Emergency Organization
- ◆ Emergency Response Facilities
- ◆ Communications Protocol/Emergency Public Information
- ◆ Offsite Organizations

Emergency response personnel in the following categories receive knowledge and/or performance based training initially and retraining thereafter on an annual basis:

- a. Directors, Managers and Coordinators within the ERO: Personnel identified by the Emergency Telephone Directory as Directors, Managers and Coordinators for the EROs receive training appropriate to their position in accordance with the approved ERO Training Program. These personnel receive specialized training in the areas of:

- ◆ Notifications
- ◆ Emergency Classifications
- ◆ Protective Action Recommendations
- ◆ Emergency Action Levels
- ◆ Emergency Exposure Control

Selected Directors, Managers and Coordinators receive training in accordance with the approved ERO Training Program. Training in accident assessment sufficient to classify an event and to mitigate the consequences of an event is also covered.

- b. Personnel Responsible for Accident Assessment: The skills and knowledge required to perform plant stabilization and mitigation are a normal function of operations specific positions, as identified in Section B of this plan. Power changes and planned and unplanned reactor shutdowns are handled on a normal operation basis. Subsequent plant stabilization and restoration is pursued utilizing normal operating procedures. Licensed Operators receive routine classroom and simulator training to ensure proficiency in this area.

1. Active Senior Licensed Control Room Personnel shall have training conducted in accordance with the approved ERO Training Program such that proficiency is maintained on the topics listed below. These subjects shall be covered as a minimum on an annual basis.

- ◆ Event Classification.
- ◆ Protective Action Recommendations.
- ◆ Radioactive Release Rate Determination.
- ◆ Notification form completion and use of the state/local notification system.
- ◆ Federal, state and local notification procedures as appropriate.
- ◆ Site-specific procedures for activating the onsite and offsite ERO.

To remove peripheral duties from the Operations shift, those positions responsible for accident assessment, corrective actions, protective actions, and related activities receive training:

2. Core Damage Assessment Personnel: During an emergency when core/cladding damage is suspected, a specialized group of trained individuals perform core damage assessment. At a minimum, personnel responsible for core damage assessment receive classroom and hands-on training in the following areas:

- ◆ Available Instrumentation and Equipment
- ◆ Isotopic Assessment and Interpretation
- ◆ Computerized core damage assessment methodology and/or proceduralized assessment methods.

c. Radiological Monitoring Teams and Radiological Analysis Personnel

1. Offsite Radiological Monitoring: Offsite radiological monitoring is performed by trained individuals who provide samples and direct readings for dose assessment calculations and dose projection comparisons.

Personnel identified as members of Monitoring Teams receive training in accordance with the approved training program. Monitoring Team members receive classroom and hands-on training in the following areas:

- ◆ Equipment and Equipment Checks
- ◆ Communications
- ◆ Plume Tracking Techniques

2. Personnel Monitoring: Personnel monitoring is performed by trained individuals who monitor site personnel and their vehicles for contamination during an emergency. Personnel Monitoring Team members receive classroom and hands-on training in the following areas:

- ◆ Personnel Monitoring Equipment and Techniques
- ◆ Decontamination Techniques for Personnel
- ◆ Decontamination Techniques for Vehicles

3. Dose Assessment: Dose Assessment training includes the skills and knowledge necessary for calculation and interpretation of an offsite release and its impact on the environment under varying meteorological conditions. Individuals responsible for performing dose assessment are trained in the following areas:

- ◆ Computerized Dose Assessment
- ◆ Protective Action Recommendations
- ◆ Monitoring Team Interface
- ◆ Protective Action Guidelines associated with offsite plume exposure doses

◆ Basic Meteorology

d. Police, Security, and Fire Fighting Personnel

1. Local Police and Fire Fighting Personnel: The local Police and Fire Departments are invited to receive training as outlined in Part 1.a of this section.
2. Security Personnel: Station security personnel are trained in accordance with training defined by the General Employee Training (GET) and the Licensee Security Plan.
3. Fire Control Teams (fire brigades): Station fire brigades are trained in accordance with training defined by the Licensee Fire Protection Program. Fire Brigade personnel are considered the primary members of rescue teams and will receive the appropriate EP training as part of their training program. Training also includes rescue of personnel from hazardous environments.

- e. Repair Teams: Operations, Maintenance and Radiation Protection personnel are trained as part of their normal job specific duties to respond to both normal and abnormal plant operations.

Operations personnel are trained to: (1) recognize and to mitigate degrading conditions in the plant, (2) mechanically and electrically isolate damaged or malfunctioning equipment, (3) isolate fluid leaks, and (4) minimize transients.

Maintenance personnel are trained to troubleshoot and repair damaged or malfunctioning electrical, mechanical, or instrumentation systems as appropriate to their job classification.

Radiation Protection personnel are trained to assess the radiological hazards associated with equipment repair and instruct personnel as to the appropriate protective clothing requirements, respiratory protection requirements, stay times, and other protective actions specific to the conditions present.

At least 50% of personnel from those departments, who are potential responders to the TSC as repair team members, are required to be qualified in the use of full face respirators. This includes in-plant supervision and craft/technicians for the following departments:

- ◆ Operations
- ◆ Radiation Protection
- ◆ Chemistry
- ◆ Maintenance (mechanical, electrical and I&C)

- f. First Aid and Rescue Personnel: First aid and rescue team members receive training as outlined in Part 3 of this section.
- g. Local Support Service Personnel: Local support service personnel providing assistance during an emergency are invited to receive training as outlined in Parts 1.a and 1.b of this section.

- h. Medical Support Personnel: Onsite medical personnel receive specialized training in the handling of contaminated victims and hospital interface. Offsite ambulance and hospital personnel are offered annual training in accordance with a program provided by Emergency Preparedness.
- i. Public Information Personnel: Site personnel responsible for disseminating emergency public information and responding to media and public information requests receive specialized public information training.
- j. Communications Personnel: ERO personnel receive training on communications protocol as a part of the initial Emergency Response training. Personnel using specialized communications equipment that is not part of their normal daily function receive initial and requalification training on the equipment. Personnel involved in notifications to offsite agencies receive specialized training in the notification process.

5. GENERAL, INITIAL, AND ANNUAL TRAINING PROGRAM MAINTENANCE

- a. Training and Emergency Preparedness jointly share the responsibility for ensuring that the ERO receives all necessary training and retraining. In order to carry this out, responsibilities are assigned as follows:
 - 1. Responsibilities for Offsite ERO Personnel
 - ◆ Scheduling and conducting initial, retraining, and make-up classes.
 - ◆ Acting as the sole contact point for ensuring attendance.
 - ◆ Record keeping for the training courses, including dates of scheduled classes and non-attendance information.
 - ◆ Verifying that all emergency response personnel training records are current.
 - ◆ Ensure instructional materials are prepared and reviewed every two years.
 - 2. Responsibilities for Onsite ERO Personnel
 - ◆ Site management shall ensure the attendance of onsite personnel for training, including required E-Plan courses.
 - ◆ The Site shall conduct onsite emergency personnel initial and retraining for site Emergency Response Personnel using approved lesson plans.
 - ◆ The Site Training Department shall provide those shift personnel included in a continuing training program an annual review of the following items as a minimum:
 - ◆ Assembly Areas
 - ◆ Emergency Response Facility assignment
 - ◆ Potential Hazards (radiological and non-radiological)

- ◆ Anticipated actions including assembly requirements, protective equipment requirements (clothing, masks, SCBA, etc.), the use of KI, emergency exposure limits and accountability requirements.
- b. Initial and Requalification ERO Training: The proficiency of emergency response personnel (as defined in 10 CFR 50 Appendix E) is ensured by the following means:
- ◆ Assigning persons to emergency duties that are similar to those performed as a part of their regular work assignment or experience.
 - ◆ Initial training and annual retraining on applicable generic and site-specific portions of the E-Plan and the corresponding implementing procedures. Individuals not demonstrating the required level of knowledge in initial or retraining classes receive additional training on the areas requiring improvement.
 - ◆ Participation in exercises and/or drills as developed or authorized by the Emergency Preparedness Department and designed to sharpen those skills that they are expected to use in the event of a nuclear emergency.

