Grand Gulf Nuclear Station

Unit 3

Combined

License

Application

Part 5: Emergency Plan

(Includes Supplemental Information)

Revision 0

February 2008

Explanatory notes regarding the Emergency Plan and Supplemental Information

The Grand Gulf Nuclear Station Unit 3 Combined License Emergency Plan consists of a basic plan and eight appendices. The basic plan follows the format of NUREG-0654 and provides detailed information regarding each of the sixteen *Planning Standards* and associated *Evaluation Criteria*. The eight appendices that follow provide additional detailed information on various aspects of the Emergency Plan. Supplemental information to this part includes the detailed evacuation time estimate report and current state and local emergency planning documents, as listed below. Emergency Planning Inspections, Test, Analyses, and Acceptance Criteria (ITAAC) are included in Part 10 of the COLA.

Emergency Plan	
Basic Plan	Grand Gulf Nuclear Station Unit 3 Combined License Application Emergency Plan
Appendix 1	Emergency Action Levels
Appendix 2	Radiological Assessment and Monitoring
Appendix 3	Public Alert and Notification System Description
Appendix 4	Evacuation Time Estimate (summary)
Appendix 5	Emergency Plan Procedures
Appendix 6	Emergency Equipment and Supplies
Appendix 7	Certification Letters
Appendix 8	Cross-Reference to Regulations, Guidance, and State and Local Plans
Supplemental Information	
Evacuation Time Estimate Report	
Siren Alert Notification System Design Evaluation - Final Report	
State and Local Emergency Planning Documents	
Mississippi Radiological Emergency Preparedness Plan; Volume III, to the Mississippi Comprehensive Emergency Management Plan	
Louisiana Peacetime Radiological Response Plan	
Louisiana Peacetime Radiological Response Plan, Attachment II for the Grand Gulf Nuclear Station	
Memorandum of Understanding Between the Louisiana Department of Environmental Quality and the Louisiana Office of Homeland Security and Emergency Preparedness	
Port Gibson/Claiborne County - Radiological Emergency Preparedness Plan	

The table below documents changes made to the approved major features in the Grand Gulf ESP application, Part 4, Emergency Planning Information, in the GGNS Unit 3 Emergency Plan, Part 5, of the GGNS Unit 3 COL application. This information is provided, as discussed in Section 1 of the COLA Emergency Plan, to meet the requirements of 10 CFR 52.79(b)(4).

Changes from GGNS ESP Emergency Planning Information Major Features to GGNS Unit 3 COLA Emergency Plan						
ESP Part 4, Emergency Planning Info. Section	**ESP Part 4, Emergency Planning Information Topic**	**COLA Part 5, Emergency Plan Section**	**COLA Part 5, Emergency Plan Topic**	**Material Change (10 CFR 52.79(b)(4)) ? (Yes / No)**	**Decrease in Effectiveness (10 CFR 50.54(q)) ? (Yes / No)**	**Discussion of Change**
3.1.1.4	LA Office of Emergency Preparedness	II.A.1.b	Concept of Operations	No	No	The ESP Emergency Planning Information ("ESP EPI") discusses the role of the Louisiana Office of Emergency Preparedness. The COLA Emergency Plan discusses the role of the Louisiana Governor's Office of Homeland Security and Emergency Preparedness. This change reflects a re-organization of Louisiana State government; however, the essential elements of emergency preparedness and response as reflected in 10 CFR 50.47 and Appendix E remain in effect.
3.6.2.1	Dedicated Telephone Lines	II.F.1.c	Description of Comm. Links	No	No	The ESP EPI indicates that GGNS will provide an Operational Counterpart Link (OCL) or LAN access for the NRC. The COLA Emergency Plan refers only to LAN access. This terminology is consistent with the content of NRC Generic Letter 91-14, "Emergency Telecommunications." The provision of LAN access satisfies the underlying need for access to data transmission technology.

Changes from GGNS ESP Emergency Planning Information Major Features to GGNS Unit 3 COLA Emergency Plan						
ESP Part 4, Emergency Planning Info. Section	**ESP Part 4, Emergency Planning Information Topic**	**COLA Part 5, Emergency Plan Section**	**COLA Part 5, Emergency Plan Topic**	**Material Change (10 CFR 52.79(b)(4)) ? (Yes / No)**	**Decrease in Effectiveness (10 CFR 50.54(q)) ? (Yes / No)**	**Discussion of Change**
3.7.1	Provision of Information to the General Public	II.G.1	Public Information Program	No	No	The ESP EPI indicates the licensee will disseminate emergency planning information to the public via a publication mailed to residents of the Plume Exposure Pathway Emergency Planning Zone. The COLA Emergency Plan indicates that distribution methods may include providing informational publications through mailings to individual households. As established in Section II.G.1, the COLA Emergency Plan establishes a commitment to provide emergency preparedness information to the affected public at least once each calendar year and discusses a range of dissemination options. The change provides flexibility to use multiple communications methods to effect the widest possible dissemination and continues to satisfy the underlying NUREG-0654 evaluation criterion.

Changes from GGNS ESP Emergency Planning Information Major Features to GGNS Unit 3 COLA Emergency Plan						
ESP Part 4, Emergency Planning Info. Section	**ESP Part 4, Emergency Planning Information Topic**	**COLA Part 5, Emergency Plan Section**	**COLA Part 5, Emergency Plan Topic**	**Material Change (10 CFR 52.79(b)(4)) ? (Yes / No)**	**Decrease in Effectiveness (10 CFR 50.54(q)) ? (Yes / No)**	**Discussion of Change**
3.10.1	Evacuation of Onsite Personnel	II.J.3	Personnel Monitoring and De-contamination	No	No	The ESP EPI indicates that, if necessary, evacuees are routed to a State reception center. The COLA Emergency Plan indicates that, if necessary, evacuees are routed to a State/local evacuation/decontamination center. This process is consistent with that outlined in the GGNS Unit 1 Emergency Plan, which has been coordinated with the affected State and local plans and results in the evacuees being routed to a location where the appropriate care may be provided. The COLA Emergency Plan, as changed, continues to satisfy the underlying NUREG-0654 evaluation criteria.

Changes from GGNS ESP Emergency Planning Information Major Features to GGNS Unit 3 COLA Emergency Plan						
ESP Part 4, Emergency Planning Info. Section	**ESP Part 4, Emergency Planning Information Topic**	**COLA Part 5, Emergency Plan Section**	**COLA Part 5, Emergency Plan Topic**	**Material Change (10 CFR 52.79(b)(4)) ? (Yes / No)**	**Decrease in Effectiveness (10 CFR 50.54(q)) ? (Yes / No)**	**Discussion of Change**
3.16.1	Licensee Responsibility	II.P.2/3	Responsibility for Radiological Emergency Response Planning /Emergency Planning coordinator	No	No	The ESP EPI indicates the licensee will appoint an appropriate manager who will have overall authority and responsibility for emergency planning and who will discharge Emergency Planning Coordinator responsibilities including responsibility for development and updating of plans. The COLA Emergency Plan indicates the senior site executive holds overall authority for ensuring an adequate level of emergency preparedness and that the Emergency Planning Coordinator exercises responsibility for development and updating of site emergency plans. The COLA Emergency Plan, as changed, continues to satisfy the underlying NUREG-0654 evaluation criteria addressing overall responsibility for the emergency planning effort and for maintaining preparedness.
Fig. 3-1	Inter-relationships of Emergency Response Organizations	Fig. II-1	Emergency Response Organization Relationships	No	No	The ESP EPI indicates that field monitoring teams may report (for communications) to the TSC or, when activated, the EOF. The COLA Emergency Plan indicates that field monitoring teams may report to the OSC or, when activated, the EOF. This is an administrative change in reporting relationships and does not affect the activities or effectiveness of the field monitoring teams.

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Definitions

Annual – Any 12 months, plus or minus three months.

Exceptions:

1. Exercises, drills, emergency information for residents, media training, and off-site emergency response training is defined as "once per calendar year."
2. Annual training is for a 12-month period which includes a grace period extending to the end of the calendar quarter in which training is due.

Biennial – Any 24 months, plus or minus six months.

Committed Dose Equivalent (CDE) - As defined by 10 CFR 20.1003.

Drill – A supervised instruction period aimed at testing, developing and maintaining skills in a particular operation. A drill is often a component of an exercise.

Emergency Action Level (EAL) – Specific events and criteria used to determine the appropriate emergency classification.

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

Emergency Classification – A scheme derived to categorize a plant accident into one of four classes according to severity so that appropriate actions might be rapidly taken.

Emergency Notification System (ENS) – The phone line used to notify and inform the NRC of Event Status Data.

Emergency Planning Zone (EPZ): – A generic area defined about a nuclear facility to facilitate off-site emergency planning and develop a significant response base. It is defined for the plume and ingestion exposure pathways. During an emergency response, best efforts are made making use of plan action criteria without regard to whether particular areas are inside or outside EPZs. (NUREG-0654/FEMA-REP-1, Glossary)

Plume Exposure Pathway EPZ – An area delineated by an approximate ten-mile radius circle around the station. The principal exposure sources from this pathway are: (a) whole body external exposure to gamma radiation from the plume and from deposited materials and (b) inhalation exposure from the passing radioactive plume. The duration of principal potential exposures could range in length from hours to days. (NUREG-0654/FEMA-REP-1, Glossary)

Ingestion Exposure Pathway EPZ – An area delineated by an approximate fifty-mile radius circle around the station. The principal exposure for this pathway would be from ingestion of contaminated water or foods such as milk or fresh vegetables. The duration of exposure could range in length from hours to months. (NUREG-0654/FEMA-REP-1, Glossary)

Exclusion Area Boundary - The area for which the licensee has absolute authority for exclusion of personnel and property within the site boundary. This boundary is used in FSAR dose assessments to define the distance to the first member of the public and is defined in the FSAR.

Exercise – An event that tests the integrated capability and a major portion of the basic elements existing within the emergency plan.

Final Safety Analysis Report (FSAR) - The final safety report that is submitted to the NRC in support of each plant's application for an operating license.

Hostile Action – An act toward a nuclear power plant or its personnel that includes the use of violent force to destroy equipment, takes hostages, and/or intimidates the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, projectiles, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. Hostile Action should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the nuclear power plant. Non-terrorism based 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 or by stealth and deception, equipped with suitable weapons capable of killing, maiming, or causing destruction.

Health Physics Network (HPN) – The NRC's health physics information line.

Interim – A temporary or provisional emergency response position or facility which is augmented or transferred as resources become available.

Joint Information Center (JIC) - A center established near the affected site to assist the news media in providing press coverage during an emergency.

Monthly – Any 30-day period, plus or minus seven days.

Off-site –The area around a nuclear plant that is not on-site.

On-site – On-site is defined according to the subject: (1) in relation to FSAR dose assessment, on-site is "within the exclusion area," (2) in relation to accountability and site notifications, on-site is "within the site's outermost secured area," (3) in relation to EP dose assessments on-site is defined as "1000 meter radius," and (4) in other contexts on-site is "within the reservation boundary."

Operations Support Center (OSC) – An area set aside within the plant for providing an assembly area for operational support personnel during an emergency situation.

Primary Sector – The 22 1/2° sector which bounds the existing wind direction.

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

Protected Area (PA) – An area encompassed by physical barriers and to which access is controlled. For the purposes of this plan, the Protected Area refers to the designated security area around the reactor and turbine buildings.

Protective Action Guides (PAGs) – The projected dose to individuals in the general population or the dose rate which warrants taking protective actions.

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

Quarterly - Any three-month period, plus or minus one month.

Recovery – The post-emergency activities in which the plant conditions are assessed and the plant is returned to an operational mode.

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

Restricted Area – Any area where access is controlled for the purpose of radiation protection.

Semi-annual – Any six-month period, plus or minus 45 days. (The exception to this is for drills for which it is defined as "twice each calendar year.")

Site Boundary – The appropriate boundary between "on-site" and "off-site."

Technical Support Center (TSC) – An on-site assembly/work area for designated support individuals knowledgeable of and responsible for engineering and management support of reactor operations in the event of an accident.

Thyroid Committed Dose Equivalent (Thyroid CDE) – The dose equivalent to the thyroid received from an intake of radioactive material by an individual during the 50-year period following the intake.

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

Acronyms and Abbreviations

ANS	Alert and Notification System
BEOF	Backup Emergency Operations Facility
CDE	Committed Dose Equivalent
CFR	Code of Federal Regulations
COL	Combined License
CPR	Cardio-Pulmonary Resuscitation
DCD	Design Control Document
DHS	(U.S.) Department of Homeland Security
DOE	(U.S.) Department of Energy
EAL	Emergency Action Level
EAS	Emergency Alert System
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EOI	Entergy Operations, Incorporated
EPA	(U.S.) Environmental Protection Agency
EPP	Emergency Plan Procedure
EPZ	Emergency Planning Zone
ERF	Emergency Response Facility
ERO	Emergency Response Organization
ERPA	Emergency Response Planning Area
ESP	Early Site Permit
FEMA	Federal Emergency Management Agency
FRMAC	Federal Radiological Monitoring and Assessment Center
GGNS	Grand Gulf Nuclear Station
GOHS/EP	(Louisiana) Governor's Office of Homeland Security/Emergency Preparedness
MEMA	Mississippi Emergency Management Agency
MDH	Mississippi Department of Health
mrem	Millirem
NRC	(U.S.) Nuclear Regulatory Commission
OSC	Operations Support Center
PAG	Protective Action Guide
PAR	Protective Action Recommendation
RPP	Radiation Protection Program
SRO	Senior Reactor Operator
TSC	Technical Support Center

I. Introduction

This Emergency Plan describes the plans established by Entergy Operations, Inc. (EOI) for responding to a radiological emergency at Grand Gulf Nuclear Station Unit 3 (GGNS 3).

In Part 4, "Emergency Planning Information," of its Grand Gulf Early Site Permit (ESP) application, System Energy Resources, Inc. (SERI), presented the major features of its proposed emergency plan pursuant to 10 CFR 52.17(b)(2)(i). The NRC Staff documented its review of these proposed major features in NUREG-1840, Section 13.3. With the exception of major feature H, related to emergency facilities and equipment, the Staff concluded that the major features proposed in the ESP application were consistent with the guidelines in RS-002, "Processing Applications for Early Site Permits," and NUREG-0654, Supplement 2. Therefore, these approved major features were found acceptable and satisfied the requirements of 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III, IV.A, IV.F, and IV.G of Appendix E to 10 CFR Part 50, insofar as they described the essential elements of advanced planning that were considered for the development, periodic review, and distribution of emergency plans. As discussed in the following sections of this plan, these approved major features are incorporated by reference.

Consistent with the requirements of 10 CFR 52.79(b)(4), this Emergency Plan must include any new or additional information that updates and corrects the information that was provided under 10 CFR 52.17(b), and must discuss whether the new or additional information materially changes the bases for compliance with the applicable requirements. In addition, the COL application must identify changes to the major features of emergency plans that have been incorporated into the proposed facility emergency plans and that constitute or would constitute a decrease in effectiveness under 10 CFR 50.54(q).

The ESP stage major features provided sufficient information to address the "essential elements of advance planning" as mentioned above, per Section III of Appendix E to 10 CFR Part 50. As discussed in Section 1.1 of the ESP application, Part 4, it was understood that the COL application would expand the major features, as needed, to support the proposed new facility. Therefore, this Emergency Plan contains supplemental information to meet NUREG-0654 evaluation criteria. A limited number of changes to the ESP major features have been identified and are listed in the "Explanatory Notes" in the preface to this part. This listing includes a cross-reference between the ESP Part 4 and this Emergency Plan, as well as a brief discussion of the change. None of these is a material change to the bases for compliance with applicable requirements or a change that constitutes a decrease in effectiveness under 10 CFR 50.54(q).

A. Purpose

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

- Notifying and mobilizing affected members of the licensee staff, federal, state, local, and commercial response organizations, and the public
- Limiting the radiological impact of the emergency on plant employees and affected members of the public
- Limiting the potential adverse impact of protective actions, such as evacuations or sheltering

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

B. Scope

This emergency plan applies to planning for and response to any radiological emergency condition at GGNS 3. Section II.D of this plan describes the emergency classification system. Appendix 1 identifies radiological emergency conditions and their initiating conditions.

This emergency plan has been coordinated with the plans of affected government agencies and private sector support organizations as listed in Section II.A of this plan. Ongoing coordination with affected local, state, and federal agencies and private sector support organizations is imperative to provide an effective emergency response capability.

C. Planning Basis and Emergency Planning Zones

1. Planning Basis

This plan has been developed to meet the requirements of 10 CFR Part 52, “Early Site Permits; Standard Design Certifications; and Combined Licenses For Nuclear Power Plants.”. Consistent with those requirements, this plan is based on the requirements of 10 CFR Part 50, “Domestic Licensing Of Production And Utilization Facilities,” primarily Section 50.47, “Emergency Plans,” and Appendix E, “Emergency Planning and Preparedness for Production and Utilization Facilities.”. This plan is also based on the guidance provided in NUREG-0654/FEMA-REP-1, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants” (Reference 1). NUREG-0654 has been endorsed as an acceptable means of meeting the emergency planning requirements of 10 CFR Part 50 through USNRC Regulatory Guide 1.101, “Emergency Planning and Preparedness for Nuclear Power Reactors” (Reference 2).

2. Emergency Planning Zones

NUREG-0654/FEMA-REP-1 establishes two Emergency Planning Zones (EPZs) for which planning for predetermined actions should be implemented – the Plume Exposure Pathway EPZ, which has a radius of approximately 10 miles, and the Ingestion Exposure Pathway EPZ, which has a radius of approximately 50 miles.