All personnel assigned position specific responsibilities in the ERO are documented by inclusion in the Emergency Telephone Directory listing of positions and personnel.

- c. General Employee Training (GET): All personnel with unescorted site access are provided with initial orientation training on the notification and instruction methods used in the event of an emergency. Additionally, all badged individuals also receive initial orientation on the basic principles of radiological safety including the effects of radiation and the theory and use of radiation detection devices. Appropriate actions for escorted individuals shall be the responsibility of the escort. GET provides initial and annual requalification training on the basic elements of the E-Plan for all personnel working at the plant. Specifically, these elements include:
- ◆ Site emergency alarms and their meaning
 - ◆ Assembly areas
 - ◆ Site and Exclusion Area Accountability and Evacuation procedures
 - ◆ Special precautions and limitations during an emergency
 - ◆ Duties and responsibilities of emergency response and non-emergency response personnel
 - ◆ Emergency classifications
 - ◆ Emergency response

SECTION P: RESPONSIBILITY FOR THE MAINTENANCE OF THE PLANNING EFFORT

This section describes the responsibilities for development, review and distribution of the E-Plan and actions that must be performed to maintain the emergency preparedness program. It also outlines the criteria for ensuring that personnel who perform the planning are properly trained.

1. EMERGENCY PREPAREDNESS STAFF TRAINING

The Emergency Preparedness staff is involved in maintaining an adequate knowledge of state of the art planning techniques and the latest applications of emergency equipment and supplies.

Training for personnel responsible for the Callaway Plant's emergency planning effort is provided by participation in industry, NRC, INPO, and FEMA sponsored emergency planning seminars and workshops.

Emergency Preparedness staff also receive training necessary for unescorted access to the Plant and training necessary to perform emergency planning functions as assigned by the Superintendent, Protective Services.

2. AUTHORITY FOR THE EMERGENCY PREPAREDNESS EFFORT

The Senior Vice President and Chief Nuclear Officer (SVPC) is responsible for the safe and reliable operation of Callaway Plant Unit 2. The issuance and control of this plan and the activities associated with emergency preparedness at Callaway Plant Unit 2 shall be the overall responsibility of the SVPC. This individual is assigned the responsibility for overall implementation of the Licensee E-Plan and Unit Annex for Callaway Plant Unit 2.

3. RESPONSIBILITY FOR DEVELOPMENT AND MAINTENANCE OF THE PLAN

The Superintendent, Protective Services is responsible for the overall radiological emergency preparedness program associated with the operation of the nuclear power plant and to administer the program to ensure availability of resources in the event of an emergency.

The Superintendent, Protective Services is assisted by an Emergency Preparedness Staff. Specific responsibilities include the following:

a. Program Administration

- ◆ Develop and maintain the E-Plan, Unit Annex, implementing procedures and administrative documents.
- ◆ Develop and maintain 10 CFR 50.54(q) evaluations for changes to EP documents.
- ◆ Develop and maintain working relationships and coordinate meetings with federal, state and local agencies.
- ◆ Ensure integration of plans between the Licensee and offsite agencies.
- ◆ Provide an opportunity to discuss Emergency Action Levels and the availability of Quality Assurance audit results relating to interface with governmental agencies.

- ◆ Coordinate, negotiate and maintain agreements and contracts with offsite agencies and support organizations.
- ◆ Obtain Letters of Agreement with major medical facilities.
- ◆ Coordinate the development and annual distribution of the site public information publication.
- ◆ Coordinate and support EP Self-Assessments, Audits and Inspections.
- ◆ Ensure the documentation and resolution of adverse conditions in the emergency preparedness program discovered through drills, audits, etc. in accordance with the Licensee Corrective Action Program.
- ◆ Coordinate and develop Operational Experience responses.
- ◆ Coordinate, document and review Performance Indicator data and reports.
- ◆ Provide oversight of Drill and Exercise Performance (DEP) evaluations during License Operator Requalification (LOR) Training.
- ◆ Coordinate and conduct EP Event reviews and reports.
- ◆ Maintain adequate documentation/files to support EP activities.
- ◆ Develop and manage the EP budget.
- ◆ Maintain the Emergency Telephone Directory.

b. Drills and Exercises

- ◆ Coordinate and maintain the EP Drill and Exercise Schedule.
- ◆ Coordinate and conduct exercises and drills.
- ◆ Coordinate NRC, FEMA, state, and local exercise scheduling and development activities.
- ◆ Coordinate drill and exercise scenario development activities.
- ◆ Develop and publish drill and exercise scenario manuals.
- ◆ Coordinate and perform controller and evaluator functions for drills and exercises.
- ◆ Coordinate response cells for drills and exercises.
- ◆ Develop and issue drill and exercise reports.

c. Facilities and Equipment

- ◆ Ensure maintenance and administration of the Alert and Notification System (ANS).

- ◆ Ensure maintenance of the ERO call-out system.
- ◆ Ensure the Emergency Response Facilities are maintained in a constant state of readiness.
- ◆ Ensure maintenance and inventory of the EP equipment.
- ◆ Ensure maintenance and testing of the communications systems.
- ◆ Maintain the EP computer applications.

d. ERO Qualification and Administration

- ◆ Develop and maintain ,with Training, ERO Lesson Plans, Examinations, and Qualification Cards.
- ◆ Maintain , with Training, EP GET training content.
- ◆ Coordinate, schedule and conduct , with Training, ERO qualification and requalification training.
- ◆ Oversee the maintenance , with Training, of ERO training records.
- ◆ Maintain and coordinate publishing of the ERO Duty Rosters.
- ◆ Provide adequate oversight and support for the training of offsite response personnel.
- ◆ Coordinate conduct of Emergency Medical Assistance Program training.
- ◆ Coordinate annual training for the media.

4. EMERGENCY PLAN AND AGREEMENT REVISIONS

The E-Plan, its Unit Annex, and supporting Agreements are reviewed on an annual basis.

The annual E-Plan review/update includes required changes identified during audits, assessments, training, drills and exercises , regulatory changes, technical review, individual staff use or review, evaluations and tests. The Superintendent, Protective Services is responsible for determining which recommended changes are incorporated into a plan or emergency procedure revision Any deficiencies, recommendations, or improvement items are tracked to ensure a satisfactory resolution in accordance with appropriate plant administrative procedures.

The E-Plan and its Annex shall be revised as needed and the most current approved revisions shall remain in effect so long as they are certified as current. Revisions to the E-Plan are reviewed by the site's Onsite Review Committee (ORC) prior to approval by the Manager, Nuclear Operations. Changes to the plan are made without NRC approval only if such changes do not decrease the effectiveness of the plan per 10 CFR 50.54(q), and the plan as changed continues to meet the standards of 10 CFR 50.47(b) and the requirements of 10 CFR 50, Appendix E. Proposed changes that decrease or have a potential to decrease the effectiveness of the approved plan are not implemented without prior approval by the NRC.

An independent review by persons who have no direct responsibility for implementation of the emergency preparedness program is performed at intervals not to exceed 12 months or, as necessary based on an assessment performed by Quality Assurance against NRC performance indicators, and as soon as reasonably practicable after a change occurs in personnel, procedures, equipment, or facilities that potentially could adversely affect emergency preparedness, but no longer than 12 months after the change. In any case, all elements of the emergency preparedness program SHALL be reviewed at least once every 24 months, per 10CFR50.54(t).

The review shall include an evaluation of the following:

- ◆ Interfaces with State and local governments
- ◆ Drills and exercises
- ◆ Emergency response capabilities
- ◆ EIPs

The results of the reviews along with recommendations for improvements are documented, reported to corporate and Plant management, and retained for a period of at least five (5) years. The portion of the review involving the evaluation for adequacy of interfaces with State and local governments is made available to the appropriate State and local governments.

The Emergency Action Levels (EAL)s are reviewed annually with off-site officials to renew familiarity and discuss questions.

Annually, each Letter of Agreement is reviewed and verified current in order to assure the availability of assistance from each supporting organization not already a party to the individual state and/or local emergency plan.

5. EMERGENCY PLAN DISTRIBUTION

E-Plan manuals, Unit Annex and implementing procedures are distributed as necessary on a controlled basis to the Emergency Response Facilities. All controlled documents holders are issued revision changes upon approval. Selected Federal, state, and local agencies, and other appropriate locations requiring them are also issued copies. Procedures are in place that control the revision of the E-Plan.

The Superintendent, Protective Services, or designee, ensures through letters, meetings, seminars or other available means, that all elements of the total emergency response organization are informed of the E-Plan, Unit Annexes, associated EIPs and revisions thereto.

6. SUPPORTING EMERGENCY RESPONSE PLANS

Other plans that support this E-Plan are:

- ◆ NUREG-1471, US Nuclear Regulatory Commission, "Concept of Operations: NRC Incident Response"
- ◆ NRC Incident Response Plan – NUREG-0728
 1. Agency Procedures for the NRC Incident Response Plan – NUREG-0845

2. Region IV Incident Response – Supplement to NUREG-0845

- ◆ National Response Plan
 1. Federal Emergency Management Agency Region VII Kansas City, Missouri Emergency Response Team Plan
- ◆ Missouri Nuclear Accident Plan-Callaway
- ◆ Callaway County/Fulton Radiological Emergency Response Plan
- ◆ Osage County Radiological Emergency Response Plan
- ◆ Montgomery County Radiological Emergency Response Plan
- ◆ Gasconade County Radiological Emergency Response Plan
- ◆ Department of Energy, "Radiological Assistance Plan"
- ◆ INPO Emergency Resources Manual.
- ◆ Callaway Plant Unit 2 Security Plan - Note: The Callaway Plant Unit 2 Security Plan contains safeguards information that must be protected from unauthorized disclosure under provisions of 10 CFR 73.21.
- ◆ Callaway Plant Unit 2 Fire Protection Program.

7. IMPLEMENTING AND SUPPORTING PROCEDURES

Appendix 2 of this plan contains a listing, by number and title, of those procedures that implement this plan during an emergency. Additionally, administrative procedures that outline the steps taken to maintain the Callaway Plant Unit 2 Emergency Preparedness Program have been developed and are listed in Appendix 2.

8. CROSS REFERENCE TO PLANNING CRITERIA

The Plan contains a table of contents and is formatted in the same manner as NUREG-0654, FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in support of Nuclear Power Plants." The use of this format lends itself to uncomplicated comparison of the criteria set forth in NUREG-0654, FEMA-REP-1.

Appendix 1, References provides cross-references of other planning standards to the section of the plan.

9. AUDIT/ASSESSMENT OF THE EMERGENCY PREPAREDNESS PROGRAM

An independent review by persons who have no direct responsibility for implementation of the emergency preparedness program is performed at intervals not to exceed 12 months or, as necessary based on an assessment performed by Quality Assurance against NRC performance indicators, and as soon as reasonably practicable after a change occurs in personnel, procedures, equipment, or facilities that potentially could adversely affect emergency preparedness, but no longer than 12 months after the change. In any case, all elements of the emergency preparedness program SHALL be reviewed at least once every 24 months, per 10CFR50.54(t).

- ◆ The review shall include an evaluation of the following:
- ◆ Interfaces with State and local governments
- ◆ Drills and exercises
- ◆ Emergency response capabilities
- ◆ EIPs

The results of the reviews along with recommendations for improvements are documented, reported to corporate and Plant management, and retained for a period of at least five (5) years. The portion of the review involving the evaluation for adequacy of interfaces with State and local governments is made available to the appropriate State and local governments.

10. MAINTENANCE OF EMERGENCY TELEPHONE DIRECTORY

Names and phone numbers of the Emergency Response Organization and support personnel shall be reviewed and updated at least quarterly.

PART 3: APPENDIXES

Appendix 1: References

References consulted in the writing of this Emergency Plan are listed in this section. With exception of regulatory requirements, inclusion of material on this list does not imply adherence to all criteria or guidance stated in each individual reference.

Guidance	Cross Reference / Use
1. 10 CFR 50.47, Emergency Plans	Entire Plan
2. 10 CFR 50.54, Conditions of Licenses	Plan Section P-4
3. 10 CFR 50.72, Immediate Notification Requirements for Operating Nuclear Power Reactors	Plan Section E
4. 10 CFR 50.73, Licensee Event Report System	Plan Section D-2
5. 10 CFR 50 Appendix E, Emergency Planning and Preparedness for Production and Utilization Facilities	See Table App1-1 at end of this section
6. 10 CFR 20, Standards for Protection Against Radiation	Section K
7. 10 CFR 73.21, Requirements for Protection of Safeguards Information.	Plan reviewed to ensure no Safeguards Information improperly included.
8. NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, November, 1980.	This plan is formatted to match NUREG-O654 numbering.
9. NUREG-0654, Supplement 3, "Criteria for Protective Action Recommendations for Severe Accidents," July 1996.	Section J
10. NUREG-0396, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants," December 1978.	Section A-2 and Section B-7
11. NUREG-0696, Revision 1, Functional Criteria for Emergency Response Facilities, February 1981.	Section H
12. US NRC Regulatory Guide 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors," Revision 4, July, 2003.	Section D-2
13. U.S. NRC Response Technical Manual (RTM-96), 1996.	Section C
14. EPA 400-R-92-001, October 1991, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents."	Section J-7 through J-10
15. FEMA-REP-10, "Guide for Evaluation of Alert and Notification Systems for Nuclear Power Plants," November, 1985.	Section E-6
16. FEMA-REP-14, "Exercise Evaluation Methodology," 1991.	Section N-4
17. FEMA-Guidance Memorandum, "MS-1 "Medical Services," November, 1986.	Section L-1
18. INPO Emergency Resources Manual	Section P-6
19. "Maintaining Emergency Preparedness Manual," dated December, 1996 INPO 96-009.	Section P
20. Comprehensive Environmental Response, Compensation and Liability Act of 1980.	Section B-8
21. American Nuclear Insurers Bulletin #5B (1981), "Accident Notification Procedures for Liability Insureds".	Section B-8
22. ANI/MAELU Engineering Inspection Criteria For Nuclear Liability Insurance, Section 6.0, Rev. 1, "Emergency Planning."	Section B-8
23. "Potassium Iodide as a Thyroid Blocking Agent in a Radiation Emergency: Final Recommendations on Use," Federal Register Vol. 47, No. 125, June 29, 1982.	Section J-6
24. INPO Coordination agreement on emergency information among USCEA, EPRI, INPO, NUMARC and their member utilities, dated April (1988).	Section A-3
25. EPPOS No. 2, Rev. 0, "Timeliness of Classification of Emergency Condition," August 1, 1995.	Section D
26. EPPOS No. 3, Rev. 0, "Requirement for Onshift Dose Assessment Capability, November 8, 1995.	Unit 2 Annex Table B-1a
27. EPPOS No. 5, Rev. 0, "Emergency Planning Information Provided to the Public," December 4, 2002.	Section G