Plume Exposure Pathway EPZ

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

The Plume Exposure Pathway EPZ consists of an area about 10 miles in radius around the site. Figure I-1 provides an illustration of the Plume Exposure Pathway EPZ and the associated Emergency Response Planning Areas (ERPAs). The description of the Plume Exposure Pathway EPZ provided in Section 2.1.5 of Part 4 of the GGNS ESP is incorporated into this plan by reference. Collectively, the affected Mississippi counties and Louisiana parishes are referred to as the risk jurisdictions.

Ingestion Exposure Pathway EPZ

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

The Ingestion Exposure Pathway EPZ consists of an area about 50 miles in radius around the site. Figure I-2 provides an illustration of the Ingestion Exposure Pathway EPZ. The description of the Ingestion Exposure Pathway EPZ provided in Section 2.1.5 of Part 4 of the GGNS ESP is incorporated into this plan by reference.

3. Site and Area Description

GGNS 3 consists of a General Electric ESBWR Reactor as described in the ESBWR DCD and the associated GGNS Unit 3 FSAR.

The site and area descriptions provided in Section 2.1 of Part 4 of the GGNS ESP are incorporated into this plan by reference.

Figure I-1 - GGNS Plume Exposure Pathway EPZ

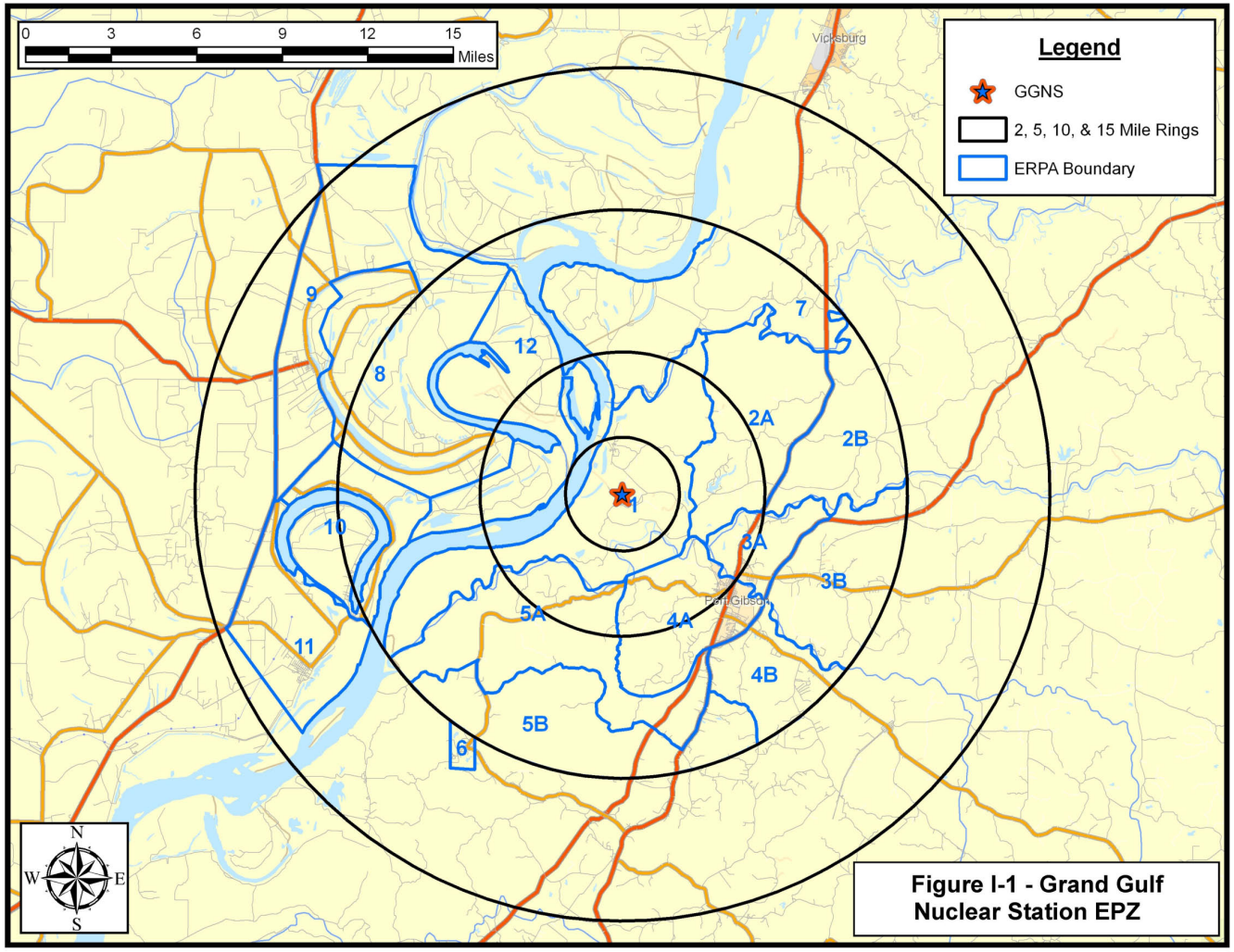
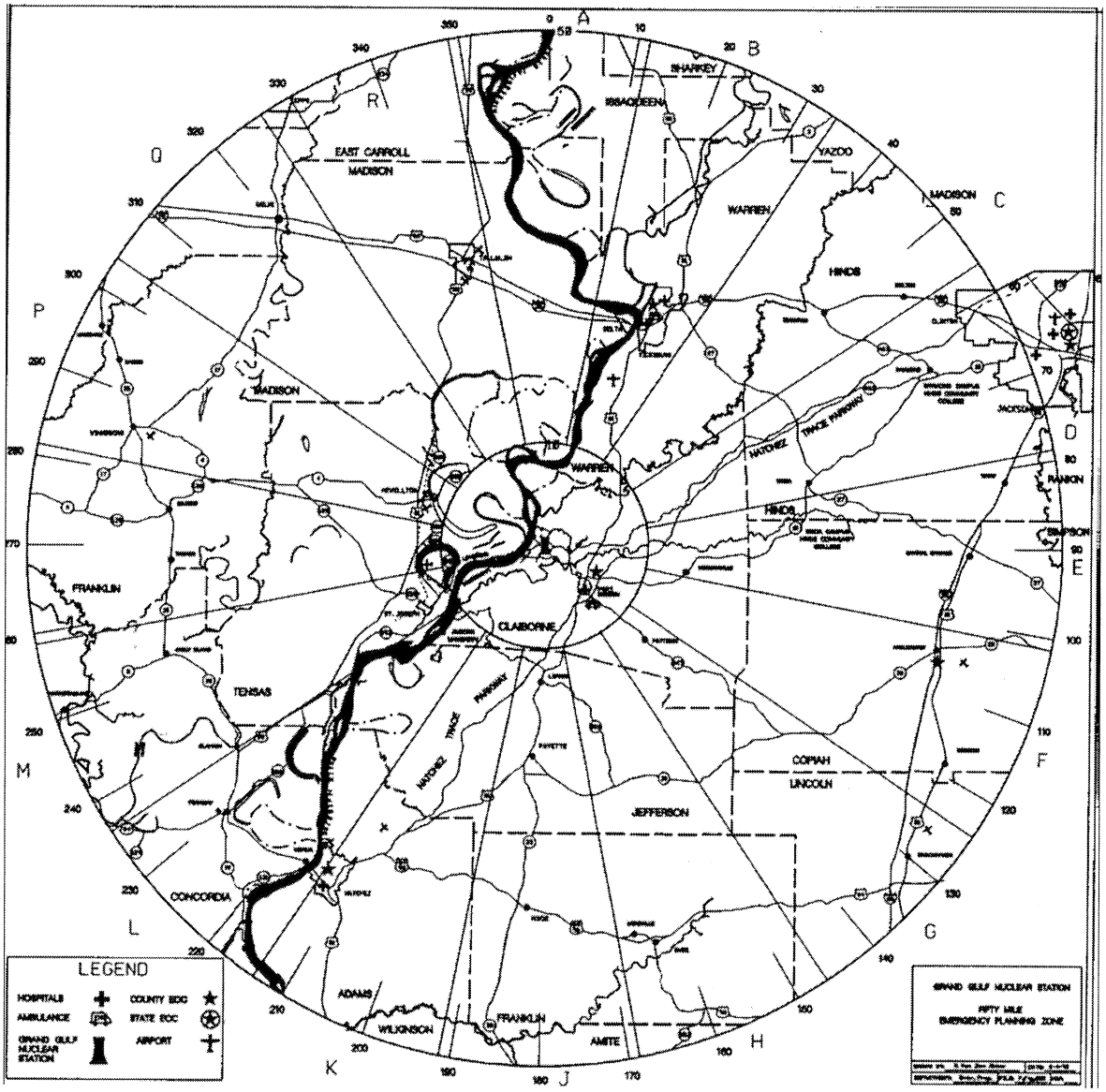


Figure I-2 - GGNS Ingestion Exposure Pathway EPZ



II. Emergency Plan

A. Assignment of Responsibility (Organization Control)

1. Emergency Organization

a. Participating Organizations

The descriptions of participating organizations provided in Sections 3.1 and 3.2 of Part 4 of the GGNS ESP are incorporated into this plan by reference.

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

b. Concept of Operations

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

- Assess plant conditions
- Classify emergency conditions
- Notify EOI emergency response organizations and affected agencies and individuals of emergency conditions
- Provide communications and technical expertise to affected agencies
- Provide support for off-site assessment and protective activities
- Make protective action recommendations
- Mitigate the consequences of adverse plant conditions by monitoring and controlling plant parameters
- Request off-site support, as needed
- Coordinate with affected agencies to provide accurate information to the public
- Terminate emergency conditions

Normal operations at GGNS 3 are conducted under the authority of the Shift Manager and directed from the Control Room. In the event of an abnormal condition, the Shift Manager directs the activities of the plant staff in performing initial assessment, corrective, and protective functions. Using approved operating and emergency procedures, including the Emergency Action Levels (EALs) provided in Appendix 1 of this plan, the Shift Manager determines if an emergency condition exists and, if so, determines the proper emergency classification.

Based on this classification and plant conditions, the Shift Manager assumes the role of the Emergency Director, makes or directs initial notifications to affected plant staff and Mississippi, Louisiana, Claiborne County (MS), Tensas Parish (LA) and federal authorities, and determines if activation of the emergency response facilities (ERFs) is desirable or required[1, 2, 3].

The Control Room is the initial center for coordination of emergency response activities. For emergencies classified as Alert, Site Area Emergency and General Emergency, the Emergency Director directs the activation of the Emergency Response Organization (ERO). The Emergency Director may direct the activation of all or part of the ERO for a Notification of Unusual Event, based on an assessment of plant conditions and support needs.

The Technical Support Center (TSC) acts in support of the command and control function of the Control Room and provides an area for other station personnel who have expertise in those areas of plant operation required to support the emergency response. This facility is equipped with communication equipment, computer terminals, printers, off-site and on-site computer access, plant drawings, procedures and other materials and equipment to support its function. Personnel in the TSC assess the accident condition and make responsible recommendations to the Control Room, the Emergency Operations Facility (EOF) and off-site agencies as necessary to provide for the safety of plant personnel and members of the general public. After the EOF is activated, the EOF assumes many of the functions of the TSC and relies on the TSC as a vital link to the station.

Following activation of the ERFs and receipt of an adequate turnover, a trained senior manager assumes the Emergency Director position, relieves the Shift Manager of Emergency Director responsibilities and directs the activities of the on-site emergency response organization from the TSC. If the EOF is activated, the Off-site Emergency Coordinator assumes responsibility for the licensee's off-site emergency response efforts, coordinates the availability and utilization of corporate and external resources, and manages recovery efforts (if needed).

The Operations Support Center (OSC) provides an operational center to provide support to the TSC and Control Room. The OSC dispatches Assessment and Repair Teams as directed by the Emergency Director,

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[1] If an event is transient in nature such that staffing of the ERO is not practical prior to termination of the event, then the ERO may not be staffed; however, notifications to affected authorities will be completed consistent with the requirements of this plan.

[2] Under some circumstances, such as unanticipated natural events or hostile action against the facility, the Emergency Director may judge that movement of personnel as needed to staff the emergency response facilities may create undue personnel hazards. Under such circumstances, the Emergency Director may elect to postpone staffing of the emergency response facilities and implement compensatory measures as needed to ensure ongoing personnel and facility safety.

[3] The ERO may be staffed prior to the declaration of an emergency situation, such as in anticipation of severe weather that is likely to result in the declaration of an emergency condition.

providing operational information, radiological assessment, and manpower for in-plant functions.

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

Coordination with GGNS Unit 1

EOI has identified the need to coordinate emergency response actions taken at GGNS Unit 3 with GGNS Unit 1. As noted previously in this section, the Emergency Director is responsible for making notifications to affected plant staff, which may include the Unit 1 Control Room personnel. This notification and subsequent communications are intended to advise Unit 1 staff of any actions they may be required to take.

Additionally, in the unlikely event that emergencies are declared simultaneously at both GGNS Unit 1 and GGNS 3, a single Emergency Director is designated from on-site shift management in accordance with Emergency Plan Procedures. The Emergency Director discharges those duties described in this Emergency Plan, as well as those described in the Unit 1 Emergency Plan, and coordinates activities between the Technical Support Centers and Operations Support Centers.

There is a potential for an emergency at an operational unit to affect personnel and activities at the second unit while the second unit remains under construction. Emergency actions, including requirements for notification of construction site personnel, are stipulated in Emergency Plan Procedures (EPPs). Requirements for subsequent response actions by construction site personnel are stipulated in the construction site Health and Safety Plan or its supporting documents.

State Government Response

Participating governmental agencies whose plans are interrelated with this plan include the following:

- Mississippi Emergency Management Agency (MEMA) - Charged with direct responsibility for the planning and coordination of the activities of state and local government agencies in the event of a radiological emergency.
- Mississippi Department of Health (MDH) - Has overall responsibility to protect the public health and safety of the general populace from the hazards of radiation. The Division of Radiological Health (DRH) is that division within the MDH which is assigned the specific responsibility with regard to the hazards of radiation.
- Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHS/EP) – Has responsibility for coordination of State agencies as well as logistical and resource support to local governments in the event of a radiological emergency.

- Louisiana Department of Environmental Quality (LDEQ) - Has overall responsibility for planning as well as the lead technical response role in the event of a radiological emergency.

Figure II-1 depicts the interrelationships among the various state and federal organizations that may respond to an emergency at GGNS 3.

Mississippi State Agency Response

The Mississippi Emergency Management Agency is the designated state authority and as such, has the responsibility for the general planning and coordination of the State of Mississippi's response to nuclear plant accidents as detailed in the "Mississippi Radiological Emergency Preparedness Plan, Volume III, to the Mississippi Comprehensive Emergency Management Plan." The functions of MEMA include:

- Develop and maintain state plans and procedures
- Operate the State Emergency Operation Center (EOC)
- Provide notification and warning in coordination with the Mississippi Highway Safety Patrol and the operators of fixed nuclear facilities
- Communications
- Assist local governments in the development and maintenance of plans and procedures
- Provide public information
- Provide training
- Provide personnel for the Radiological Emergency Response Teams
- Provide continuity of technical, administrative, and material resources

A letter (see Appendix 7 of this plan) from the Governor of Mississippi that implements the Mississippi Radiological Emergency Plan is a commitment from state agencies to perform their functions delineated in the state plan as required by Mississippi law.

The Mississippi Department of Health/Division of Radiological Health (DRH) is charged with the responsibility to protect the public health and safety of the general populace from the hazards of radiation. With respect to radiological hazards resulting from incidents involving fixed nuclear facilities, the functions of DRH include:

- Act as lead agency for technical response
- Accident assessment
- Provide personnel and equipment for the Radiological Emergency Response Team
- Advise state and local officials on implementation of protective actions based on accident assessment

- Establish radiological exposure controls
- Establish access/egress and reentry criteria
- Provide laboratory services
- Coordinate off-site decontamination activities

Louisiana State Agency Response

The Secretary of the Louisiana Department of Environmental Quality under Act 97 of 1983 (L.R.S. 30:2001 et. seq.), also known as the Louisiana Environmental Quality Act, and specifically L.R.S. 30:2109, has the authority to develop and implement a statewide radiological emergency preparedness plan and coordinate the development of specific emergency plans for nuclear power facilities, including planned protective action for the population and the establishment of appropriate boundaries for which planning for nuclear emergencies is undertaken; to respond to any emergency which involves possible or actual release of radioactive material; to coordinate off-site decontamination efforts; to issue relocation and evacuation recommendations; and to otherwise protect the public welfare and safety in any manner deemed necessary and appropriate. As a result, the "Louisiana Peacetime Radiological Response Plan," which includes Attachment 2 for the Grand Gulf Nuclear Station, has been developed. Federal, state and local agencies are notified as required to provide assistance in evaluating the radiological hazard and to provide implementation of appropriate protective actions in accordance with this plan. The Secretary of the LDEQ or his designee is responsible for notifying the public that a radiological incident has occurred and for providing an evaluation of the incident in terms of public health. If protective actions are indicated, specific guidance can be provided and the information released.

GOHS/EP is responsible for coordinating emergency actions of the various state and local agencies in the event that evacuation is necessary. Local law enforcement agencies, rescue squads, medical facilities and other parish and municipal agencies provide assistance pursuant to their agreements with local civil defense organizations as delineated in the local civil defense plans. A letter (see Appendix 7 of this plan) from the Governor of Louisiana to implement the Louisiana Peacetime Radiological Response Plan is a commitment from state agencies to perform their functions as delineated in the state plan as required by Louisiana law.

Local Government Emergency Response

Responsibility for radiological emergency response rests primarily with the elected officials of local governments. Claiborne County in Mississippi and Tensas Parish in Louisiana are the local governmental jurisdictions within the GGNS Plume Exposure Pathway EPZ. They have developed plans to be implemented in the event of a radiological emergency. Claiborne County Civil Defense and Tensas Parish Office of Homeland Security and Emergency Preparedness have communication centers which serve as the

means for notifying various support services (fire and rescue, transportation, and law enforcement).

The Port Gibson/Claiborne County Civil Defense Director is the designated county authority and as such, has executive authority and responsibility for the planning and coordination of the county's emergency response. The Director has delegated responsibilities and tasks to the local support agencies and has established operating procedures to implement the "Port Gibson/Claiborne County - Radiological Emergency Preparedness Plan." Upon notification of a major emergency at the Grand Gulf Nuclear Station, the Civil Defense Director, as a primary duty, provides direction within the county boundaries. This duty includes, if required, the coordination with other agencies to inform the public in affected portions of the county to take protective actions. The Port Gibson/Claiborne County Civil Defense Director is responsible for activation of the Claiborne County Emergency Operations Center (EOC).

The President of the Tensas Parish Police Jury, as the Chief Executive of Tensas Parish, is responsible by law for emergency preparedness operations. The Emergency Preparedness Coordinator acts as his Chief of Staff and provides for continuity of resources for sustained emergency operations. The Emergency Preparedness Coordinator is responsible for initiating the manning of the Tensas Parish Emergency Operations Center and for coordinating the involved agencies during the course of the radiological emergency as detailed in the "Tensas Parish Radiological Emergency Implementing Plan for Grand Gulf Nuclear Station."

As time is a major factor in realizing the benefits of protective action in the event of a radiological emergency, certain of these actions are predetermined and agreed upon by the local governing body and are implemented without delay upon notification of a radiological emergency. The GGNS Operational Hot Line, with extensions available in the Control Room, TSC and EOF, is used for normal transmission of emergency notifications to these authorities. Procedures for authentication of an emergency message are maintained in state and local Radiological Emergency Response Plans. The local risk jurisdiction law enforcement personnel also respond to this plan. They can perform essentially the same functions as the State Police and coordinate their efforts with that organization.

In the event of an emergency, the Station is in communication with the risk jurisdiction Emergency Services Directors, who have the capability of activating their Emergency Operations Centers. The Station relies upon the risk jurisdictions to provide assistance for any services the supporting organizations are capable of providing to mitigate the results of the emergency.

Federal Government Emergency Response

The emergency response roles of various federal agencies are established in the National Response Plan and various agency-specific documents (e.g. NRC's Incident Response Plan) supporting that plan.

The Station also maintains close contact with the NRC Operations Center and/or the NRC Region IV offices in Arlington, Texas. This is an important function to provide accurate information and assessment capability to the federal government. As a result of these communications, the NRC can best appraise their response to the emergency. In a like manner, the U.S. Department of Energy, Oak Ridge Operations, is available to provide radiological assistance to the Station.

Department of Energy

The Federal Radiological Monitoring and Assessment Center (FRMAC) Operations Plan provides for the coordinated management of federal technical response activities related to a radiological emergency. Its primary goals include:

- Assisting the state and federal Coordinating Agency with personnel, equipment, and technical resources, as needed
- Collecting off-site environmental radiological data
- Providing the data and related assessments to involved state agencies and to the Federal Coordinating Agency

The Department of Energy (DOE) bears the responsibility to prepare for, establish, and manage the FRMAC. The FRMAC may be activated when a major radiological emergency exists, and the federal government will respond when a state, other governmental entity with jurisdiction, or a regulated entity requests federal support.

Further information concerning objectives and organization is provided in the FRMAC Operations Plan (Reference 3).

Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) coordinates the non-technical federal agency support for the facility and affected area, including the support of agencies such as the activities of the Departments of Transportation and Health and Human Services. NRC coordinates federal agency technical support, including technical support provided by DOE and EPA.

Nuclear Regulatory Commission

The response provided by the NRC is described in NUREG-0728, "NRC Incident Response Plan" (Reference 4). The representative of the NRC who would provide input to the CECC Director is the Region II Regional Administrator/designee. A workspace and a telephone have been provided in the EOF for this NRC representative.

Environmental Protection Agency (EPA)

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

U.S. Coast Guard

The U.S. Coast Guard has jurisdiction over traffic on the Mississippi River. Upon notification by the Mississippi State Emergency Management Agency of an emergency requiring traffic exclusion, the Captain of the Port exercises his authority to control traffic through the establishment of a safety zone in the immediate area.

Appendix 7 of this plan provides copies of the certification letters established between EOI and the supporting state and local government agencies supporting this plan. The responsibilities of many federal agencies are established in the National Response Plan (Reference 5) and therefore no agreement letters are required for these agencies.

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

c. Organizational Interrelationships

The interfaces between and among the on-site and off-site functional areas of emergency response described in Section 3.3.2 of Part 4 of the GGNS ESP are incorporated into this plan by reference. Figure II-1 illustrates these interrelationships.

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

d. Individual in Charge of Emergency Response

In the event of an abnormal condition, the Shift Manager determines if an emergency condition exists and, if so, determines the proper emergency classification. Upon declaration of an emergency, the Shift Manager assumes the role of the Emergency Director and is in charge of the emergency response for the facility.

If required by the emergency classification, or if deemed appropriate by the Emergency Director, emergency response personnel are notified and instructed to report to their emergency response locations[4]. The Shift

[4] See Section II.A.1.b of this plan regarding situations under which staffing of the emergency response facilities may be deferred.

Manager is relieved as Emergency Director when the designated senior manager reports to the station and is updated as to the status of the unit, the emergency actions taken, and the current status of the emergency. Following this relief, the Emergency Director may relocate to the TSC.

The EOF may be activated concurrent with the TSC and is always activated upon declaration of a Site Area Emergency or General Emergency. The EOF is staffed by station and corporate personnel, including the Off-site Emergency Coordinator, who directs the activities of this facility. The Off-site Emergency Coordinator is responsible for ensuring the EOF communicates emergency status to the state and local governments, directs the efforts of the off-site monitoring teams, makes radiological assessments, recommends off-site protective measures to the state, and arranges through the company for dispatch of any special assistance or services requested by the station.

The Off-site Emergency Coordinator reports to company executives who are responsible to the President of the Company for the total execution of the company's emergency response effort.

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

e. 24-Hour Emergency Response Capability

EOI maintains the capability for 24-hour response, including manning of communications links, through:

- Training of multiple responders for key emergency response positions, consistent with the training requirements established in Section II.O of this plan
- Assignment of emergency response personnel to extended shifts as needed to support emergency response operations
- Procurement of external resources as needed to supplement the assigned emergency response staff
- Establishment of arrangements for provision of basic necessities (e.g., food, cleanliness, and sleeping facilities) to affected emergency response personnel

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

2. Functions, Responsibilities, and Legal Basis

This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

3. Written Agreements

The description of contacts and arrangements provided in Section 3.17 of Part 4 of the GGNS ESP is incorporated into this plan by reference.

Appendix 7 of this plan provides copies of the certification letters established between EOI and the state and local government agencies committed to supporting further development and implementation of this plan.

The responsibilities of those federal agencies having primary responsibilities for supporting this plan are established in the National Response Plan; therefore, no certification letters are required for these agencies.

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

4. Continuous Operations

EOI maintains capability for continuous operations consistent with Section II.A.1.e of this plan. The Off-site Emergency Coordinator (if the position is staffed) or the Emergency Director (if the Off-site Emergency Coordinator position is not staffed) bears responsibility for ensuring continuity of technical, administrative, and material resources during emergency operations.

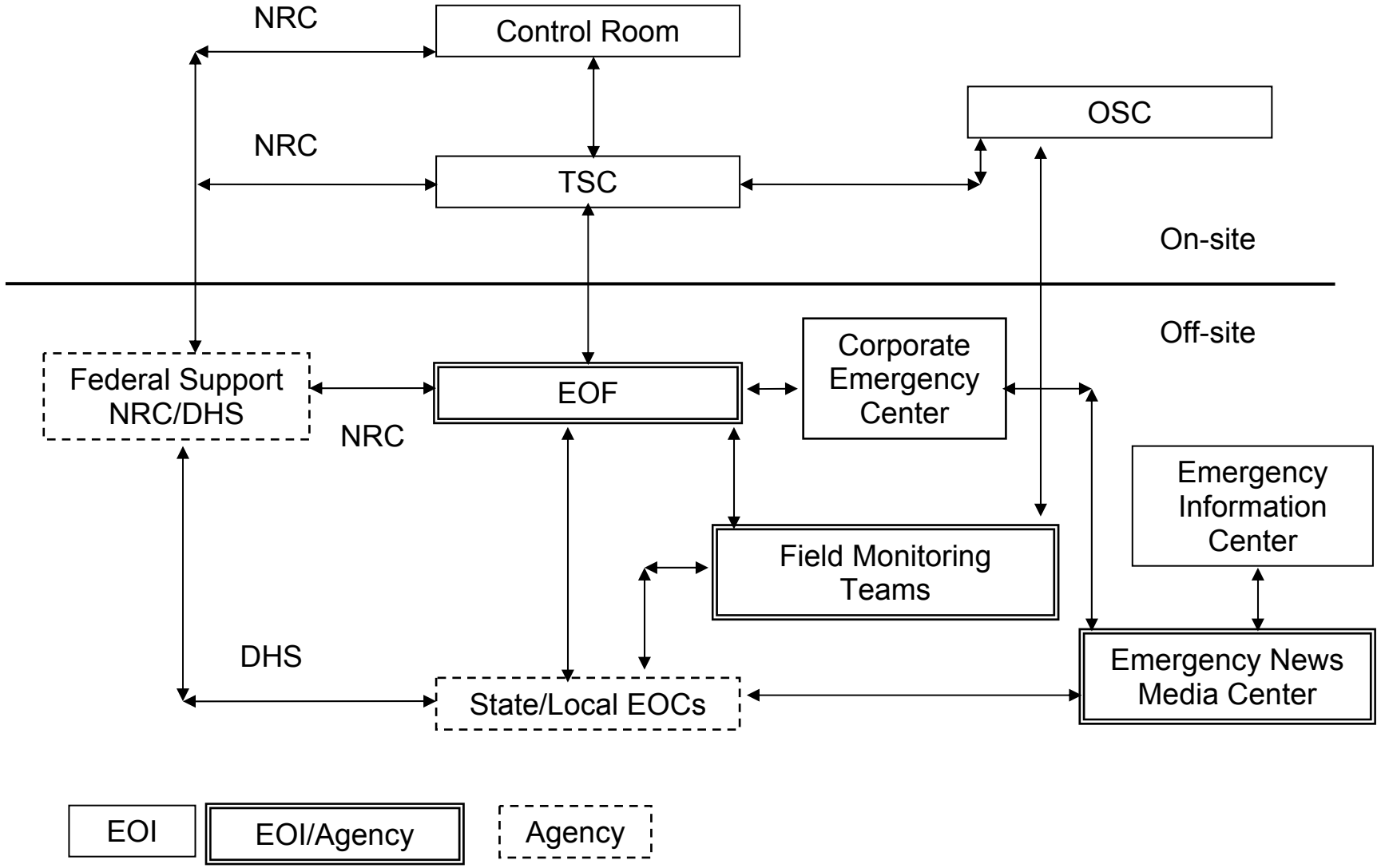
Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

Table II-1 - Responsibility for Emergency Response Functions

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

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

Figure II-1 - Emergency Response Organization Interrelationships



B. On-site Emergency Organization

1. On-site Emergency Organization

Figure II-2 illustrates the on-site emergency response organization (ERO). Emergency Plan Procedures (Appendix 5) provide details regarding ERO position functions.

The minimum staff required to conduct routine and immediate emergency operations is maintained at the station consistent with 10 CFR 50.54(m) and the GGNS Unit 3 Technical Specifications. Section 13.1 of the GGNS Unit 3 FSAR provides details of facility staffing. Station administrative procedures provide the details of the normal station organization, including reporting relationships.

Upon declaration of an emergency, designated members of the normal staff complement fulfill corresponding roles within the emergency response organization. For example, Radiation Protection personnel undertake radiation protection activities, Security personnel undertake Security activities, Engineering personnel focus on plant assessment and technical support for operations, and Operations personnel focus on plant operations.

2. Emergency Director

The Shift Manager position is staffed at all times. Upon recognition of an emergency condition, the individual filling this position assumes the duties of the Emergency Director until relieved by a qualified member of the management staff consistent with Section II.B.3 of this plan or until termination of the emergency condition, whichever comes first.

The individual filling the Emergency Director role has the responsibility and authority to initiate any required emergency response actions, including notification of affected federal, state, and local authorities and provision of Protective Action Recommendations to off-site authorities.

3. Emergency Director Line of Succession

Should the Shift Manager be rendered unable to fulfill the duties and responsibilities of the Emergency Director position (such as due to personal illness or injury), the Supervisor, Control Room or Reactor Operator present on shift (a position that also is staffed at all times) assumes the Emergency Director position until relieved by a qualified member of the management staff as outlined below.

A trained, higher level member of the licensee's management staff, referred to as the On-Call Manager, may assume Emergency Director responsibilities from the Shift Manager after becoming fully familiar with the pertinent plant and radiological conditions and status of emergency response/accident mitigation efforts.

4. Emergency Director Responsibilities

The Emergency Director has the responsibility and authority to initiate emergency actions necessary to protect the life, health, and safety of both the plant staff and the affected public on site. The responsibilities of the Emergency Director include:

- Classifying the emergency
- Authorizing notification to the NRC, state and local agencies of the emergency status
- Issuing protective action recommendations
- Authorizing emergency exposure limits
- Activating emergency personnel and facilities
- Directing reactor controls
- Committing company resources as necessary
- Acquiring emergency equipment or supplies
- Ordering site evacuation
- Restricting access to the site
- Notifying company management
- Implementing work schedules
- Directing on-site emergency activities

The first four items above may not be delegated to a subordinate, but may be assumed by the Off-site Emergency Coordinator. Upon activation of the EOF, the Off-site Emergency Coordinator is responsible for assuming these responsibilities from the Emergency Director.

5. Plant Emergency Response Staff

EOI provides for minimum emergency response staffing consistent with Table II-2 of this plan. This table is based on Table B-1 of NUREG-0654/FEMA-REP-1 and is consistent with the emergency response staffing requirements previously approved and successfully implemented for GGNS Unit 1.

The positions, title and major tasks to be performed by the persons assigned to the functional areas of emergency activity at the station are described in EPPs. These assignments cover the emergency functions in Table II-2. The minimum on-shift staffing and goals for augmenting on-shift resources after declaration of an emergency are also indicated in Table II-2. The functional tasks to be performed by persons assigned to the areas of emergency activity are as designated in EPPs.

Upon declaration of an emergency requiring augmented staff support, other members of the plant staff assume positions in the emergency response organization consistent with their qualifications.

Figure II-3 provides an illustration of the augmented plant staff emergency response organization.

The ERO, when fully activated, includes the positions described in Table II-2. Additional personnel may be designated by station management as emergency responders providing special expertise deemed beneficial, but not mandatory, to the planned response. The individuals assigned as interim, primary and alternate responders for the emergency positions are designated by station management based on the technical requirements of the position.

6. Interfaces Between Functional Areas

Figure II-1 illustrates the interfaces between and among the site functional areas of emergency response activity, EOI corporate support, and the affected state and local government response organizations.

7. Corporate Support for the Plant Staff

Upon declaration of an Alert, Site Area Emergency, or General Emergency, the Emergency Director directs the activation and notification of the on-site and off-site ERFs. EOI management, technical, and administrative personnel staff the EOF in accordance with Emergency Plan Procedures and provide augmented support for the plant staff consistent with Table B-1 of NUREG-0654/FEMA-REP-1.

The EOF staff focuses on discharging management, technical and administrative activities as needed to support the plant emergency response staff and to relieve the plant emergency response staff of external coordination responsibilities, including notification of and coordination with off-site authorities and release of information to the media. In addition to the activities discussed in Table II-2, activities of the EOF staff include:

- Logistical support for plant personnel as discussed in Sections II.A and II.B of this plan
- Technical support for planning and recovery/reentry operations as discussed in Section II.M of this plan
- Management-level interface with governmental authorities as discussed in Sections II.E and II.F of this plan
- Coordination with, and release of information to, the news media as discussed in Section II.G of this plan

8. Support from Contractor and Private Organizations

Institute of Nuclear Power Operations

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

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

If requested, one or more suitably qualified members of the INPO staff will report to the Off-site Emergency Coordinator and assist in coordinating INPO's response to the emergency.

Reactor Plant Vendor

EOI may request that the reactor vendor, General Electric, provide technical support for emergency response activities. General Electric operates primarily from its corporate offices, with a small contingent at the plant if requested.

Medical and Public Health Support

A number of private sector medical service agencies provide support for GGNS 3 emergency response activities. Section II.L of this plan provides a description of these arrangements.

Other Supporting Organizations

EOI may establish contractual arrangements with various private sector organizations as needed to support ongoing plant operations and maintenance activities. These arrangements may provide for a wide variety of support functions, including specialized operational, maintenance, modification, and technical support (e.g., engineering, health physics, chemistry) functions. EOI may make arrangements for any of these organizations to provide support for emergency response activities, consistent with facility needs and supporting organization capabilities.

9. Local Emergency Response Support

EOI has established and maintains agreements for local emergency response support services, including fire fighting, rescue squad, medical and hospital services. Section 3.3 of Part 4 of the GGNS Early Site Permit is incorporated into this plan by reference.