Guidance	Cross Reference / Use
28. Regulatory Issue Summary (RIS) 2000-08, "Voluntary Submission of Performance Indicator Data," March 29, 2000 (ADAMS Accession No. ML003685821).	Section P-3
29. RIS 2000-11, "NRC Emergency Telecommunications System," June 30, 2000 (ADAMS Accession No. ML003727812).	Section F-1
30. RIS 2000-11, Supp. 1, "NRC Emergency Telecommunications System," March 22, 2001 (ADAMS Accession No. ML010570103).	Section F-1
31. RIS 2001-16, "Update of Evacuation Time Estimates," August 1, 2001 (ADAMS Accession No. ML012070310).	Section J-8
32. RIS 2003-12, "Clarification of NRC Guidance for Modifying Protective Actions," June 24, 2003 (ADAMS Accession No. ML031680611).	Section J-10
33. RIS 2003-18, "Use of NEI 99-01, "Methodology for Development of Emergency Action Levels," Revision 4, Dated January 2003," October 8, 2003 (ADAMS Accession No. ML032580518).	Section D
34. RIS 2003-18, Supp. 1, "Supplement 1, Use of Nuclear Energy Institute (NEI) 99-01, "Methodology for Development of Emergency Action Levels," Revision 4, Dated January 2003," July 13, 2004 (ADAMS Accession No. ML041550395).	Section D
35. RIS 2003-18, Supp. 2, "Supplement 2, Use of Nuclear Energy Institute (NEI) 99-01, "Methodology for Development of Emergency Action Levels," Revision 4, Dated January 2003," December 12, 2005 (ADAMS Accession No. ML051450482).	Section D
36. RIS 2005-02, "Clarifying the Process for Making Emergency Plan Changes," February 14, 2005 (ADAMS Accession No. ML042580404).	Section P-4
37. RIS 2005-08, "Endorsement of Nuclear Energy Institute (NEI) Guidance "Range of Protective Actions for Nuclear Power Plant Incidents," June 6, 2005 (ADAMS Accession No. ML050870432).	Section J-10
38. RIS 2006-03, "Guidance on Requesting an Exemption from Biennial Emergency Preparedness Exercise Requirements," February 24, 2006 (ADAMS Accession No. ML053390039).	Section N-1
39. RIS 2006-12, "Endorsement of Nuclear Energy Institute Guidance "Enhancements to Emergency Preparedness Programs for Hostile Action," July 19, 2006 (ADAMS Accession No. ML061530290).	Section D
40. IN 85-44, "Emergency Communication System Monthly Test," May 30, 1985.	Section F-1.f
41. IN 86-98, "Offsite Medical Services," December 2, 1986.	Section L-1
42. IN 87-58, "Continuous Communications Following Emergency Notification," November 16, 1987.	Section E-4
43. IN 88-15, "Availability of U.S. Food and Drug Administration (FDA)-Approved Potassium Iodide for Use in Emergencies Involving Radioactive Iodine," April 18, 1988.	Section J-6.c
44. IN 93-81, "Implementation of Engineering Expertise on Shift," October 12, 1993.	Section B-1
45. IN 02-14, "Ensuring a Capability to Evacuate Individuals, Including Members of the Public, from the Owner-Controlled Area," April 8, 2002.	Section J-2

Table App 1-1, 10 CFR 50 Appendix E, Cross Reference

AppE #	STATEMENT	PLAN Section
IV A.	The organization for coping with radiological emergencies shall be described, including definition of authorities, responsibilities, and duties of individuals assigned to the licensee emergency organization and the means for notification of such individuals in the event of an emergency.	B
IV A.1	A description of the normal plant operating organization.	B.1
IV A.2.a	A description of the onsite emergency response organization with a detailed discussion of: Authorities, responsibilities, and duties of the individual(s) who will take charge during an emergency;	B.2, B.3, B.4, B.5
IV A.2.b	Plant staff emergency assignments;	B.5
IV A.2.c	Authorities, responsibilities, and duties on an onsite emergency coordinator who shall be in charge of the exchange of information with offsite authorities responsible for coordinating and implementing offsite emergency measures.	B.5
IV A.3	A description, by position and function to be performed, of the licensee's headquarters personnel who will be sent to the plant site to augment the onsite emergency organization.	B.5.b, B7
IV A.4	Identification, by position and function to be performed, of persons within the licensee organization who will be responsible for making offsite dose projections, and a description of how these projections will be made and the results transmitted to State and local authorities, NRC, and other appropriate governmental entities.	B.5.a.12, B.5.b.7, B.5.b.8
IV A.5	Identification, by position and function to be performed, of other employees of the licensee with special qualifications for coping with emergency conditions that may arise. Other persons with special qualifications, such as consultants, who are not employees of the licensee and who may be called upon for assistance for emergencies shall also be identified. The special qualifications of these persons shall be described.	B.5, B.8
IV A.6	A description of the local offsite services to be provided in support of the licensee's emergency organization.	B.9
IV A.7	Identification of, and assistance expected from, appropriate State, local, and Federal agencies with responsibilities for coping with emergencies.	A.1, A.2
IV A.8	Identification of the State and/or local officials responsible for planning for, ordering, and controlling appropriate protective actions, including evacuations when necessary.	A.1
IV B	The means to be used for determining the magnitude of and for continually assessing the impact of the release of radioactive materials shall be described, including emergency action levels that are to be used as criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies, and the emergency action levels that are to be used for determining when and what type of protective measures should be considered within and outside the site boundary to protect health and safety. The emergency action levels shall be based on in-plant conditions and instrumentation in addition to onsite and offsite monitoring. These emergency action levels shall be discussed and agreed on by the applicant and State and local governmental authorities and approved by NRC. They shall also be reviewed with the State and local governmental authorities on an annual basis.	I.4, D Unit 2 Annex

Table App 1-1, 10 CFR 50 Appendix E, Cross Reference

IV C	The entire spectrum of emergency conditions that involve the alerting or activating of progressively larger segments of the total emergency organization shall be described. The communication steps to be taken to alert or activate emergency personnel under each class of emergency shall be described. Emergency action levels (based not only on onsite and offsite radiation monitoring information but also on readings from a number of sensors that indicate a potential emergency, such as the pressure in containment and the response of the Emergency Core Cooling System) for notification of offsite agencies shall be described. The existence, but not the details, of a message authentication scheme shall be noted for such agencies. The emergency classes defined shall include: (1) notification of unusual events, (2) alert, (3) site area emergency, and (4) general emergency. These classes are further discussed in NUREG - 0654; FEMA - REP - 1.	E
IV D.1	Administrative and physical means for notifying local, State, and Federal officials and agencies and agreements reached with these officials and agencies for the prompt notification of the public and for public evacuation or other protective measures, should they become necessary, shall be described. This description shall include identification of the appropriate officials, by title and agency, of the State and local government agencies within the EPZs.	F
IV D.2	Provisions shall be described for yearly dissemination to the public within the plume exposure pathway EPZ of basic emergency planning information, such as the methods and times required for public notification and the protective actions planned if an accident occurs, general information as to the nature and effects of radiation, and a listing of local broadcast stations that will be used for dissemination of information during an emergency. Signs or other measures shall also be used to disseminate to any transient population within the plume exposure pathway EPZ appropriate information that would be helpful if an accident occurs.	G.1
IV D.3	A licensee shall have the capability to notify responsible State and local governmental agencies within 15 minutes after declaring an emergency. The design objective of the prompt public notification system shall be to have the capability to essentially complete the initial notification of the public within the plume exposure pathway EPZ within about 15 minutes. The use of this notification capability will range from immediate notification of the public (within 15 minutes of the time that State and local officials are notified that a situation exists requiring urgent action) to the more likely events where there is substantial time available for the State and local governmental officials to make a judgment whether or not to activate the public notification system. Where there is a decision to activate the notification system, the State and local officials will determine whether to activate the entire notification system simultaneously or in a graduated or staged manner. The responsibility for activating such a public notification system shall remain with the appropriate governmental authorities.	E
IV 4.E.1	Adequate provisions shall be made and described for emergency facilities and equipment, including: Equipment at the site for personnel monitoring;	H