The Claiborne County Fire Department, located approximately six miles from the plant and available 24 hours per day, provides fire-fighting support to the facility. Notification of a need for off-site fire-fighting assistance is made by means of a telephone call. The Claiborne County Fire Department maintains an informal aid pact with the Port Gibson Fire Department. These two fire-fighting groups have agreed, upon request, to furnish each other with firefighting personnel, resources, and facilities and to render such fire protection services which may be necessary to suppress any fire or disaster which goes beyond the control of either of the agencies. When additional fire support groups would be brought in to assist at the Station, the Claiborne County Fire Department Fire Chief directs off-site firefighting personnel, while the GGNS Emergency Director retains overall responsibility for on-site emergency response.

The Claiborne County Sheriff's Department and the Port Gibson Police Department have agreed to provide the following emergency support:

- Controlling matters of civil disorder within Claiborne County (provided by Sheriff's Department) and within the city limits of Port Gibson (provided by Sheriff's Department and Port Gibson Police Department)
- Communications
- Furnishing personnel and equipment in accordance with Security Plans
- Controlling access to areas affected by the emergency
- Directing area evacuation

Section II.L of this plan provides a description of the arrangements for medical support services, including hospital and ambulance support.

Appendix 7 of this plan provides certification letters for organizations providing the required services.

Figure II-2 - GGNS 3 Emergency Response Organization – TSC/OSC Only

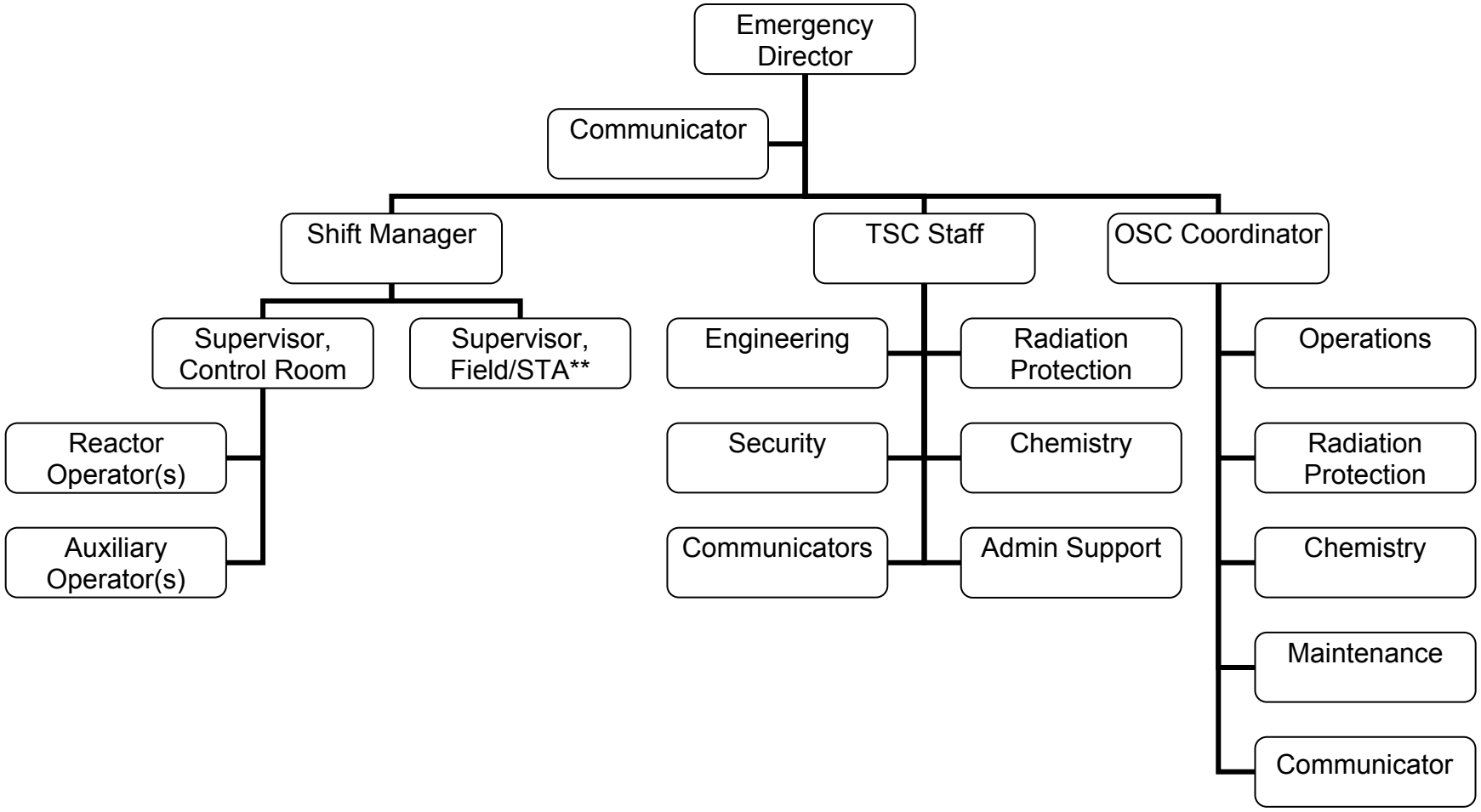


Figure II-3 - GGNS 3 Augmented Emergency Response Organization

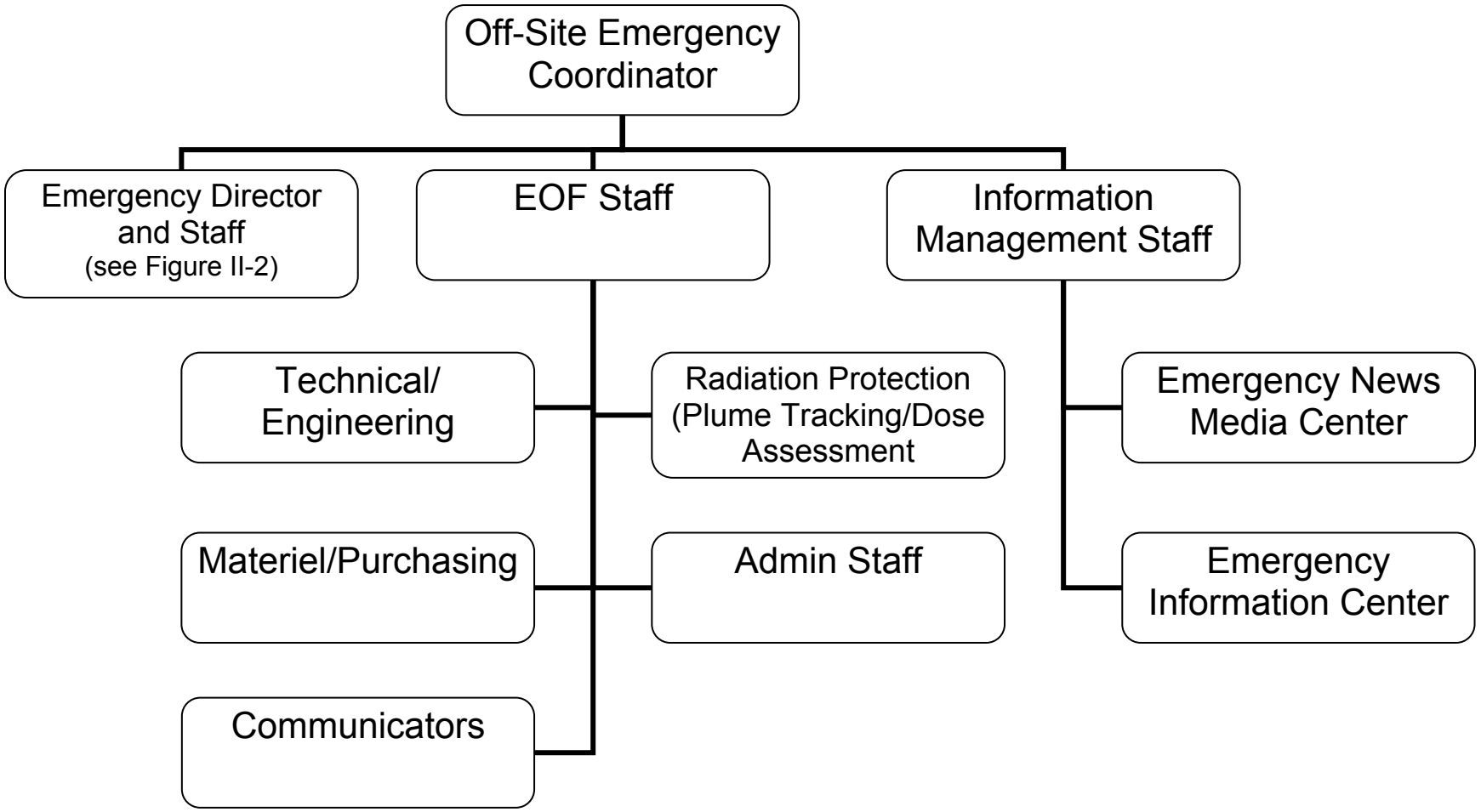


Table II-2 - Plant Staff Emergency Functions

Major Functional Area	Major Tasks	Position, Title, or Expertise	On Shift [5]	Capability for Additions (Time to be provided)[8]
Plant Operations and Assessment of Operational Aspects	Emergency Direction and Control [6]	Shift Manager (SRO)	1	
		On-call Manager		1[7]
		Shift Manager (SRO)	1	
		Reactor Operator (RO)	2	
		Auxiliary Operators	2	
	Firefighting, Firefighting Communications	Shift Personnel (Operations)	5[1]	Local support
	Technical Support and Core/Thermal Hydraulics[4]	Supervisor, Field/ Shift Technical Advisor	1[3]	
	Core/Thermal Hydraulics	TSC Coordinator/Operations Coordinator/SRO/STA		1[7]
Notification and Communication[3]	Notify Licensee, State, Local, and Federal Personnel and Maintain Communication	Communicator	2	2[7]
Radiological Accident Assessment and Support of Operational Accident Assessment	EOF Direction and Control	Senior Manager		1
	Off-site Dose Assessment	Radiological Assessment	1[1]	1[7]
	Chemistry/ Radiochemistry	Chemist	1	1
Plant System Engineering	Technical Support	Electrical		1
		Mechanical		1
Repair and Corrective Actions		Mechanical Maintenance	1	1
		Rad Waste Operator	1[1]	1
		Electrical Maintenance	1	2
		Instrument and Control	1	

Major Functional Area	Major Tasks	Position, Title, or Expertise	On Shift [5]	Capability for Additions (Time to be provided)[8]
Radiation Protection	Access Control HP Coverage for Repair, Corrective Actions, Search and Rescue, First Aid, and Firefighting Personnel Monitoring Dosimetry Surveys (Off-site, On-site, and In-plant Surveys on an As-Needed Basis)	Radiation Protection Technician	2	11[2]
Rescue/First Aid		Rescue and First Aid	2[1]	Local Support
Site Access Control and Personnel Accountability	Security, Personnel Accountability	Security Personnel	Per Facility Security Plan	

(1) May be provided by Shift Personnel assigned other duties.
(2) Must be trained for the Emergency Task being performed.
(3) STA staffing is in accordance with FSAR Table 13.1-202.
(4) Core/Thermal Hydraulics is part of normal STA duties as listed in the GGNS Unit 3 FSAR and Technical Specifications.
(5) These ERO positions may be vacant for not more than 2 hours, in order to provide for unexpected absences, provided action is taken to fill the required position. This allowance is not applicable during declared emergencies. Minimum Operations shift staffing under unit shutdown conditions is in accordance with FSAR Table 13.1-202.
(6) Overall direction of facility response is assumed from the Shift Manager (SRO) by the On-call Manager. Upon relief, the Shift Manager (SRO) resumes plant operational duties.
(7) These personnel report and augment shift personnel as soon as possible without delay but no later than 75 minutes.
(8) If personnel are on-site they report and augment the on-shift personnel as soon as possible without delay, but no later than 45 minutes.

C. Emergency Response Support and Resources

The arrangements for emergency response support and resources described in Section 3.3 of Part 4 of the GGNS ESP are incorporated into this plan by reference.

1. Federal Response Capability

a. Under some complex circumstances it may be necessary to obtain off-site radiological monitoring support from federal government agencies. The state EOC may request FRMAC assistance directly or through the NRC (Federal Coordinating Agency). The Emergency Director and Off-site Emergency Coordinator (when the EOF is staffed) are responsible for requesting required support.

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

b. Federal radiological monitoring assistance may be provided by DOE-Oak Ridge under the DOE Radiological Assistance Program. Support available from DOE-Oak Ridge includes medical support from the Radiation Emergency Assistance Center/Training Site (REAC/TS). EOI estimates that a FRMAC Advance Party could be expected at the site within 12 hours following the order to deploy. EOI expects that NRC assistance from NRC's offices in Arlington, TX will arrive in the site vicinity within 4-6 hours following notification; the team may reduce this time by use of aircraft. Three airfields are available in close proximity to GGNS as follows:

   - Jackson International Airport, Jackson, MS
   - Hawkins Field, Jackson, MS
   - Vicksburg Municipal Airport, Vicksburg, MS

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

c. EOI provides facilities and resources needed to support the federal response through the EOF. Available resources include office space, telephone and radio communications circuits, and protective clothing and equipment. EOI also provides limited office space and telephone communications facilities for NRC personnel in the TSC.

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

2. Off-site Organization Representation in the EOF

a. This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

b. If requested by any of the directors of the risk jurisdiction EOCs, a GGNS representative is dispatched to the EOC to serve in a technical and operational liaison capacity.

3. Radiological Laboratories

Radiological laboratories available to support emergency response efforts include the GGNS Site Laboratory and the Mississippi Department of Health Laboratory.

The GGNS Chemistry and Radiation Protection Departments have isotopic analysis capability available for on-site radiological analysis.

The Mississippi Department of Health Laboratory would be prepared to receive samples in the event of a Site Area Emergency or General Emergency, with an expected response time of one hour following notification. This laboratory has the capability to measure beta-gamma emitters, including radioiodine in environmental samples (soil, vegetation, water, and air). Data from this laboratory may be provided to each agency's representative in the EOF by radio communications established by each agency or by normal phone communications with the MDH or LDEQ.

Additional mobile laboratories with similar capabilities are available from DOE, Region III, Oak Ridge, TN (estimated response time 12 hours) and EPA, Region IV, Montgomery, AL (estimated response time 9 hours).

The listed laboratory facilities are available to support emergency response activities on a 24-hour per day basis.

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

4. Other Supporting Organizations

EOI has made arrangements to obtain additional emergency response support from the INPO Fixed Nuclear Facility Voluntary Assistance Agreement signatories and General Electric as discussed in Section II.B.8 of this plan. Certification letters, provided in Appendix 7 of this plan, outline the scope of the expected support.

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

D. Emergency Classification System

EOI has developed and implemented a standard emergency classification scheme, based on system and effluent parameters, on which affected state and local response organizations may rely for determining initial off-site response measures. The initiating conditions include the conditions provided in NEI 07-01, Rev. 0, "Methodology for Development of Emergency Action Levels, Advanced Passive Light Water Reactors," (Reference 6) as it applies to ESBWRs, and postulated accidents identified in the FSAR.

The description of the emergency classification system described in Section 3.4 of Part 4 of the GGNS ESP is incorporated into this plan by reference. The following information supplements that description.

1. Classification System

Appendix E of 10 CFR 50 identifies four distinct classes of emergencies. The definitions of these emergency classes are more fully discussed in NEI 07-01, as follows:

- Notification of Unusual Event (NOUE) - Events are in process or have occurred which indicate a potential degradation of the level of safety of the plant. No releases of radioactive material requiring off-site response or monitoring are expected unless further degradation of safety systems occurs.
- 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 personnel or damage to equipment because of hostile action. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline (PAG) exposure levels.
- Site Area Emergency - Events are in process or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or hostile actions that result in intentional damage or malicious act: 1) toward personnel or equipment that could lead to the likely failure of, or; 2) that prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary.
- General Emergency – Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels off-site for more than the immediate site area.

Appendix 1 of this plan provides recognition categories, the associated initiating condition matrices, and the emergency action levels.

2. Emergency Action Levels

The initiating conditions associated with the emergency classification scheme include the example conditions provided in Appendix 1 of NUREG-0654/FEMA-REP-1, to the extent applicable to the facility design, and postulated accidents identified in the FSAR.

EOI adopts the methodology provided in NEI 07-01, Rev. 0. Because this document has not yet been endorsed by the NRC, EALs contained in this plan will be subject to further review and modification based on the version of NEI 07-01 ultimately endorsed in a future revision to USNRC Regulatory Guide 1.101, “Emergency Planning and Preparedness for Nuclear Power Reactors,” or other accepted guidance, modified consistent with the improvements to facility design and operation as reflected in the ESBWR DCD. Appendix 1 provides the parameter values and equipment status that are indicative of each emergency class.

3. State/Local Emergency Action Level Scheme

This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

4. State/Local Emergency Action Procedures

This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

E. Notification Methods and Procedures

EOI maintains procedures for notification of state and local response organizations and licensee emergency responders. These procedures include, or make reference to, the pre-planned content of messages to state and local organizations. EOI also makes arrangements to provide prompt notification to members of the public within the plume exposure pathway EPZ.

The descriptions of notification methods and procedures provided in Section 3.5 of Part 4 of the GGNS ESP are incorporated into this plan by reference.

1. Notification of State and Local Authorities

EOI establishes systems and procedures needed to provide the capability to provide prompt notification of affected state, local, and federal authorities following the declaration of any emergency condition, consistent with the Emergency Classification and Action Level scheme described in Appendix 1 of this plan. The Emergency Director initiates notification of affected state and local authorities within fifteen (15) minutes of the emergency declaration, including escalation or termination of any emergency condition. The affected state and local authorities include the following (at least one agency in each row must be notified):

Table II-3 – GGNS Emergency Notification Contacts

Primary	Secondary
Mississippi Emergency Management Agency	Mississippi Highway Patrol
Louisiana Office of Homeland Security and Emergency Preparedness	Louisiana Department of Environmental Quality
Claiborne County Sheriff's Dept	Claiborne County Civil Defense
Tensas Parish Sheriff's Dept	

The primary notification method to be used is the Operational Hot Line, which is accessible from the Control Room, TSC, and EOF. Back-up notification capability is maintained through the use of commercial telephone systems. EOI also maintains a UHF radio communication capability with selected local authorities as discussed in Section II.F of this plan. Message content and verification methods are established in Emergency Plan Procedures and agreements between the affected organizations.

EOI maintains systems and procedures needed to provide the capability to provide prompt notification of the USNRC Operations Center following the declaration of any emergency condition. The USNRC is notified as soon as is practical following the notification of state and local authorities and within one (1) hour of the emergency declaration, including escalation or

termination of any emergency declaration[5]. The primary notification method to be used is the Emergency Notification System. Back-up notification capability is maintained through the use of commercial telephone systems.

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

2. Notification and Mobilization of Licensee Response Organizations

The description of the methods and procedures used for alerting, notifying, and mobilizing provided in Section 3.5.2 of Part 4 of the GGNS ESP are incorporated into this plan by reference. The following information supplements that description.

The Emergency Director directs the notification and mobilization of the site and corporate emergency response organization following the declaration of an Alert or higher level emergency. Although EOI does not expect that the augmented resources of the emergency response organization would be required for a Notification of Unusual Event, all or part of the emergency response organization may be mobilized at the Notification of Unusual Event level at the discretion of the Emergency Director.

When staffing of the Emergency Response Organization is required, or desired by the Emergency Director, affected personnel are notified by a computerized emergency notification system. The system is provided with reliable primary and backup power supplies.

Redundant notification capability is provided by the plant paging system (during normal working hours) and commercial telephone system (during non-working hours). Notification and mobilization of the emergency response organization is initiated in accordance with Emergency Plan Procedures under the direction of the Emergency Director.

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

3. Message Content

The content of initial emergency notification messages from the plant to affected state and local authorities includes information addressing the class of emergency, status of any radioactive releases, the locations of any potentially-affected populations, and recommendations regarding public protective actions.

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

4. Follow-up Messages to Off-site Authorities

Dedicated communicators are available to maintain a continuous channel of communications with designated authorities and to provide regular updates to state and local officials approximately every 60 minutes, when conditions change or as otherwise agreed.

Follow-up messages from the plant to affected state and local authorities include the following information, to the extent the information is available and appropriate:

- Incident date, time, and location
- Name of and contact information for caller
- Emergency classification
- Information regarding any actual or potential radioactive releases, including medium (i.e., airborne, waterborne, surface spill), estimated duration/impact time, release point (including elevation, if appropriate)), chemical and physical form, and estimates of total and relative quantities and concentrations of noble gases, iodines, and particulates
- Meteorological conditions, including wind speed and direction, stability class, and precipitation
- Actual or projected exposure rates and projected integrated dose at the site boundary
- Projected exposure rates and integrated doses at the projected peak location and at 2, 5, and 10 miles, including affected sectors
- Recommended emergency actions, including protective action recommendations
- Prognosis for changes in event classification or other conditions based on current assessments of plant conditions

The actual notification form to be used is agreed upon by EOI and the affected state and local governmental organizations.

5. Disseminating Information to the Affected Public

This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

6. Instructions to the Public in the Plume Exposure EPZ

The description of the methods and procedures used for providing instructions to members of the public provided in Section 3.5.3 of Part 4 of the GGNS ESP is incorporated into this plan by reference. The following information supplements that description.

An Alert Notification System is provided that meets the design objectives of NUREG-0654/FEMA-REP-1, Appendix 3. This system has been in use and has performed acceptably for the existing GGNS facility. The basic system consists of 43 sirens located in Claiborne County and Tensas Parish. Selected institutions located in the 10-mile EPZ are supplied with tone activated receivers which supplement the siren system. Port Gibson/Claiborne County Civil Defense and Tensas Parish Office of Homeland Security and Emergency Preparedness are responsible for activating the portion of the system within their respective jurisdictions. Additional alert notification details are addressed in local and state emergency plans, the GGNS Emergency Public Information publication, and the Alert and Notification System description provided in Appendix 3 of this plan.

The state and local governments have ultimate responsibility for warning the public. Should it be necessary, state and local authorities alert the public within the Plume Exposure Pathway EPZ using alternative methods described in the State Emergency Response Plans. Members of the public within the Plume Exposure Pathway EPZ shall be informed of what actions to take following activation of the Alert and Notification System. Upon hearing the alert, they are instructed to turn on their radios or television sets to the Emergency Alert System (EAS) to receive further instructions. The affected counties and the state have 24-hour per day capability to activate the system.

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

7. Written Messages to the Public

Affected state and local officials bear responsibility for providing written emergency messages intended for the public, in particular providing instructions regarding specific protective actions. EOI supports development of these messages by providing supporting information.

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

F. Emergency Communications

EOI maintains systems and procedures that provide for prompt communications between its ERFs and between the site and off-site ERFs. The descriptions of emergency communications systems provided in Section 3.6 of Part 4 of the GGNS ESP are incorporated into this plan by reference.

1. Description of Communication Links

EOI maintains reliable communications links both within the plant and between the plant and external emergency response organizations. Section 9.5.2 of the ESBWR DCD provides a description of communications systems that are within the scope of the certified design.

a. EOI maintains capabilities for 24-hour per day emergency notification to the state and county emergency response network. State/county warning points are manned 24 hours per day. These communication links consist of the following:

- The GGNS Operational Hot Line is used for initial notification and ongoing communications to the locations listed in Table II-4 for the duration of the emergency. Utilization of this line by GGNS activates the emergency response network by notifying each location simultaneously.
- UHF radios are available as a back-up to the GGNS Operational Hot Line. UHF Radios connect the Control Room, TSC, EOF, selected Security stations, the Tensas Parish Sheriff's Department, and the Claiborne County Sheriff's Department.

Section II.A.1.b of this plan describes responsibilities for completing the required notifications.

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

b. Provisions for communicating with state and local governments include the GGNS Operational Hot Line and UHF radio systems discussed in Section II.F.1.a of this plan.

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

c. Separate telephone lines are dedicated for communications with the NRC and include the following:

- Emergency Notification System (ENS): Provides for initial notifications, as well as provision of ongoing information about plant systems, status and parameters, to the NRC. ENS lines are located in the Control Room, TSC and EOF.

- Health Physics Network (HPN): Provides for communications regarding radiological and meteorological conditions, assessments, trends, and protective measures. HPN lines are located in the TSC and EOF.
- Reactor Safety Counterpart Link (RSCL): Allows for internal NRC discussions regarding plant and equipment conditions. RSCL lines are located in the TSC and EOF.
- Protective Measures Counterpart Link (PMCL): Allows for internal NRC discussions on radiological releases, meteorological conditions, and protective measures. PMCL lines are located in the TSC and EOF.
- Emergency Response Data System (ERDS) Channel: Allows transmittal of reactor parametric data to the NRC. ERDS data is transmitted to the NRC Operations Center.
- Management Counterpart Link (MCL): This system has been established for internal discussions between the NRC Executive Team Director/members and the NRC Site Team Director or licensee management. MCL lines are located in the TSC and EOF.
- Local Area Network (LAN) Access: Provides access to the NRC local area network. Telephone jacks are provided in the TSC and EOF for NRC LAN access.

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

d. EOI provides capability for communications between the Control Room or TSC and the EOF and county and state EOCs via the GGNS Operational Hot Line discussed in Section II.F.1.a.

   EOI's off-site monitoring teams communicate with the EOF and OSC via UHF radios.

   Subsection 9.5.2 of the ESBWR DCD provides a description of the plant's installed communications systems.

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

e. Notification, alerting and activation of emergency response personnel in the TSC, OSC, and EOF are described in Section II.E.2 of this plan.

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

f. EOI provides for communications between Control Room/TSC/EOF and the NRC Operations Center via the systems discussed in Section II.F.1.c of this plan.

g. EOI activates the Emergency Response Data System (ERDS) within one hour of the declaration of an Alert or higher emergency classification.

2. Communication with Fixed and Mobile Medical Support Facilities

EOI maintains communications systems that allow for communications between the site and fixed and mobile medical support facilities. The communications systems include commercial telephone communications between GGNS 3 and the fixed facilities (hospitals). The ambulance maintains radio communications with the hospital. Any communications between GGNS 3 and the ambulance are relayed through the hospital (i.e., from GGNS 3 to the hospital via commercial telephone and then from the hospital to the ambulance via radio).

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

3. Communication System Tests

EOI conducts tests of its emergency communications system as follows:

Communications with the facility and EOF and the state/local warning points are tested monthly. Communications between the state/local EOCs and field assessment teams are tested consistent with the requirements of the affected state and local plans.

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

Table II-4 – GGNS Operational Hot Line

Location	Normal Contact	Alternate Contact
Control Room	Control Room Communicator	Control Room Operator
TSC	TSC Communicator	Alt. TSC Communicator
EOF	EOF Communicator	Alt. EOF Communicator
CEC	CEC Communicator	Alt. CEC Communicator
MS Emergency Management Agency	Director, MEMA	Communications Officer
MS Highway Safety Patrol	Communications Officer	Dispatcher
Claiborne County Civil Defense	Director	Assistant Director
Claiborne County Sheriff's Office	Sheriff	Dispatcher
Port Gibson Police Department	Police Chief	Dispatcher
LA Dept. of Environmental Quality	Secretary	Radiological Emergency Planning and Response Staff
Tensas Parish Sheriff's Office	Sheriff	Dispatcher
LA Office of Homeland Security and Emergency Preparedness	Assistant Secretary	Communications Officer

G. Public Education and Information

EOI maintains a coordinated program to educate affected members of the public regarding emergency notification methods and actions. The descriptions of plans for implementing a public information program provided in Section 3.7 of Part 4 of the GGNS ESP are incorporated into this plan by reference.

1. Public Information Program

EOI coordinates with affected state and local authorities to disseminate pertinent emergency response information to members of the public in the Plume Exposure Pathway EPZ at least once each calendar year. Information is provided via a number of methods to effect the widest practical dissemination. Distribution methods may include providing informational publications, such as brochures or calendars through mailings to individual households. Emergency public information may also be distributed in telephone directories and utility bills, through public information postings, and information distributed via local media outlets. The distributed information includes:

a. Educational information on radiation

b. Information regarding notification methods and immediate actions

c. Protective measures, such as information addressing evacuation routes, relocation centers, sheltering, respiratory protection, and radioprotective drugs

d. Information addressing special needs of the handicapped

e. Point of contact for additional information

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

2. Distribution and Maintenance of Public Information

EOI coordinates with affected state and local authorities to disseminate pertinent emergency response information to members of the public in the Plume Exposure Pathway EPZ at least once each calendar year. Written information applicable to permanent residences is provided in a form that is likely to be maintained in the residence (e.g., calendars, brochures) so it is available during an emergency.

Information intended for transients (individuals on vacation in, camping in, or traveling through the Plume Exposure Pathway EPZ), may include public postings, publications provided to hotels, motels, and campgrounds, and information published in telephone directories. These sources of information provide transients sources for local emergency information, such as local radio and television stations.

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

3. News Media Coordination

a. The primary outlet for emergency information is the Emergency News Media Center. EOI's company spokesperson serves as the primary licensee spokesperson and media contact in the Emergency News Media Center. The public affairs liaison gathers information from the Off-site Emergency Coordinator and his staff for dissemination to the news media and updates the news media on a periodic basis throughout any emergency situation during which the members of the media respond to the Emergency News Media Center. Press conferences are held periodically, and equipment and facilities are available to support timely communication and information dissemination concerning plant conditions. The Emergency News Media Center is activated at an Alert, Site Area Emergency and General Emergency.

   The Entergy Operations corporate office in Jackson, Mississippi (Corporate Emergency Center) serves as the news media center during an emergency.

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

b. EOI provides a designated space for limited numbers of news media personnel within designated emergency response centers.

4. Information Exchange

a. The public affairs liaison has access to required public information, primarily through communications with the Off-site Emergency Coordinator and designated members of the EOF staff.

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

b. The public affairs liaison coordinates with designated members of the state and local emergency response organizations on a periodic basis to provide for continuity and consistency of information available to the affected organizations.

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

c. Rumor control is accomplished through ongoing contact between the designated spokespersons and by the activities of a licensee liaison in the Emergency Information Center, who monitors communications, identifies rumors, and makes appropriate contacts to obtain and disseminate accurate information. EOI also implements a system for dealing with rumors consistent with agreements between EOI and affected public agencies.

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

5. News Media Training

EOI provides an annual program for the news media. The training is intended to acquaint members of the media organizations with the emergency plans, information regarding radiation hazards, and points of contact for release of public information during an emergency.

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

H. Emergency Facilities and Equipment

The descriptions of ERFs provided in Section 3.8 of Part 4 of the GGNS ESP are incorporated into this plan by reference.

1. On-site Emergency Response Facilities

Control Room

The Control Room is the initial location for command and control of the emergency response effort. Controls and instrumentation needed to diagnose plant conditions and to take immediate actions to place the affected unit(s) in a safe condition are available in the Control Room. Within the Control Room, the Emergency Coordinator has access to the information needed to classify the emergency. Redundant communication systems are also available in the Control Room to make the required on-site and off-site notifications. The Control Room has the required shielding and ventilation system to remain habitable during the emergency. Access to the Control Room is limited to those individuals responsible for carrying out assigned emergency response tasks plus other technical advisors, as necessary.

Technical Support Center (TSC)

The mission of the TSC is to provide an area and resources for use by personnel providing plant management and technical support to the plant operating staff during emergency evolutions. The TSC relieves the reactor operators of peripheral duties and communications not directly related to reactor system manipulations and prevents congestion in the Control Room. Communications needs are provided for the staff within the TSC, and between the TSC and the plant (including the Control Room and OSC), the EOF, EOI management, outside authorities (including the NRC), and the public.

The description of the TSC provided in Section 13.3 of the ESBWR DCD is incorporated into this plan by reference.

Operations Support Center (OSC)

The OSC provides a centralized area and the necessary supporting resources for the assembly of designated operations support personnel during emergency conditions. The OSC, located in the Service Building, includes dedicated telephones to facilitate communications with the Control Room and the TSC and one or more additional telephones providing communications with both on-site and off-site locations. This permits personnel reporting to the OSC to be assigned to duties in support of emergency operations.

Designated plant support personnel, as indicated in Section II.B of this plan, assemble in the OSC to provide support to both the Control Room and TSC. The primary function of the OSC staff is to dispatch assessment, corrective action, and rescue personnel to locations in the plant, as directed by the TSC and Control Room.

The OSC is not designed to remain habitable under all projected emergency conditions; however, Emergency Plan Procedures make provisions for relocating the OSC as needed, based on ongoing assessments of plant conditions and facility habitability. The Emergency Director directs relocation of the OSC, if required.

2. Emergency Operations Facility

The EOF provides a location for EOI management to provide direction and coordination of emergency response activities, with emphases on providing support to the plant staff and coordinating emergency response activities with off-site response agencies.

The location of the EOF is in the Energy Services Center approximately 0.6 miles from the GGNS site. The EOF has a protection factor of 50 and its own ventilation system.

Provisions are made for staffing of the EOF by EOI, state, and NRC personnel. The EOF provides a base of operation for Off-site Monitoring Teams and is the central point for the receipt of field monitoring data.

Section II.F of this plan provides a description of the communications capabilities provided in the EOF.

EOI maintains a Backup EOF (BEOF) at the Entergy Mississippi Baxter Wilson Steam Electric Station in Vicksburg, MS. In the unlikely event that the EOF must be evacuated, essential emergency response functions are transferred to the TSC and key EOF personnel relocate to the BEOF. When the BEOF is staffed, BEOF establishes communications with the TSC and resumes its emergency response functions in coordination with the TSC.

3. State/County Emergency Operations Centers

This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

4. Activation and Staffing of Emergency Response Facilities

EOI staffs and activates the designated ERFs as follows:

- Notification of Unusual Event – ERF staffing not normally needed, but may be undertaken at the discretion of the Emergency Director.
- Alert, Site Area Emergency and General Emergency – Staffing of the TSC, OSC, and EOF required.

Following declaration of an emergency condition, the ERFs are staffed and activated in accordance with Emergency Plan Procedures. Section II.E.2 of this plan discusses provisions for notifying emergency response personnel of the need to staff the ERFs. Section II.B of this plan provides a discussion of the time required to complete the staff augmentation process. State and

local emergency response personnel staff their ERFs consistent with the requirements of the applicable plans.

Section II.A.1.b describes provisions for activating the emergency response organization under conditions that may be hazardous to emergency response personnel.