Table App 1-1, 10 CFR 50 Appendix E, Cross Reference

IV 4.E.2	Equipment for determining the magnitude of and for continuously assessing the impact of the release of radioactive materials to the environment;	H
IV 4.E.3	Facilities and supplies at the site for decontamination of onsite individuals;	H
IV 4.E.4	Facilities and medical supplies at the site for appropriate emergency first aid treatment;	L.2
IV 4.E.5	Arrangements for the services of physicians and other medical personnel qualified to handle radiation emergencies on-site;	L.3
IV 4.E.6	Arrangements for transportation of contaminated injured individuals from the site to specifically identified treatment facilities outside the site boundary;	L.4
IV 4.E.7	Arrangements for treatment of individuals injured in support of licensed activities on the site at treatment facilities outside the site boundary;	L.1
IV 4.E.8	A licensee onsite technical support center and a licensee near-site emergency operations facility from which effective direction can be given and effective control can be exercised during an emergency;	H.1, H.2
IV 4.E.9	At least one onsite and one offsite communications system; each system shall have a backup power source. All communication plans shall have arrangements for emergencies, including titles and alternates for those in charge at both ends of the communication links and the primary and backup means of communication.	F.1
IV 4.E.9.a	Where consistent with the function of the governmental agency, these arrangements will include: Provision for communications with contiguous State/local governments within the plume exposure pathway EPZ. Such communications shall be tested monthly.	F.3, N.2.a
IV 4.E.9.b	Provision for communications with Federal emergency response organizations. Such communications systems shall be tested annually.	N.2.a
IV 4.E.9.c	Provision for communications among the nuclear power reactor control room, the onsite technical support center, and the near-site emergency operations facility; and among the nuclear facility, the principal State and local emergency operations centers, and the field assessment teams. Such communications systems shall be tested annually.	N.2.a
IV 4.E.9.d	Provisions for communications by the licensee with NRC Headquarters and the appropriate NRC Regional Office Operations Center from the nuclear power reactor control room, the onsite technical support center, and the near-site emergency operations facility. Such communications shall be tested monthly.	N.2.a
IV F.1.i	The program to provide for: (a) The training of employees and exercising, by periodic drills, of radiation emergency plans to ensure that employees of the licensee are familiar with their specific emergency response duties, and (b) The participation in the training and drills by other persons whose assistance may be needed in the event of a radiation emergency shall be described. This shall include a description of specialized initial training and periodic retraining programs to be provided to each of the following categories of emergency personnel: Directors and/or coordinators of the plant emergency organization;	O.4.a
IV F.1.ii	Personnel responsible for accident assessment, including control room shift personnel;	O.4.b
IV F.1.iii	Radiological monitoring teams;	O.4.c
IV F.1.iv	Fire control teams (fire brigades);	O.4.d
IV F.1.v	Repair and damage control teams;	O.4.e

Table App 1-1, 10 CFR 50 Appendix E, Cross Reference

IV F.1.vi	First aid and rescue teams;	O.4.f
IV F.1.vii	Medical support personnel;	O.4.h
IV F.1.viii	Licensee's headquarters support personnel;	O.4.i
IV F.1.ix	Security personnel.	O.4.d
IV F.1	In addition, a radiological orientation training program shall be made available to local services personnel; e.g., local emergency services/Civil Defense, local law enforcement personnel, local news media persons.	O.4.g
IV F.2	The plan shall describe provisions for the conduct of emergency preparedness exercises as follows: Exercises shall test the adequacy of timing and content of implementing procedures and methods, test emergency equipment and communications networks, test the public notification system, and ensure that emergency organization personnel are familiar with their duties.	N.1
IV F.2.a	A full participation exercise which tests as much of the licensee, State and local emergency plans as is reasonably achievable without mandatory public participation shall be conducted for each site at which a power reactor is located.	N.1
IV F.2.b	Each licensee at each site shall conduct an exercise of its onsite emergency plan every 2 years. The exercise may be included in the full participation biennial exercise required by paragraph 2.c. of this section. In addition, the licensee shall take actions necessary to ensure that adequate emergency response capabilities are maintained during the interval between biennial exercises by conducting drills, including at least one drill involving a combination of some of the principal functional areas of the licensee's onsite emergency response capabilities.	N.1
IV F.2.c	Offsite plans for each site shall be exercised biennially with full participation by each offsite authority having a role under the plan. Where the offsite authority has a role under a radiological response plan for more than one site, it shall fully participate in one exercise every two years and shall, at least, partially participate in other offsite plan exercises in this period.	N.1
IV F.2.d	A State should fully participate in the ingestion pathway portion of exercises at least once every six years. In States with more than one site, the State should rotate this participation from site to site.	N.1
IV F.2.e	Licensees shall enable any State or local Government located within the plume exposure pathway EPZ to participate in the licensee's drills when requested by such State or local Government.	N.1.b
IV F.2.f	Remedial exercises will be required if the emergency plan is not satisfactorily tested during the biennial exercise, such that NRC, in consultation with FEMA, cannot find reasonable assurance that adequate protective measures can be taken in the event of a radiological emergency. The extent of State and local participation in remedial exercises must be sufficient to show that appropriate corrective measures have been taken regarding the elements of the plan not properly tested in the previous exercises.	N.5
IV F.2.g	All training, including exercises, shall provide for formal critiques in order to identify weak or deficient areas that need correction. Any weaknesses or deficiencies that are identified shall be corrected.	N.4, O.1

Table App 1-1, 10 CFR 50 Appendix E, Cross Reference

IV.F.2.h	The participation of State and local governments in an emergency exercise is not required to the extent that the applicant has identified those governments as refusing to participate further in emergency planning activities, pursuant to 10 CFR 50.47(c)(l). In such cases, an exercise shall be held with the applicant or licensee and such governmental entities as elect to participate in the emergency planning process.	N.1.a
IV.G	Provisions to be employed to ensure that the emergency plan, its implementing procedures, and emergency equipment and supplies are maintained up to date shall be described.	P
IV.H	Criteria to be used to determine when, following an accident, reentry of the facility would be appropriate or when operation could be resumed shall be described.	M

Appendix 2: Procedure Cross-Reference to NUREG-0654

Criteria	Planning Standard	Procedure/Document
NUREG-0654.II.A	Assignment of Responsibility (Organization Control)	EP-AN-100, Emergency Plan General Response
NUREG-0654.II.B	Onsite Emergency Organization	EP-AN-200, Control Room Emergency Response
		EP-AN-210, TSC Activation and Operation
		EP-AN-220, OSC Activation and Operation
		EP-AN-230, EOF Activation and Operation
		EP-AN-240, JIC Activation and Operation
NUREG-0654.II.C	Emergency Response Support and Resources	Details provided in EP-AN-2xx series, facility procedures.
NUREG-0654.II.D	Emergency Classification System	EP-AN-300, Emergency Classification
NUREG-0654.II.E	Notification Methods and Procedures	EP-AN-400, Emergency Notifications
NUREG-0654.II.F	Emergency Communications	Details provided in EP-AN-2xx series, facility procedures.
NUREG-0654.II.G	Public Education and Information	EP-AN-901, Emergency Plan Public Information Program
NUREG-0654.II.H	Emergency Facilities and Equipment	EP-AN-700, Emergency Plan Equipment Operation
		EP-AN-903, Maintenance of Emergency Response Facilities.
		EP-AN-906, Siren Maintenance and Testing
NUREG-0654.II.I	Accident Assessment	EP-AN-500, Core Damage Assessment
		EP-AN-510, Dose Assessment
		Position specific details provided in EP-AN-2xx series, facility procedures.
NUREG-0654.II.J	Protective Response	EP-AN-600, Protective Action Recommendations
		EP-AN-610, Onsite Protective Actions
NUREG-0654.II.K	Radiological Exposure Control	EP-AN-620, Emergency Exposure Controls
NUREG-0654.II.L	Medical and Public Health Support	EP-AN-630, Health Physics Hospital Assistance
NUREG-0654.II.M	Recovery and Reentry Planning and Post-Accident Operations	EP-AN-800, Reentry and Recovery
NUREG-0654.II.N	Exercises and Drills	EP-AN-905, Exercises, Tests and Drills
NUREG-0654.II.O	Radiological Emergency Response Training	EP-AN-904, Emergency Response Training
NUREG-0654.II.P	Responsibility for the Planning Effort: Development, Periodic Review and Distribution of Emergency Plans	EP-AN-900, Emergency Preparedness Administration
		EP-AN-902, Maintenance of Emergency Plan Records
		EP-AN-907, Emergency Plan Performance Indicators

Appendix 3: List of Letters of Agreements

Letters of commitment from each of the offsite agencies providing direct support to Callaway Plant Unit 2 are contained in Part 11 of the COLA. These commitments provide reasonable assurance that binding agreements will be in place after the decision to construct Callaway Plant Unit 2 is made. A defined binding agreement, including possible assistance for any required additional resources to support Callaway Plant Unit 2, will be executed according to the timeline provided in the Introduction to COLA Part 5.

Appendix 4: Glossary of Terms and Acronyms

Accident Assessment	Accident assessment consists of a variety of actions taken to determine the nature, effects and severity of an accident and includes evaluation of reactor operator status reports, damage assessment reports, meteorological observations, seismic observations, fire reports, radiological dose projections, in plant radiological monitoring, and environmental monitoring.
Accountability	The process of identifying personnel remaining in the Protected Area following an assembly or site evacuation.
Activation	"ERO Activation" is the process of initiating actions to notify and mobilize Emergency Response Organization (ERO) personnel following an event classification under the emergency plan. "Facility Activation" refers to the decision to consider a facility fully operational based on the minimum staffing required under Table B-1b of the emergency plan and the ability of facility staffing and equipment to perform its designed function(s).
Alert	Events are in process 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 exposure levels.
Annual	Frequency of occurrence equal to once per calendar year.
Assembly	A procedural or discretionary protective action taken for all persons within the security "Protected Area", which involves the gathering of personnel into pre-designated areas.
Assessment Actions	Those actions taken during or after an emergency to obtain and process information that is necessary to make decisions to implement specific emergency measures.
Automatic Calling System	Automated calling service provided by a vendor. This system is a backup to the Sirens and Tone Alert Radios for notifying the general public. In addition, the system can also be used as a backup to the Cellular Paging System for notifying selected ERO personnel.
Backup Emergency Operations Facility (BEOF)	Alternate facility for the EOF set up in the State Emergency Operations Center (EOC) at the Ike Skelton Training Site southeast of Jefferson City, Missouri.
Biennial	Frequency of occurrence equal to once per two calendar year periods.
Biennial Exercise	An event that tests the integrated capability and a major portion of the basic elements existing within an emergency plan. An exercise usually involves participation of personnel from state and local governments and licensee personnel, and may involve participation of federal government personnel.

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Classification	The classification of emergencies is divided into Five (5) categories or conditions, covering the postulated spectrum of emergency situations. The first four categories are Unusual Event, Alert, Site Area Emergency and General Emergency. The first four (4) emergency classifications are characterized by Emergency Action Levels (EALs) or event initiating conditions and address emergencies of increasing severity. The fifth, the Recovery classification, is unique in that it may be viewed as a phase of the emergency, rather than a classification, requiring specific criteria to be met and/or considered prior to its declaration.
Command and Control	When in Command and Control, the designated Emergency Response Facility (ERF) has overall responsibility for the Licensee's emergency response efforts, including the non-delegable responsibilities of Command and Control.
Committed Dose Equivalent (CDE)	The Dose Equivalent to organs or tissues of reference that will be received from an intake of radioactive material by an individual during the 50-year period following the intake.
Committed Effective Dose Equivalent (CEDE)	The sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to these organs or tissues.
Corrective Action	Those emergency measures taken to lessen or terminate an emergency situation at or near the source of the problem, to prevent an uncontrolled release of radioactive material, or to reduce the magnitude of a release. Corrective actions include, equipment repair or shutdown, installation of emergency structures, fire fighting, repair, and damage control.
Damage Assessment	Estimates and descriptions of the nature and extent of damages resulting from an emergency or disaster; of actions that can be taken to prevent or mitigate further damage; and of assistance required in response and recovery efforts based on actual observations by qualified engineers and inspectors.
Decontamination	The reduction or removal of contaminated radioactive material from a structure, area, material, object, or person. Decontamination may be accomplished by (1) treating the surface so as to remove or decrease the contamination; (2) letting the material stand so that the radioactivity is decreased as a result of natural decay; and (3) covering the contamination.
Dedicated Communications	A communications link between two or more locations, access to which is limited to designated locations, and used only for the purpose intended. The communications link may be either telephone or radio.
Deep Dose Equivalent (DDE)	The dose equivalent at a tissue depth of 1 cm (1000 mg/cm ²); applies to external whole body exposure.
Department of Health	A Department of the State of Missouri responsible for evaluating the effects of a radiological emergency on the population at risk.
Dose	A generic term that means absorbed dose, dose equivalent, effective dose equivalent, deep dose equivalent, committed dose equivalent, committed effective dose equivalent, or total effective dose equivalent.
Dose Equivalent (DE)	The product of the absorbed dose in tissue, quality factor, and all other necessary modifying factors at the location of interest. The unit of dose equivalent is the Rem (Sv).

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Dose Projection	The calculated estimate of a radiation dose to individuals at a given location (normally off-site), determined from the source term/quantity of radioactive material (Q) released, and the appropriate meteorological dispersion parameters (X/Q).
Dose Rate	The amount of ionizing (or nuclear) radiation to which an individual would be exposed per unit of time. As it would apply to dose rate to a person, it is usually expressed as rems per hour or in submultiples of this unit, such as millirems per hour. The dose rate is commonly used to indicate the level of radioactivity in a contaminated area.
Dosimeter	An instrument such as a thermoluminescent dosimeter (TLD), self-reading pocket dosimeter (SRPD), optically stimulated luminescent dosimeter (OSLD) or electronic dosimeter (ED) for measuring, registering, or evaluating total accumulated dose or exposure to ionizing radiation.
Drill	A supervised instruction period aimed at testing, developing and maintaining skills in a particular operation.
Early Phase	The period at the beginning of a nuclear incident when immediate decisions for effective use of protective actions are required and must be based primarily on predictions of radiological conditions in the environment. This phase may last from hours to days. For the purposes of dose projections it is assumed to last four days.
Emergency Action Levels (EALs)	A pre-determined, site-specific, observable threshold for a plant Initiating Condition that places the plant in a given emergency class. An EAL can be an instrument reading; an equipment status indicator; a measurable parameter (onsite or offsite); a discrete, observable event; or another phenomenon which, if it occurs, indicates entry into a particular emergency class.
Emergency Alert System (EAS)	A network of broadcast stations and interconnecting facilities which have been authorized by the Federal Communications Commission to operate in a controlled manner during a war, state of public peril or disaster, or other national or local emergency. In the event of a nuclear reactor accident, instructions/notifications to the public on conditions or protective actions would be broadcast by state or local government authorities on the EAS.
Emergency Communications Center (ECC)	A designated facility designed and equipped to handle incoming and outgoing communications for a County Emergency Operations Center.
Emergency Notification System (ENS)	The NRC Emergency Notification System hot line is a dedicated telephone system that connects the plant with NRC headquarters in White Flint, Maryland. It is directly used for reporting emergency conditions to NRC personnel.
Emergency Operating Procedures (EOPs)	EOPs are step-by-step procedures for direct actions taken by licensed reactor operators to mitigate and/or correct an off normal plant condition through the control of plant systems.
Emergency Operations Center (EOC)	A facility designed and equipped for effective coordination and control of emergency operations carried out within an organization's jurisdiction. The site from which civil government officials (city, county, state, and federal) exercise direction and control in a civil defense emergency.