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

5. On-site Monitoring Systems

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

a. Subsection 3.7.4 of the ESBWR DCD and the corresponding section of the GGNS 3 FSAR provide a description of the seismic monitoring system. Section II.H.6 of this plan provides a description of the meteorological monitoring system. The groundwater monitoring program provides data on seasonal fluctuations of the regional groundwater. In the event that GGNS personnel were unable to conduct the hydrological sampling program, pertinent information is available from the U.S. Geological Survey, which monitors groundwater levels in the town of Port Gibson.

b. Section 12.3 of the ESBWR DCD and the corresponding section of the GGNS 3 FSAR provide a description of the installed radiological monitoring systems. In addition to the installed systems, EOI maintains an adequate supply of portable radiation monitoring and sampling equipment, including dedicated emergency response equipment, consistent with Section II.H and Appendix 6 of this plan.

c. Section 11.5 of the ESBWR DCD and the corresponding section of the GGNS 3 FSAR provide a description of the plant process monitoring systems.

d. Subsection 9.5.1 of the ESBWR DCD and the corresponding section of the GGNS 3 FSAR provide a description of the plant fire monitoring system.

NEI 07-01 describes the bases for the selection of the designated instruments as indicators of emergency conditions.

6. Access to Data from Monitoring Systems

a. EOI acquires meteorological data from the National Weather Service (NWS) during periods when the primary system is unavailable. Back-up seismic data is available from the U.S. Geological Survey. Other data sources, such as commercial media outlets, may also be used.

b. Off-site environmental radiological monitoring equipment includes a series of continuous air samplers and environmental monitoring dosimeters surrounding the facility. The facility's Off-site Dose Calculation Manual (ODCM) describes the monitoring systems. Dosimeters are posted and collected in accordance with Table 1 of NRC's Branch Technical Position for the Environmental Radiological Monitoring Program, Rev. 1 (Reference 7).

c. In addition to the monitoring systems, equipment, and radiological laboratory facilities provided at the plant, EOI maintains arrangements to obtain back-up radiological monitoring and analysis support from off-site organizations. Section II.A of this plan provides a description of these arrangements and the capabilities of the affected organizations and facilities. Appendix 7 of this plan provides pertinent certifications from these support organizations.

Section II.C.3 of this plan provides a description of the available laboratory facilities.

7. Off-site Radiological Monitoring Equipment

EOI provides off-site radiological monitoring equipment suitable for assessment of the off-site radiological consequences of facility incidents, for use by its off-site monitoring field teams. Appendix 6 of this plan provides a description of the types of radiological monitoring equipment provided for field team use.

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

8. Meteorological Instrumentation and Procedures

The station's Meteorological Monitoring System provides the capability for predicting atmospheric effluent transport and diffusion. The system consists of a primary and a backup tower, the locations of which were chosen so as to be representative of regional conditions.

The parameters monitored by the site meteorological towers include the following:

Surface	33 Feet	162 Feet
Tipping bucket rain gauge	Wind speed sensor	Wind speed sensor
Delta Temperature translator (utilizes 33 and 162 foot temperature sensors)	Wind direction sensor	Wind direction sensor
	Temperature sensor	Temperature sensor
	Relative Humidity	

GGNS also utilizes a back-up meteorological system which provides meteorological information to the control room, if the primary meteorological system fails. The instrumentation on the backup system includes a wind speed sensor, wind direction sensor, and a temperature sensor located at a 33-foot elevation.

In the unlikely event that both the primary and backup meteorological systems were inoperable, the tertiary means of obtaining wind speed and direction data would be through the National Weather Service or the U.S. Corps of Engineers, Waterways Experiment Station.

Appendix 2 of this plan provides additional information regarding the meteorological monitoring system.

9. Operations Support Center

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

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

10. Emergency Equipment and Supplies

EOI performs inspection, inventory, and appropriate operational tests of dedicated emergency equipment and instruments at least once each calendar quarter and following each use consistent with Section II.P of this plan. Facility procedures establish requirements for performing inventories and operational tests. EOI maintains sufficient reserves of equipment and instruments to replace any items that are removed from the emergency kits for calibration or repair.

Appendix 6 of this plan provides a description of the emergency equipment and supplies typically provided for use by emergency response personnel.

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

11. Emergency Kits

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

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

12. Receipt of Field Monitoring Data

When the EOF is operational, radiological assessment personnel located in the EOF are designated as the central point for the receipt of off-site monitoring data results and sample media analysis results collected by EOI personnel. Resources exist within the organization to evaluate the

information and make recommendations based upon the evaluations. Trained personnel perform these evaluations.

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

I. Accident Assessment

The descriptions of provisions for accident assessment provided in Section 3.9 of Part 4 of the GGNS ESP are incorporated into this plan by reference.

1. Parameters Indicative of Emergency Conditions

Appendix 1 of this plan identifies plant system and effluent parameter values that are indicative of off-normal or accident conditions. Appendix 1 of this plan includes the various indications that correspond to the emergency initiating conditions based on the methodology provided in NEI 07-01. Facility procedures specify the types and capabilities of the instruments used to indicate emergency conditions.

2. Plant Monitoring Systems

Appendix 2 of this plan provides information regarding plant monitoring systems that are significant to continuing radiological assessment. Subsection 1.2.2.15 of the ESBWR DCD provides a description of the ESBWR Post-Accident Sampling System.

3. Determination of Source Term and Radiological Conditions

a. Appendix 2 of this plan describes the means for relating various measured parameters, including containment radiation monitor reading, to the source term available for release within plant systems.

b. Appendix 2 of this plan describes the means for relating various measured parameters, including effluent monitor readings, to the magnitude of the release of radioactive materials.

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

Emergency Plan Procedures include the relationship between effluent monitor readings and on-site and off-site exposures and contamination for various meteorological conditions.

Appendix 2 provides a description of the emergency dose assessment program used at GGNS 3. Information includes dose and dose rate determinations based on plant effluent monitors, and contamination estimates based on deposition assumptions and meteorological conditions.

5. Meteorological Information

Section II.H.8 and Appendix 2 of this plan provide a description of the meteorological monitoring systems that are used to provide initial values and continuing assessment of meteorological conditions under emergency conditions.

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

Emergency Plan Procedures establish processes for estimating release rates and projected doses if the associated instrumentation is inoperable or off-scale. These procedures include the following considerations:

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

Appendix 2 of this plan provides a description of the emergency dose assessment program used at GGNS 3. Information includes dose and dose rate determinations based on plant effluent monitors, and contamination estimates based on deposition assumptions and meteorological conditions.

7. Field Monitoring Capability

EOI provides Emergency Response field teams composed of one or more radiation protection technicians qualified in accordance with Regulatory Guide 1.8 and the emergency preparedness training requirements established in Section II.O of this plan. Section II.E of this plan provides information regarding the methods used to notify and activate field team members and their expected activation times.

Appendix 6 of this plan provides a description of the instrumentation that is available for performance of field monitoring in the Plume Exposure Pathway EPZ. In addition to the required instrumentation, EOI provides suitable vehicles, protective equipment (including respiratory protection and radioprotective drugs), communications equipment, and supplies to facilitate performance of radiation, surface contamination, and airborne radioactivity monitoring. Emergency Plan Procedures provide guidance for field monitoring teams' performance of monitoring activities. Field monitoring teams act under the direction of designated personnel in the OSC prior to activation of the EOF and, following activation of the EOF, under the direction of designated personnel in that facility.

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

8. Assessing Hazards Through Liquid or Gaseous Release Pathways

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

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

9. Measuring Radioiodine Concentrations

EOI equips field teams with portable air samplers, appropriate sample media, and analysis equipment capable of detecting radioiodine concentrations at or below 1E-7 microcuries per cubic centimeter under field conditions, taking into consideration potential interference from noble gas activity and background radiation. Appendix 6 of this plan provides information regarding emergency supplies, equipment, and instruments.

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

10. Relating Measured Parameters to Dose Rates

Appendix 2 of this plan describes the means for relating measured parameters, such as surface, airborne, or waterborne activity levels, to dose rates for those key isotopes listed in Table 3 of NUREG-0654/FEMA-REP-1. Appendix 2 also describes the provisions for estimating the projected dose based on projected and actual dose rates. Trained personnel are responsible for directing implementation of these procedures under emergency conditions.

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

11. Tracking of Plume Using Federal and State Resources

This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

J. Protective Response

The descriptions of protective response measures provided in Section 3.10 of Part 4 of the GGNS ESP are incorporated into this plan by reference.

1. On-Site Notification

EOI establishes methods to inform personnel within the site boundary of an emergency condition requiring individual action. EOI informs individuals located within the protected area, including employees, contractors, and visitors, primarily via use of the plant public announcement system and audible warning systems, including the Evacuation Alarm and Remote Warning System, as described in DCD Subsection 9.5.2. In high noise areas or other areas where these systems may not be audible, other measures, such as visible warning signals or personal notifications, may be used.

EOI informs individuals located outside of the controlled area via audible warnings provided by warning systems and the activities of the Security Force (e.g., vehicle-mounted public address systems) and if needed, local law enforcement personnel. EOI provides information regarding the meaning of the various warning systems and the appropriate response actions via plant training programs, visitor orientation, escort instructions, posted instructions, or within the content of audible messages. Escorts provide response instructions to visitors who may not be trained to take specific emergency response actions.

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

2. Evacuation Routes and Transportation

EOI establishes and maintains pre-planned site evacuation routes consistent with Emergency Plan Procedures. EOI has provided the secondary route to provide for site evacuation in the event that the primary route is rendered impassable, such as due to radiological or meteorological conditions or other impediments to evacuation.

Affected individuals evacuate the site via personal vehicles. If any individual on site does not have access to a personal vehicle, the Security Force makes arrangements for transportation with another evacuating individual.

EOI informs individuals of the evacuation routes and appropriate instructions via plant training programs, visitor orientation, escort instructions, posted instructions, or within the content of audible messages.

Should site evacuation via either designated evacuation route be determined to be inadvisable due to adverse conditions (e.g., weather-related, radiological, or traffic density conditions), EOI directs affected individuals to a safe on-site area (as determined by the Emergency Director or his designee)

for accountability and, if necessary, contamination monitoring and decontamination.

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

3. Personnel Monitoring and Decontamination

The Emergency Director directs contamination monitoring of personnel, vehicles, and personal property when there is a likelihood that individuals and their property may have become contaminated before or during the site evacuation.

A monitoring and decontamination station is established at the EOF when directed by the Emergency Director. Emergency Organization personnel perform monitoring and decontamination in accordance with plant procedures. When a site evacuation is ordered, non-essential personnel are routed, as necessary, to evacuation/decontamination centers established by the state/local governments.

4. Non-Essential Personnel Evacuation and Decontamination

In the event of a Site Area Emergency or General Emergency, EOI evacuates non-essential personnel (i.e., personnel who do not have an emergency response assignment) consistent with the provisions of Section II.J.2 of this plan. Appropriate equipment and supplies are provided from the facility to facilitate contamination monitoring and decontamination, if needed.

5. Personnel Accountability

EOI provides the capability to account for individuals within the protected area and to determine the identities of any missing individuals within 30 minutes following initiation of assembly and accountability measures. EOI also provides a capability to account for individuals on-site continuously after making the initial determination of individuals on-site. EOI maintains these capabilities consistent with the requirements of the facility Security Plan.

6. Protective Measures

EOI maintains equipment and supplies to provide for adequate protection for individuals remaining or arriving on-site during an emergency. The equipment and supplies include:

a. respiratory protection equipment

b. protective clothing

c. radioprotective drugs

On-site supplies of protective clothing and respiratory protection equipment may be augmented by that provided by off-site responders, such as firefighters responding to the site.

In the event of a hostile attack against the site, conditions may dictate initiation of protective measures other than personnel assembly, accountability and evacuation. The SED makes decisions regarding appropriate protective measures based on evaluation of site conditions, including input from the Security force. If, based on the judgment of the SED, personnel assembly, accountability, and evacuation may result in undue hazards to site personnel, the SED may direct other protective measures, including:

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

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

7. Protective Action Recommendations and Bases

Public Protective Action Recommendations (PARs) are based on plant conditions, estimated off-site doses, or some combination of both. EOI provides Protective Action Recommendations promptly to affected state and local officials. The Emergency Action Levels correspond to the projected dose to the population at risk and are determined consistent with the methodology discussed in NEI 07-01.

If the Emergency Director declares a General Emergency, then EOI communicates to the affected state and local authorities a Protective Action Recommendation to evacuate a two mile radius around the facility, evacuate five miles downwind (downwind sector and adjacent sectors), and shelter in place the remainder of the Plume Exposure Pathway EPZ. The PAR is provided within 15 minutes of the General Emergency declaration.

In addition to the EAL-based Protective Action Recommendation, EOI provides Protective Action Recommendations based on off-site dose projections. The Radiation Protection staff is responsible for conducting off-site dose projections periodically throughout any emergency during which there is an actual or potential release of an amount of radioactive material that is likely to result in off-site consequences. Emergency Plan Procedures establish requirements for performing required calculations and projections consistent with Section II.I of this plan.

The projected doses are compared to the Protective Action Guides shown in Table II-5, as derived from EPA 400-R-92-001, and Protective Action Recommendations are developed based on the results of these comparisons. If dose projections exceed 5 rem thyroid at the site boundary, protective action recommendations include prophylactic use of radioprotective drugs in accordance with State Plans.

Prior to activation of the EOF, the Emergency Director is responsible for determining PARs and communicating the PARs to affected state and local authorities. Following activation of the EOF, the Off-site Emergency Coordinator assumes these responsibilities. The Emergency Director or Off-site Emergency Coordinator provides Protective Action Recommendations to state and local authorities who are responsible for implementing the protective actions, using the communications systems discussed in Section II.H of this plan or by direct communications in the EOF.

Table II-5 – Protective Action Guides

Projected Dose[1]	Protective Action Recommendation
• TEDE 1,000 to 5,000 mRem • CDE (Thyroid) 5,000 to 25,000 mRem • SDE (Skin Dose) 50,000 to 250,000 mRem	• Evacuation • Sheltering may be considered based on risk versus benefit • Sheltering up to 10,000 mRem may be justified for special populations
• CDE (Thyroid) 5,000 mRem or greater	• Consider prophylactic use of potassium iodide in accordance with State Plans

Note 1: Dose that can be avoided if the protective action is implemented

8. Evacuation Time Estimates

EOI has conducted an Evacuation Time Estimate (ETE) (Reference 8) consistent with the guidance provided in Appendix 4 of NUREG-0654/FEMA-REP-1 and NUREG/CR-6863, “Development of Evacuation Time Estimate Studies for Nuclear Power Plants” (Reference 9). The ETE did not reveal the existence of any significant impediments to the development of emergency plans.

Population distribution and evacuation time estimates are maintained on file by emergency preparedness personnel. Appendix 4 of this plan provides additional details of the ETE.

9. State and Local Government Implementation of Protective Measures

This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

10. Protective Measures Implementation

a. Appendix 4 provides a map of the Plume Exposure Pathway EPZ illustrating evacuation routes, evacuation areas, pre-selected radiological sampling and monitoring points, and locations of shelter areas and relocation centers.

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

b. Appendix 4 provides a map of the Plume Exposure Pathway EPZ illustrating population distribution around the facility by evacuation area. Appendix 4 also provides a map of the Plume Exposure Pathway EPZ illustrating population distribution around the facility in a sector format.

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

c. The affected state officials are responsible for making decisions regarding the public protective actions. Protective actions are implemented by affected state and local officials. The primary method of warning the public is by the use of the Alert Notification System sirens. Port Gibson/Claiborne County Civil Defense and Tensas Parish Office of Homeland Security and Emergency Preparedness are responsible for activating the portion of the system within their respective jurisdictions. Other warning methods may include telephone communications, television and radio Emergency Alert System stations, public address systems, bullhorns from patrol cars and personal contact.

   Appendix 3 of this plan provides a description of the Alert Notification System.

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

d. This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

e. This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

f. This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

g. This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

h. This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

i. This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

j. This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

k. This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

l. This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

m. The choices of recommended protective actions are based on the guidance provided in Supplement 3 to NUREG-0654/FEMA-REP-1. Section II.J.8 and Appendix 4 of this plan provide discussions of the ETE that has been prepared for the Plume Exposure Pathway EPZ.

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

11. Protective Measures Specified by the State(s)

This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

12. Registering and Monitoring Evacuees

This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

K. Radiological Exposure Control

The descriptions of radiological exposure control measures provided in Section 3.11 of Part 4 of the GGNS ESP are incorporated into this plan by reference.

1. On-Site Exposure Guidelines and Authorizations

EOI implements on-site exposure guidelines for emergency response personnel consistent with those published in EPA 400-R-92-001, Table 2-2, "Guidance on Dose Limits for Workers Performing Emergency Services." The applicable guidelines are provided in Table II-6 of this plan.

Prior to activation of the EOF, the Emergency Director, in consultation with facility Radiation Protection personnel, is responsible for authorization of any emergency exposures resulting in doses exceeding the numerical values of the occupational dose limits provided in 10 CFR Part 20. Following activation of the EOF, the Off-site Emergency Coordinator, in consultation with Radiation Protection personnel, authorizes any exposures in excess of the numerical values of the occupational dose limits provided in 10 CFR Part 20. If exposures in excess of the numerical values of the occupational dose limits provided in 10 CFR Part 20 are required, these exposures are limited to individuals who are properly trained and knowledgeable of the tasks to be completed and the risks associated with the exposures. Selection criteria for volunteer emergency workers include consideration of those who are in good physical health, are familiar with the consequences of emergency exposure, and are not a "declared pregnant adult." It is preferable, though not mandatory, that volunteers be older than 45 years of age and not be a female capable of reproduction. Efforts are made to maintain personnel doses ALARA.

Table II-6 - Emergency Worker Exposure Guidelines

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

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

2. Radiation Protection Program

Chapter 12 of the GGNS 3 FSAR describes a radiation protection program (RPP) consistent with the requirements of 10 CFR 20. The RPP, in concert with the Emergency Plan Procedures, includes provisions for implementing emergency exposure guidelines. Emergency Plan Procedures establish procedures for allowing on-site volunteers to receive radiation doses in the course of carrying out life-saving and other emergency response activities, including provisions for expeditious decision-making and consideration of the relative risks.