Appendix 4: Glossary of Terms and Acronyms

Emergency Operations Facility (EOF)	An emergency response facility designed and equipped for effective communication, coordination and control of emergency operations carried out by the site and communicated to the offsite emergency response organizations.
Emergency Personnel	Those organizational groups that perform a functional role during an emergency condition. Within the Licensee, emergency personnel include the Managers and Directors of the Emergency Response Organization, accident assessment personnel, radiological monitoring teams, fire brigades, first aid teams and security personnel.
Emergency Planning Zones (EPZ)	That area surrounding a nuclear site in which emergency planning is conducted for the protection of the public. With respect to protecting the public from the plume exposure resulting from an incident, the EPZ is usually an area with a radius of about 10 miles (16 kilometers) surrounding the facility. With respect to the ingestion exposure pathway, the EPZ is usually an area with a radius of about 50 miles (80 kilometers).
Emergency Plan Implementing Procedures (EPIP)s	Specific procedures providing actions required to put into effect the provisions of the RERP in order to mitigate and/or terminate the emergency situation. Procedures addressing maintenance of emergency preparedness are also included.
Emergency Preparedness	A state of readiness that provides reasonable assurance that adequate protective measures can and will be taken upon implementation of the emergency plan in the event of a radiological emergency.
Emergency Response Data System (ERDS)	ERDS is a direct near real-time electronic data link between the licensee's onsite computer system and the NRC Operations Center that provides for the automated transmission of a limited data set of selected parameters.
Emergency Response Facility (ERF)	A collective name for specifically designated locations that are equipped to facilitate the control and coordination of emergency activities and assessment.
Emergency Response Organization (ERO)	An organization that has been established to provide technical and logistical direction in the event of a radiological emergency declaration at the site. This organization is structured to provide plant control and coordination of on-site response, coordination of off-site response and dissemination of information to the public.
Environmental Monitoring	The use of radiological instruments or sample collecting devices to measure and assess background radiation levels and/or the extent and magnitude of radiological contamination in the environment around the plant. This may be done in various stages such as pre-operational, operational, emergency, and post operational.
Essential Personnel	Essential personnel are those needed to achieve the goals and tasks as deemed necessary by the Emergency Coordinator.
Evacuation	The urgent removal of people from an area to avoid or reduce high level, short-term exposure usually from the plume or from deposited activity.

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Exclusion Area	An Exclusion Area is an area specified for the purpose of reactor site evaluation in accordance with 10 CFR 100. It is an area of such size that an individual located at any point on its boundary for two hours immediately following onset of the postulated release would not receive a total radiation dose to the whole body in excess of 25 rem (0.25 Sv) or a total radiation dose of 300 rem (3 Sv) to the thyroid from iodine exposure.
Exercise	An event that tests the integrated capability of a major portion of the basic elements existing within emergency preparedness plans and organizations.
Exercise Cycle	A six-year period of time.
Fission Product Barrier	The fuel cladding, reactor coolant system boundary, or the containment boundary.
General Emergency	Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with the 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 Protective Action Guideline exposure levels off-site for more than the immediate site area.
Hazardous Material	A substance or material which has been determined by the United States Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and which has been so designated in 49 CFR 172.
Health Physics Network (HPN) Line	In the event of a Site Area Emergency, the NRC HPN line will be activated by the NRC Operations center in White Flint, Maryland. This phone is part of a network that includes the NRC Regional Office and the NRC Operations Headquarters in White Flint, Maryland. This system is dedicated to the transmittal of radiological information by plant personnel to NRC Operations Center and the Regional office. HPN phones are located in the TSC and EOF.
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 a part of a concerted attack on the nuclear power plant. Non-terrorism based EALs should be used to address such activities (e.g. violent acts between individuals in the owner controlled area).
Hostile Force	One or more individuals who are engaged in a determined assault, overtly by stealth and deception, equipped with suitable weapons capable of killing, maiming or causing destruction.

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Ingestion Exposure Pathway	The potential pathway of radioactive materials to the public through consumption of radiologically contaminated water and foods such as milk or fresh vegetables. Around a nuclear power plant this is usually described in connection with the 50-mile (80-kilometer) radius Emergency Planning Zone (50 mile (80-kilometer) EPZ).
Initiating Condition	A predetermined Unit condition where either the potential exists for a radiological emergency or such an emergency has occurred.
Intermediate Phase	The period beginning after the source and releases have been brought under control and reliable environmental measurements are available for use as a basis for decisions on additional protective actions.
Joint Public Information Center	An Emergency Response Facility activated by the Licensee and staffed by the Licensee, state, and federal public information personnel. This facility serves as the single point of contact for the media and public to obtain information about an emergency.
Late Phase	The period beginning when recovery action designed to reduce radiation levels in the environment to acceptable levels for unrestricted use are commenced and ending when all recovery actions have been completed. This period may extend from months to years (also referred to as the recovery phase).
Local Evacuation	The evacuation of personnel from a particular area, such as a room or building.
Low Population Zone (LPZ)	The area immediately surrounding the Exclusion Area which contains residents, the total number and density of which are such that there is a reasonable probability that appropriate protective actions could be taken on their behalf in the event of a serious accident.
Main Control Room	The operations center of a nuclear power plant from which the plant can be monitored and controlled.
Monthly	Frequency of occurrence equal to once per calendar month.
Non-Essential Site Personnel	Those personnel not needed for the continuing existence or functioning of the ERO. They are personnel not required to fill certain positions in the ERO. Identification of non-essential personnel is circumstance-oriented as determined by the Emergency Coordinator.
Notification, Public	Public notification means to communicate instructions on the nature of an incident that prompted the public alerting/warning and on protective or precautionary actions that should be taken by the recipients of the alert. A state and local government process for providing information promptly to the public over radio and TV at the time of activating the alerting (warning) signal (sirens). Initial notifications of the public might include instructions to stay inside, close windows and doors, and listen to radio and TV for further instructions. Commercial broadcast messages are the primary means for advising the general public of the conditions of any nuclear accident. (See Emergency Alert System.)
Off-Site	The area around a nuclear generating plant that lies outside the station's "site boundary".

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Offsite Dose Calculation Manual (ODCM)	The ODCM presents a discussion of the following: 1. The ways in which nuclear power plants can affect their environment radiologically 2. The regulations which limit radiological effluents from the nuclear power plants; and 3. The methodology used by the nuclear power plants to assess radiological impact on the environment and compliance with regulations.
On-Site	The area around a nuclear generating plant that lies within the station's "site boundary".
Owner Controlled Area	Company owned property on which a nuclear plant is located and may include Licensee leased lands adjacent to that Nuclear Station.
Personnel Monitoring	The determination of the degree of radioactive contamination on individuals, using standard survey meters, and/or the determination of dosage received by means of dosimetry devices.
Puff Release	A controlled containment vent that will be terminated prior to exceeding 60 minutes in duration AND exceeds either the EPA-400 TEDE or CDE Thyroid PAG.
Plume Exposure Pathway	The potential pathway of radioactive materials to the public through: (a) whole body external exposure from the plume and from deposited materials, and (b) inhalation of radioactive materials.
Population-at-Risk	Those persons for whom protective actions are being or would be taken. In the 10-mile (16-kilometer) EPZ the population-at-risk consists of resident population, transient population, special facility population, and industrial population.
Potassium Iodide	(Symbol KI) A chemical compound that readily enters the thyroid gland when ingested. If taken in a sufficient quantity prior to exposure to radioactive iodine, it can prevent the thyroid from absorbing any of the potentially harmful radioactive iodine-131.
Potential	Mitigation actions are not effective and trended information indicates that the parameters are outside desirable bands and not stable or improving.
Projected Dose	That calculated dose that some individuals in the population group may receive if no protective actions are implemented. Projected doses are calculated to establish an upper limit boundary.
Protected Area	That onsite area within the security boundary as defined in each site's Security Plan.
Protection Factor (PF)	The relation between the amount of radiation that would be received by a completely unprotected person compared to the amount that would be received by a protected person such as a person in a shielded area. $PF = \text{Unshielded dose rate} \times \text{shielded dose rate}$.
Protective Action	Those emergency measures taken for the purpose of preventing or minimizing radiological exposures to affected population groups.