3. Dosimetry and Dose Assessment

a. EOI maintains a site personnel radiation dosimetry program that includes the capability to determine both external and internal doses consistent with the requirements of 10 CFR 20 on a 24-hour per day basis. The external dosimetry program includes provisions and requirements for use of both permanent record and self-reading dosimeters (e.g., pocket or electronic dosimeters). Dosimeter ranges are sufficient to measure both planned routine and foreseeable accident photon doses. Emergency Plan Procedures establish requirements for distributing dosimeters to emergency responders, including those individuals responding to the site from off-site locations. Internal doses are typically estimated through the use of whole body counting and/or in-vitro sampling and analysis routines. Emergency Plan Procedures, in conjunction with procedures associated with the RPP, establish requirements for determining internal doses based on in-vivo or in-vitro analyses results or by assessment of individual exposures to airborne radioactive materials. Dose assessment capabilities are available on a 24-hour per day basis.

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

b. Emergency Plan Procedures also establish guidance for wearers to periodically read their self-reading dosimeters to monitor compliance with emergency exposure guidelines. EOI maintains individual dose records in accordance with the requirements of 10 CFR 20 and the RPP and its supporting procedures.

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

4. State and Local Responder Exposure Authorizations

This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

5. Decontamination Action Levels

a. EOI implements requirements for personnel and area decontamination, including decontamination action levels and criteria for returning areas and items to normal use, in procedures supporting the RPP.

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

b. EOI implements procedures for decontamination of on-site emergency personnel wounds, supplies, instruments and equipment, and for waste disposal. EOI provides decontamination supplies with emergency kits consistent with Appendix 6 of this plan.

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

6. Contamination Control Measures

a. The FSAR and Security Plan establish requirements for site access control from off-site locations. Following a site evacuation, law enforcement agencies control access to the owner-controlled area consistent with the requirements of the supporting state and local plans. The site Security Force controls entry to the restricted area by individuals, including emergency responders, who must enter the site during an emergency. The RPP and its supporting procedures establish requirements for limiting access to areas having significant radiological hazards, consistent with the requirements of 10 CFR 20 and Chapter 12 of the FSAR.

b. Should the potential exist for contamination of on-site food or drinking water supplies that renders these supplies non-consumable, the designated EOF staff member makes arrangements for transport of non-contaminated off-site supplies to the site.

c. EOI permits areas and items to be returned to normal (i.e., non-contaminated) use following conduct of appropriate surveys and verification that the contamination levels meet the criteria provided in the RPP or its supporting procedures.

7. Decontamination of Relocated Site Personnel

EOI makes provisions for protective clothing, contamination monitoring, and decontamination, including decontamination of radioiodine contamination on the skin, as needed. Appendix 6 of this plan provides a description of the emergency equipment and supplies to be provided.

L. Medical and Public Health Support

The descriptions of plans for medical and public health support provided in Section 3.12 of Part 4 of the GGNS ESP are incorporated into this plan by reference.

1. Hospital and Medical Support

EOI has established agreements with Claiborne County Hospital (primary provider), located in Port Gibson, MS, and River Region Medical Center (back-up provider), located in Vicksburg, MS, under which these facilities provide medical services for injured personnel from GGNS 3. Radiation monitoring equipment, dosimeters, and protective clothing are available at the facilities.

Claiborne County Hospital and River Region Medical Center maintain appropriate radiological control capabilities through training courses supported by EOI consistent with Section II.O of this plan, periodic drills and exercises consistent with Section II.N of this plan, and material support provided consistent with agreements between EOI and the medical support providers.

If medical treatment of the injured and/or contaminated personnel requires assistance or medical expertise beyond the capabilities of the local facilities, the patients would be transferred to a support hospital. GGNS 3 has an agreement with The Ochsner Clinic, located in New Orleans, LA, to provide hospital and medical services for injured/contaminated or overexposed personnel.

Appendix 7 of this plan provides copies of the relevant certification letters.

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

2. On-Site First Aid Capability

EOI maintains a trained First Aid Team at the site to provide 24-hour per day first aid support. EOI maintains First Aid Team readiness through training consistent with Section II.O of this plan and drills and exercises consistent with Section II.N of this plan. Appendix 6 of this plan provides a description of first aid supplies and equipment to be maintained at the facility.

3. Emergency Medical Facilities Within the Affected States

This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

4. Medical Emergency Transportation

Transportation of injured persons from GGNS 3 to the medical facility is normally provided by regional ambulance service. In the event that these services are unavailable, provisions are in place to transport

injured persons in company owned or private vehicles. Ambulance service can be requested by the local hospitals or GGNS. Contaminated injured personnel are suitably clothed or prepared to prevent the spread of contamination in the transporting vehicle, if practical considering the medical condition of the injured person. The ambulance maintains radio communications with the hospital while in transit. GGNS uses telephone communication to contact the hospital, thereby maintaining indirect communications with the ambulance.

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

M. Recovery and Re-Entry

1. Recovery Plans and Procedures

EOI implements recovery plans and procedures that provide guidance for a range of recovery and reentry activities, including:

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

The following activities are included in reentry planning and execution, to the extent appropriate to plant conditions and operational needs:

- Review available radiation surveillance data/determine plant areas potentially affected by radiation and/or contamination
- Review radiation exposures of personnel to participate in the recovery operations
- Determine the need for additional personnel and the sources for these additional personnel
- Review adequacy of radiation survey instrumentation and equipment (items such as type, ranges, number, calibration)
- Preplan survey team activities

The initial reentry into the plant areas encompasses the following goals:

- Determination of the initial required recovery operations (application of clearance tags, etc.)
- Visual observation of hazards or potential hazards associated with the recovery operations
- Conduct comprehensive radiation surveillance of plant facilities and define radiological problem areas
- Isolate and post areas in the plant with radiological warning signs, and rope barriers as appropriate

The initial objectives of the recovery program are the determination of the damage to equipment, the installation of shielding, rope barriers and signs, the application of clearance tags, decontamination, and cleanup as required to place the plant in an acceptable long term condition. Other recovery operations are not initiated until the area affected by the emergency has been defined. Particular attention is directed toward isolating and tagging out

components and systems as required to control or minimize hazards. A systematic investigation is conducted to determine the equipment that has been damaged and the extent of the damage.

Once the initial objectives are completed, a detailed investigation of the accident causes and consequences, both to the plant and to the environment, is conducted. Determinations are made as to the repair work required to perform necessary modifications to plant equipment and/or operating procedures. Repair work and approved modifications are carried out as authorized. Test programs to confirm fitness for return to services are to be developed and executed.

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

2. Recovery Organization

Most emergencies will not require long-term recovery operations. Recovery operations will vary greatly depending upon the circumstances of the emergency situation. Criteria and procedures are developed as required considering maximum protection for plant personnel and the public.

The decision to terminate an event for which the on-site and off-site emergency response facilities have not been activated is made by the Emergency Director.

The decision to terminate and/or enter recovery from an incident for which on-site and off-site emergency response facilities have been activated is made by the Emergency Director after consultation with the plant technical and operations staffs. This decision is based upon a comprehensive review of plant status and system parameters. The state has the authority and responsibility for off-site recovery efforts. EOI provides assistance, as requested, through the recovery organization. Procedures and plans are then developed to implement the most expeditious recovery sequence to return the plant to normal operation.

Under some circumstances, particularly those involving significant damage to the facility or off-site consequences, there may be a need for ongoing assessment and recovery actions following the cessation of emergency response activities. Prior to entering the recovery/reentry phase of operations following an emergency, EOI establishes a recovery organization consistent with the existing conditions and continuing organizational needs.

The actual constitution and reporting relationships of the recovery organization are determined by the Off-site Emergency Coordinator based on an assessment of the facility condition and ongoing operational and technical support needs. The Off-site Emergency Coordinator staffs the recovery organization by retaining the positions from the emergency response organization needed to fulfill the ongoing needs. The roles and responsibilities of the individuals in the recovery organization are consistent with their roles and responsibilities in the ERO as described in Section II.B of this plan. The Off-site Emergency Coordinator may add supplemental

personnel as needed to address any emergent conditions or activities that are not adequately addressed by those personnel and positions available from the ERO.

The Recovery organization develops plans and procedures designed to address both immediate and long-term actions. The necessity to maintain protective measures implemented during the emergency is evaluated and, if deemed appropriate, the Recovery organization recommends relaxation of the protective measures. Because it is not possible to foresee all of the consequences of an event, specific recovery procedures may need to be written to address specialized requirements. Where possible, existing station procedures are utilized in the areas of operations, maintenance, and radiological controls. Any special recovery procedures require the same review and approval process accorded other station procedures and require the approval of the facility's safety review committee.

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

In general, EOI would not expect a Recovery organization to be necessary following a Notification of Unusual Event or Alert.

3. Changes in Organizational Structure

The recovery process is implemented when the facility's emergency response organization managers, with concurrence of state and federal agencies, have determined the station to be in a stable and controlled condition. Upon the determination, the Off-site Emergency Coordinator initiates notification of the NRC Operations Center, the state EOCs, and the local EOCs that the emergency has been terminated and any required recovery has commenced.

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

4. Updating Total Population Exposure During Recovery Operations

Total population doses are periodically estimated in the affected sectors and zones utilizing population distribution data from within the emergency planning zones. Trained personnel initially determine Total Effective Dose Equivalent (TEDE) due to external exposure from airborne material, external exposure from ground deposition, and internal exposure due to inhalation. Initial calculations also are performed for determination of Thyroid Committed Dose Equivalent (CDE) resulting from inhalation of radioiodines. The methodology used is consistent with that presented in EPA-400-R-92-001. Determination of total population doses includes assessments of exposure received from (but not necessarily limited to) immersion, inhalation, ground shine, and ingestion of radioactive materials.

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

N. Exercises and Drills

EOI implements a program of periodic drills and exercises to evaluate major portions of emergency response capabilities and to develop and maintain key emergency response skills. Identified deficiencies are corrected.

1. Exercises

a. Exercise Scope and Frequency

EOI conducts emergency exercises in accordance with NRC and DHS rules (e.g., 10 CFR 50.47(b)(14) and 44 CFR 350.9). Unless otherwise specified or authorized by NRC, emergency exercises that include NRC participation simulate an emergency that results in off-site radiological releases requiring response by off-site authorities.

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

b. Drill/Exercise Scenarios and Participation

EOI conducts exercises on a periodic basis. The exercises:

- Test the adequacy of timing and content of Emergency Plan Procedures and methods
- Test emergency equipment and communications networks
- Test the public notification system
- Provide for emergency organization personnel familiariarity with their duties

The scenario varies from year to year in a manner that tests the major elements of the plans and preparedness organizations within a five year period.

EOI will conduct a full participation exercise (which tests as much of the licensee, state and local emergency plans as is reasonably achievable without mandatory public participation) within two years before scheduled initial fuel loading. This exercise includes participation by the affected state and local governments within the plume exposure pathway and ingestion exposure pathway EPZs.

If the full participation exercise is conducted more than one year prior to initial fuel loading, EOI will conduct an exercise that tests the on-site emergency plans within one year before initiation of full power operations. This exercise may, but need not, have state or local government participation.

Following initiation of full power operations at GGNS Unit 3, EOI conducts an exercise of its on-site emergency plan (including either GGNS Unit 1, GGNS Unit 3, or both) every two years. The exercise may be included in the biennial full participation exercise discussed below.

EOI conducts exercises involving participation by each off-site authority having a role under the plan at least biennially. If any off-site authority has a role under a radiological response plan for more than one site, EOI offers that authority an opportunity to participate in one exercise every two years.

EOI offers the affected state(s) an opportunity to participate in the ingestion pathway portion of exercises, regardless of the state's participation in other licensed facility's emergency exercises.

EOI plans and conducts remedial exercises if the emergency plan is not satisfactorily tested during the biennial exercise, such that NRC, in consultation with DHS, cannot find reasonable assurance that adequate protective measures can be taken in the event of a radiological emergency. EOI coordinates with the affected state and local authorities to provide the opportunity for their participation in remedial exercises to be sufficient to demonstrate that appropriate corrective measures have been taken regarding the elements of the plan not properly tested in the previous exercises.

During each six year period, at least one exercise begins between 6:00 p.m. and 4:00 a.m. on a weekday or on a weekend. EOI conducts unannounced exercises on a periodic basis, to the extent such exercises can be supported by affected external organizations. To the extent practicable, as limited by the exercise planning process, some exercises are conducted under adverse weather conditions.

Section II.N.4 of this plan discusses drill and exercise critiques.

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

2. Drills

EOI maintains adequate emergency response capabilities between biennial exercises by conducting drills, including at least one drill involving a combination of some of the principal functional areas of on-site emergency response capabilities. Upon request, EOI allows affected state and local governments located within the plume exposure pathway EPZ to participate in the drills.

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

To the extent that emergency response activities and resources are shared between GGNS Unit 1 and GGNS Unit 3, certain drill requirements may be satisfied by a single drill. For example, it the two units share common resources for off-site radiological monitoring activities, the drill requirements may be satisfied by a single drill conducted by either unit.

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

The drill program includes the following:

a. Communications Drills

EOI tests communications with state and local governments within the Plume Exposure Pathway EPZ, as identified in Section II.A of this plan, at least once each calendar month.

EOI tests communications with affected state agencies within the Ingestion Pathway EPZ, as identified in Section II.A of this plan, at least once each calendar quarter.

Communications between GGNS, state and local EOCs, and field assessment teams are tested on an annual basis.

Communications drills evaluate both the operability of the communications system(s) and the ability to understand message content.

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

b. Fire Drills

EOI conducts fire drills as required by Section 9.5.1 of the GGNS 3 Final Safety Analysis Report. EOI conducts a drill on an annual basis to determine the effectiveness of the local fire department working in conjunction with the Fire Brigade.

c. Medical Emergency Drills

EOI conducts medical emergency drills that include a simulated contaminated injured individual and participation by the local support services agencies (e.g., medical transportation and off-site medical treatment facility) at least once each calendar year.

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

d. Radiological Monitoring Drills

EOI conducts radiological monitoring drills, involving both on-site and off-site radiological monitoring activities, at least once each calendar year. Radiological monitoring drills include collection and analysis of those sample media for which the facility is responsible, communications with monitoring teams, and recordkeeping activities. EOI may coordinate radiological monitoring drills with those drills conducted by state and local government entities, or may conduct these drills independently.

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

e. Health Physics Drills

EOI conducts on-site Health Physics drills at least semi-annually. Health Physics drills include use of the Post Accident Sampling System, response to, and analysis of, simulated elevated airborne and liquid samples, and direct radiation measurements in the environment.

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

f. External Threat-Based Drills

EOI conducts an integrated terrorist-action based drill consistent with applicable NRC requirements.

3. Conduct of Drills and Exercises

EOI implements a process to provide for effective preparation for and conduct of drills and exercises. EOI develops drill and exercise scenarios and related materials that clearly establish the following:

a. Basic objectives and evaluation criteria
b. Date, time period, location, and participating organizations
c. Simulated events
d. Time schedule of real and simulated initiating events
e. Narrative summary describing the conduct of the exercise or drill, including items such as simulated casualties, off-site response to the facility, personnel rescue, use of protective equipment, monitoring team deployment, and public information activities
f. Arrangements for official observers and the advance materials to be provided to them

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

4. Exercise and Drill Evaluation

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

EOI makes arrangements for exercises to be critiqued by federal and state observers/evaluators.

EOI conducts a critique following each exercise. Participants may include selected EOI, NRC, state, local, and other participants and observers/evaluators as appropriate. Following the critique, EOI develops and issues a formal exercise evaluation.

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

5. Drill and Exercise Critiques

EOI records the input from the critique participants, evaluates the need for changes to the plan, procedures, equipment, facilities, and other components of the emergency preparedness and response program, and develops an action plan to address the identified substantive issues.

EOI tracks identified corrective actions to completion using the designated tracking systems.

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

O. Radiological Emergency Response Training

1. General

EOI implements a training program that provides for initial training and retraining for individuals who have been assigned emergency response duties, including both on-site staff and off-site individuals who may be called on to provide assistance in the event of an emergency.

The description of the emergency preparedness training program provided in Section 3.15 of Part 4 of the GGNS ESP is incorporated into this plan by reference.

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

a. Off-site Emergency Response Training

EOI conducts, or supports the conduct of, site-specific training for off-site personnel who may be called upon to provide assistance in the event of an emergency. This includes emergency responders employed by agencies identified in Section II.A of this plan. The affected agencies include local fire, law enforcement, ambulance, and hospital services. Assistance may be provided as needed by personnel from Training, Health Physics, Operations, Security, or Corporate Communications. This emergency plan training includes the following topics as a minimum:

- Grand Gulf Nuclear Station site layout
- Communications interfaces and procedures between the on-site organizations and the off-site support agencies
- Expected responses to emergencies
- Anticipated protective actions
- Basic health physics and radiation protection
- Primary and alternate plant access routes and access procedures

Local civil defense/emergency preparedness personnel are provided training through participation in joint utility/state/local status meetings, through invitations to attend the training offered to the agencies listed above, and through their respective state emergency management agencies.

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

b. Mutual Aid Agreements

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

2. On-site Emergency Response Training

The emergency response training program includes EOI personnel who may be called upon to respond to an emergency. Each individual completes the required training prior to assignment to a position in the emergency response organization. The training program includes practical drills, consistent with Section II.N of this plan, during which each individual demonstrates the ability to discharge the assigned emergency response function. The instructor/evaluator immediately corrects any erroneous performance noted during these practical drills and, as appropriate, demonstrates proper performance consistent with approved procedures and accepted standards.