Appendix 4: Glossary of Terms and Acronyms

Protective Action Guide (PAG)	Projected radiological dose values to individuals in the general population that warrant protective action. Protective Action Guides are criteria used to determine if the general population needs protective action regarding projected radiological doses, or from actual committed (measured) dose values.
Protective Action Recommendations (PARs)	Recommended actions to the state and local governments for the protection of the offsite public from whole body external gamma radiation, and inhalation and ingestion of radioactive materials. The PAR issued may be to evacuate or shelter-in-place. Access control and other recommendations concerning the safeguards of affected food chain processes may be issued by the state as a PARs.
Public Alerting/Warning	The process of signaling the public, as with sirens, to turn on their TV's or radios and listen for information or instructions broadcast by state or local government authorities on the Emergency Alert System (EAS).
Quarterly	Frequency of occurrence equal to once in a three month period.
Recovery	The process of reducing radiation exposure rates and concentrations of radioactive material in the environment to levels acceptable for unconditional occupancy or use.
Recovery Manager	The Director of the facility in Command and Control. One of the following: the Shift Manager (Control Room) or the Recovery Manager (EOF).
Release	A 'Release in Progress' is defined as ANY radioactive release that is a result of, or associated with, the emergency event.
Restricted Area	Any area, access to which is controlled by the Licensee for purposes of protection of individuals from exposure to radiation and radioactive materials.
Safety Analysis Report, Final (FSAR)	The FSAR is a comprehensive report that a licensee is required to submit to the NRC as a prerequisite and as part of the application for an operating license for a nuclear power plant. The multi-volume report contains detailed information on the plant's design and operation, with emphasis on safety-related matters.
Semi-Annual	Frequency of occurrence equal to once in a six month period.
SENTRY	A computerized notification system linked between the Licensee, the State Emergency Management Agency and the EPZ local governments. It allows the Communicator to fill out a notification form on screen and transmit the data simultaneously. Notifications on SENTRY can be initiated from the Control Room, the Technical Support Center (TSC) or the Emergency Operations Facility (EOF).
Shielding	Any material or barrier that attenuates (stops or reduces the intensity of) radiation.
Site Boundary	The Nuclear Plant's Site Boundary is described in detail in the ODCM.

Appendix 4: Glossary of Terms and Acronyms

Site Emergency (or Site Area Emergency)	The terms Site Emergency or Site Area Emergency have the same meaning and may be used interchangeably in the RERP, EALs and Procedures. Events are in progress or have occurred which involve an actual or likely major failure of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts: (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 that exceed EPA Protective Action Guideline exposure levels beyond the site boundary.
Site Evacuation	The evacuation of non-essential personnel from the plant site.
Source Term	Radioisotope inventory of the reactor core, or amount of radioisotope released to the environment, often as a function of time.
State	The State of Missouri
Technical Support Center (TSC)	An emergency response facility outside of the Control Room in which information is supplied on the status of the plant to those individuals who are knowledgeable or responsible for engineering and management support of reactor operations in the event of an emergency, and to those persons who are responsible for management of the on-site emergency response.
Threshold Value	Measurable, observable detailed conditions, which must be satisfied to determine an EAL applicability.
Thyroid Blocking Agent	An agent which when properly administered to an individual will result in sufficient accumulation of stable iodine in the thyroid to prevent significant uptake of radioiodine. Potassium Iodide is such an agent.
Total Effective Dose Equivalent (TEDE)	The sum of the deep dose equivalent (for external exposure) and the committed effective dose equivalent (for internal exposure) and assuming – for offsite dose projections - 4 days of deposition exposure.
Unrestricted Area	Any area to which access is not controlled by the licensee for protecting individuals from exposure to radiation and radioactive materials, and any area used for residential quarters.
Unusual Event (or Notification of Unusual Event)	The terms Unusual Event or Notification of Unusual Event have the same meaning and may be used interchangeably in the RERP, EALs and Procedures. Events are in process or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection have been initiated. No release of radioactive material requiring off-site response or monitoring are expected unless further degradation of safety systems occurs.
Vital Areas	Areas within the station security fence which contain vital equipment.
Vital Equipment	Any equipment, system, device or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation. Equipment or systems which would be required to function to protect public health and safety following such failure, destruction, or release are also considered to be vital.
Weekly	Frequency occurrence equal to once per calendar week.

Appendix 4: Glossary of Terms and Acronyms

Note: Any abbreviation followed by a lower case 's' denotes the plural form of the term.

ac.....	alternating current
ALARA	as low as reasonably achievable
ANI.....	American Nuclear Insurers
ANSI	American National Standards Institute
ARM.....	Area Radiation Monitor
ASLB.....	Atomic Safety Licensing Board
CB.....	citizen band
cc.....	cubic centimeter
CEOC.....	County Emergency Operation Center
CFR	Code of Federal Regulations
CHRMS	Containment High Range Monitoring System
cm ²	square centimeter
CR.....	Control Room
Cs	Cesium
dc.....	direct current
DEQ	Department of Environmental Quality
DHS	Department of Homeland Security
DNR.....	Missouri Department of Natural Resources
DOE	U. S. Department of Energy
DOT	U. S. Department of Transportation
DPH	Department of Public Health
DHS	Department of Homeland Security
dpm.....	disintegration per minute
EAL	Emergency Action Level
ECC	Emergency Communications Center

EMA	Emergency Management Agency
ENC.....	Emergency News Center
ENS	Emergency Notification System (NRC)
EOC.....	Emergency Operations (or Operating) Center
EOF	Emergency Operations Facility
EOP.....	Emergency Operating Procedure
EPA.....	U. S. Environmental Protection Agency
EPDS.....	Emergency Preparedness Data System
EPZ.....	Emergency Planning Zone
ERF	Emergency Response Facility
ESF	Engineered Safety Feature
FEMA.....	Federal Emergency Management Agency
FRMAP	Federal Radiological Monitoring and Assessment Plan
FRPCC	Federal Radiological Preparedness Coordinating Committee
FSAR.....	Final Safety Analysis Report
Ge.....	Germanium
GET	General Employee Training
HEPA	high efficiency particulate air
HPN	Health Physics Network (NRC)
hr.....	hour
I.....	Iodine
IRAP	Interagency Radiological Assistance Plan
INPO.....	Institute of Nuclear Power Operations
JPIC.....	Joint Public Information Center
KI	Potassium Iodide
LGEOC	Local Government Emergency Operations Center

Li.....	Lithium
LOCA.....	Loss of Coolant Accident
LPZ.....	Low Population Zone
MAELU.....	Mutual Atomic Energy Liability Underwriters
MCP.....	Municipal Command Post
mR.....	milliroentgen
NCRP.....	National Council on Radiation Protection
NOP.....	Nuclear Organization Procedure
NRC.....	U. S. Nuclear Regulatory Commission
NRP>.....	National Response Plan
PAG.....	Protective Action Guide
PANS.....	Prompt Alert and Notification System
PAR.....	Protective Action Recommendation
PASS.....	Post Accident Sampling System
QAPD.....	Quality Assurance Program Description
R.....	roentgen
RAC.....	Regional Advisory Committee (FEMA)
RAP.....	Radiological Assistance Plan
REAC.....	Radiological Emergency Assessment Center
REP.....	Radiological Emergency Plan
SAMG.....	Severe Accident Management Guidelines
SCBA.....	Self Contained Breathing Apparatus
SEOC.....	State Emergency Operations Center
SEMA.....	State Emergency Management Agency
SFCP.....	State Forward Command Post
SGTS.....	Standby Gas Treatment System

- SPCC.....Spill Prevention Control and Countermeasure
- SPDS.....Safety Parameter Display System
- Sr Strontium
- SvSievert
- STA.....Shift Technical Advisor
- TDD Telecommunications Device for the Deaf
- TEDE..... Total Effective Dose Equivalent
- TLD Thermoluminescent Dosimeter
- TSC..... Technical Support Center
- μCi..... microcurie

Appendix 5: Evacuation Time Estimates

In 2008, AmerenUE issued a revision to the "Evacuation Time Estimate for the Callaway Nuclear Plant emergency Planning Zone."

The results are provided separately in Part 5 of the COL Application.