3. First Aid Team Training

EOI provides first aid training, including cardio-pulmonary resuscitation (CPR) training, consistent with the projected hazards and events, for selected members of the ERO. EPPs establish requirements for provision of first aid training.

4. Emergency Response Training and Qualification

EOI conducts a program for instructing and qualifying personnel who implement this plan. Each individual completes the required training prior to assignment to a position in the emergency response organization. The training program establishes the scope, nature, and frequency of the required training and qualification measures. The training program includes practical drills, consistent with Section II.N of this plan, during which each individual demonstrates the ability to discharge the assigned emergency response function. The instructor/evaluator immediately corrects any erroneous performance noted during these practical drills and, if appropriate, demonstrates proper performance consistent with approved procedures and accepted standards.

Emergency response personnel are trained in the following subjects, to the extent appropriate to their duties and responsibilities:

- Emergency response organization
- Emergency classification system
- Personnel accountability
- Emergency exposure limits
- Emergency response facilities
- Security access control and site evacuation process
- Exposure control techniques

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

a. Emergency response directors and coordinators
b. Accident assessment personnel
c. Radiological monitoring and analysis personnel
d. Police, Security and firefighting personnel
e. Damage control/repair/corrective action teams
f. First aid/rescue personnel
g. Local support services/emergency service personnel
h. Medical support personnel
i. Corporate office support personnel
j. Emergency communicators

Requirements for training course content and conduct are established in facility procedures.

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

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

5. Retraining

EOI conducts, or supports the conduct of, annual retraining for those categories of emergency response personnel listed in Section II.O of this plan.

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

P. Responsibility for the Planning Effort

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

The descriptions of plans for maintaining emergency preparedness provided in Section 3.16 of Part 4 of the GGNS ESP are incorporated into this plan by reference.

1. Training

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

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

2. Responsibility for Radiological Emergency Response Planning

The senior site executive holds the overall authority and responsibility for ensuring that an adequate level of emergency preparedness is maintained.

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

3. Emergency Planning Coordinator

The emergency planning coordinator exercises responsibility for development and updating of site emergency plans and coordination of these plans with other response organizations. The EOI corporate staff may augment these on-site efforts as needed to support a comprehensive emergency preparedness effort.

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

4. Plan Reviews and Updates

The emergency planning coordinator is responsible for conducting or coordinating an annual review of this plan to determine that the plan and its supporting agreements are current. This review includes consideration of any changes that may be necessary to address issues identified during the course of drills, exercises, and actual emergency events. The emergency planning coordinator also reviews and updates the plan and agreements as

needed (e.g., following changes to state and local plans that may affect the content of the facility's plan) to verify that they remain current.

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

5. Distribution of Revised Plans

Upon completion of the annual review, the emergency planning coordinator or his designee incorporates any necessary changes. Changed pages are marked and dated to highlight the changes. The emergency planning coordinator forwards the updated plan to the plant's safety review committee for review and approval. If a proposed revision is judged to decrease the effectiveness of these documents with respect to the requirements of 10 CFR 50.47(b) or 10 CFR 50, Appendix E, the proposed changes are submitted to the NRC for approval in accordance with the requirements of 10 CFR 50.54(q) prior to implementation.

Following approval of the updated plan by the senior site executive, the facility's document control organization distributes the updated plan to organizations/individuals with responsibility for implementing the plans.

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

6. Supporting Plans

The following list identifies supporting plans and their sources.

- Mississippi Radiological Emergency Preparedness Plan; Volume III, to the Mississippi Comprehensive Emergency Management Plan
- Louisiana Peacetime Radiological Response Plan; Supplement II, Fixed Nuclear Facilities to Louisiana Emergency Operations Plan
- Port Gibson/Claiborne County - Radiological Emergency Preparedness Plan
- Hospital Emergency Department Management of Radiation Accidents

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

7. Implementing Procedures

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

Certain emergency plan features recommended by NUREG-0654/FEMA-REP-1 (e.g., Evaluation Criterion II.I.3, which addresses methods and techniques for determining source terms and the magnitude of releases) are procedural in nature and have been more appropriately placed in facility procedures, including Emergency Plan Procedures. Changes to the affected portions of these procedures are developed and approved consistent with

the requirements of 10 CFR 50.54(q) and the guidance provided in NRC Regulatory Information Summary 2005-02, “Clarifying the Process for Making Emergency Plan Changes” (Reference 10).

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

8. Table of Contents

The format for this Emergency Plan directly follows the format of NUREG-0654/FEMA-REP-1.

Appendix 8 of this plan provides a cross-reference between this plan, affected state and local plans, and to the evaluation criteria in NUREG-0654/FEMA-REP-1.

9. Emergency Plan Audits

EOI’s independent assessment organization performs, or oversees the performance of, periodic independent audits of the emergency preparedness program consistent with the requirements of 10 CFR 50.54(t). The audits include, at a minimum, the following:

- The Emergency Plan
- Emergency Plan Procedures and practices
- The emergency preparedness training program
- Readiness testing (e.g., drills and exercises)
- ERFs and associated equipment, and supplies
- Interfaces with state and local government agencies

EOI’s independent assessment organization verifies that audit findings are subject to management controls consistent with the facility’s corrective action program.

EOI establishes and maintains the frequency of the periodic audits based on an assessment of performance as compared to performance indicators; however, the audit frequency may not be less than once every 24 months. In addition, EOI conducts a program audit 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 twelve months after the change.

EOI’s independent assessment organization documents audit results and improvement recommendations and reports these results to GGNS 3 and EOI management. EOI makes those portions of the audits that address the adequacy of interfaces with federal, state and local government agencies available to the affected agencies.

EOI retains audit records for a period of at least five years in accordance with facility records management requirements.

10. Emergency Telephone Numbers

The Emergency Planning Coordinator or his designee is responsible for performing or coordinating a review of the emergency personnel notification list at least once each calendar quarter and for ensuring required revisions are completed. Documentation of this review is filed by the facility's records management organization.

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

III. References and Appendices

A. Cited References

1. U.S. Nuclear Regulatory Commission, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants” NUREG-0654/FEMA-REP-1, October 1980.
2. U.S. Nuclear Regulatory Commission, “Emergency Planning and Preparedness for Nuclear Power Reactors,” Regulatory Guide 1.101, Revision 3, August 1992.
3. U. S. Department of Energy, Federal Radiological Monitoring and Assessment Center Operations Plan, DOE/NV 11718-080, December 2005.
4. U.S. Nuclear Regulatory Commission, , NRC Incident Response Plan, NUREG-0728, Revision 4, April 2005.
5. U.S. Department of Homeland Security, National Response Plan, December 2004.
6. Nuclear Energy Institute, Methodology for Development of Emergency Action Levels, Advanced Passive Light Water Reactors, NEI 07-01, Revision 0, September 2007
7. U.S. Nuclear Regulatory Commission, “Environmental Monitoring for Direct Radiation,” Generic Letter 79-65, November 1979.
8. KLD Associates, Inc., Grand Gulf Nuclear Station Development of Evacuation Time Estimates, September 2007.
9. US Nuclear Regulatory Commission, “Development of Evacuation Time Estimate Studies for Nuclear Power Plants,” NUREG/CR-6863, January 2005.
10. U.S. Nuclear Regulatory Commission, “Clarifying the Process for Making Emergency Plan Changes,” USNRC RIS 2005-02, February 2005.

B. Supplemental References

1. USNRC IN 91-77- Shift Staffing at Nuclear Power Plants
2. USNRC IN 93-81 – Implementation of Engineering Expertise On Shift
3. USNRC IN 95-48 – Results of Shift Staffing Study
4. USNRC IN 86-16 – NRC On-Scene Response During a Major Emergency
5. USNRC RIS 2002-21 – National Guard and Other Emergency Responders Located in the Licensee's Controlled Area
6. NEI 99-01 – Methodology for Development of Emergency Action Levels
7. USNRC RIS 2003-18 - Use of NEI 99-01, Methodology for Development of Emergency Action Levels (including Supplements 1 and 2)
8. USNRC IN 97-05 – Offsite Notification Capabilities
9. USNRC RIS 00-011 – NRC Emergency Telecommunications System, including Supplement 1
10. USNRC IN 87-58 – Continuous Communications Following Emergency Notifications.
11. USNRC IN 93-53 – Effect of Hurricane Andrew on Turkey Point Nuclear Generating Station and Lessons Learned
12. USNRC IN 97-05 – Offsite Notification Capabilities
13. USNRC IEB 79-18 – Audibility Problems Encountered on Evacuation of Personnel from High-Noise Areas
14. USNRC RIS 2002-16 – Current Incident Response Issues
15. FEMA-REP-11 – Guide to Preparing Emergency Public Information Materials
16. USNRC IEC 80-09 – Problems with Plant Internal Communications Systems
17. USNRC IN 85-44 – Emergency Communications System Monthly Test
18. USNRC IN 2004-19 – Problems Associated with Back-Up Power Supplies to Emergency Response Facilities and Equipment
19. USNRC IN 2002-14 – Ensuring a Capability to Evacuate Individuals, Including Members of the Public, from the Owner-Controlled Area
20. USNRC IN 88-15 – Availability of USFDA-Approved Potassium Iodide for Use in Emergencies Involving Radioactive Iodine
21. USNRC IN 96-19 – Failure of Tone Alert Radios to Activate When Receiving a Shortened Activation Signal
22. USNRC IN 2002-25 – Challenges to Licensees' Ability to Provide Prompt Public Notification and Information During an Emergency Preparedness Event

23. USNRC IN 2005-06 – Failure to Maintain Alert and Notification System Tone Alert Radio Capability
24. USNRC RIS 01-016 – Update of Evacuation Time Estimates
25. USNRC RIS 2003-12 – Clarification of NRC Guidance for Modifying Protective Actions
26. USNRC RIS 2004-13 - Consideration of Sheltering in Licensee's Range of Protective Action Recommendations, including Supplement 1
27. USNRC RIS 2005-08 – Endorsement of NEI Guidance “Range of Protective Actions for Nuclear Power Plant Incidents”
28. FEMA-REP-10 – Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants
29. USNRC IN 98-020 – Problems with Emergency Preparedness Respiratory Protection Programs
30. USNRC IN 86-98 – Offsite Medical Services
31. 44 CFR 350, Review and Approval of State and Local Radiological Emergency Plans and Preparedness
32. USNRC IN 85-41 – Scheduling of Pre-Licensing Emergency Preparedness Exercises
33. USNRC IN 87-54 – Emergency Response Exercises
34. USNRC Bulletin 2005-02 – Emergency Preparedness and Response Actions for Security-Based Events
35. USNRC RIS 2006-02 – Good Practices for Licensee Performance During the Emergency Preparedness Component of Force-on-Force Exercises
36. USNRC RIS 2006-03 – Guidance on Requesting an Exemption from Biennial Emergency Preparedness Exercise Requirements

C. Appendices

Appendix 1 – Emergency Action Levels
Appendix 2 – Radiological Assessment and Monitoring
Appendix 3 – Alert and Notification System Description
Appendix 4 – Evacuation Time Estimate
Appendix 5 – Emergency Plan Procedures -Topical List
Appendix 6 – Emergency Equipment and Supplies
Appendix 7 – Certification Letters
Appendix 8 – Cross-Reference to Regulations, Guidance, and State and Local Plans

Appendix 1 – Emergency Action Levels

Executive Summary

This appendix provides the set of Emergency Action Levels and Initiating Conditions based on industry guidance provided in NEI 07-01, "Methodology for Development of Emergency Action Levels, Advanced Passive Light Water Reactors," Rev. 0 Draft September 2007. Emergency Action Levels are presented by Recognition Category:

- A - Abnormal Rad Levels/Radiological Effluent
- C - Cold Shutdown./ Refueling System Malfunction
- F - Fission Product Barrier Degradation
- H - HAZARDS or OTHER Conditions Affecting Plant Safety
- S - System Malfunction

Each of these Recognition Categories is structured in the following way:

- Recognition Category - As described above.
- Emergency Class – Notice of Unusual Event (NOUE), Alert, Site Area Emergency or General Emergency.
- Initiating Condition - Symptom- or Event-Based, Generic Identification and Title.
- Operating Mode Applicability - Power Operation, Hot Standby, Safe/Stable Shutdown, Cold Shutdown, Refueling, Defueled, All, or Not Applicable.
- Emergency Action Level(s) corresponding to the IC.
- Basis information for plant-specific readings and factors that may relate to changing the generic IC or EAL to a different emergency class, such as for Loss of All AC Power.

For Recognition Category F, the information is presented in a matrix format. The presentation method was chosen to clearly show the synergism among the Emergency Action Levels and to support more accurate dynamic assessments. For Recognition Category F, the Emergency Action Levels are arranged by safety function or fission product barrier. Classifications are based on various combinations of safety function or fission product barrier challenges.

The primary threshold for Notification of Unusual Event is operation outside the safety envelope for the plant as defined by plant Technical Specifications, including LCOs and Action Statement Times. In addition, certain precursors of more serious events such as earthquakes are included in Notification of Unusual Event Emergency Action Levels. This provides a clear demarcation between the lowest emergency class and "non-emergency" notifications specified by 10 CFR 50.72.

The approved Design Certification does not include detailed design data for those items specific to a site location. In many cases this data is necessary to determine EAL thresholds. In these cases this document provides a [site-specific] placeholder.

The approved Design Certification does not include some detailed design information such as setpoints and some instrument numbers which are being developed by General Electric. In many cases this data is necessary to determine EAL thresholds. Appropriately, this document provides a [TBD] placeholder for future inclusion. This applies to certain site specific values, as well. Development of the site specific EAL scheme was based on this concept.

Acronyms

AC	Alternating Current
APRM	Average Power Range Monitor
CDE	Committed Dose Equivalent
CET	Core Exit Thermocouple
CFR	Code of Federal Regulations
Ci	Curie
CMT/CNMT	Containment
CSF	Critical Safety Function
DC	Direct Current
DG	Diesel Generator
EAL	Emergency Action Level
EOF	Emergency Operations Facility
EOP	Emergency Operating Procedure
EPA	Environmental Protection Agency
EPG	Emergency Procedure Guideline
EPIP	Emergency Plan Implementing Procedure
EPRI	Electric Power Research Institute
ERG	Emergency Response Guideline
FAA	Federal Aviation Administration
FAQ	Frequently Asked Question
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
FSAR	Final Safety Analysis Report
GE	General Emergency
HCTL	Heat Capacity Temperature Limit
IC	Initiating Condition
IRWST	In Containment Refueling Water Storage Tank
Keff	Effective Neutron Multiplication Factor
LCO	Limiting Condition of Operation
LOCA	Loss of Coolant Accident
LWR	Light Water Reactor
MCR	Main Control Room
MSL	Main Steam Line
MSIV	Main Steam Isolation Valve
mR	milliRoentgen
Mw	Megawatt
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
NOUE	Notification Of Unusual Event
OBE	Operating Basis Earthquake
ODCM	Off-site Dose Calculation Manual
PA	Protected Area
PAG	Protective Action Guideline
PIP	Plant Investment Protection
PLS	Plant Control System
POAH	Point of Adding Heat

PRA/PSA	Probabilistic Risk Assessment / Probabilistic Safety Assessment
PWR	Pressurized Water Reactor
psig	Pounds per Square Inch Gauge
Q-DCIS	Safety Related Distributed Control and Information System
R	Rem
RCS	Reactor Coolant System
RMS	Radiation Monitoring System
RPS	Reactor Protection System
RPV	Reactor Pressure Vessel
RWCU/SDC	Reactor Water Cleanup/Shutdown Cooling System
SAG	Severe Accident Guideline
SCBA	Self Contained Breathing Apparatus
SBGTS	Stand-By Gas Treatment System
SPDS	Safety Parameter Display System
SRNM	Source Range Neutron Monitor
SRO	Senior Reactor Operator
SSE	Safe Shutdown Earthquake
TEDE	Total Effective Dose Equivalent
TBD	To Be Determined
TOAF/TAF	Top of Active Fuel
TSC	Technical Support Center

1. Methodology For Development Of Emergency Action Levels

This appendix provides the set of Emergency Action Levels and Initiating Conditions based on industry guidance provided in NEI 07-01, "Methodology for Development of Emergency Action Levels, Advanced Passive Light Water Reactors," Rev. 0 Draft September 2007.

The approved Design Certification does not include detailed design data for those items specific to a site location. In many cases this data is necessary to determine EAL thresholds. In these cases this document provides a [site-specific] placeholder.

The approved Design Certification does not include some detailed design information such as setpoints and some instrument numbers which are being developed by General Electric. In many cases this data is necessary to determine EAL thresholds. Appropriately, this document provides a [TBD] placeholder for future inclusion. This applies to certain site specific values, as well. Development of the site-specific EAL scheme was based on this concept.

2. Changes

Reserved.

3. Development Of Basis For Generic Approach

The Emergency Action Levels (EALs) and Initiating Conditions (ICs) provided in this appendix address the emergency classification scheme discussed in Section II.D of the Emergency Plan. In addition to radiological events, non-radiological events are included in the classification scheme only to the extent that these events represent challenges to the continued safety of the reactor plant and its operators. There are existing reporting requirements (EPA, OSHA) under which utilities operate. There are also requirements for emergency preparedness involving hazardous chemical releases. While the proposed classification structure could be expanded to include these non-radiological hazards, these events are beyond the scope of this document.

This classification scheme is based on the four classification levels described in Section II.D of the Emergency Plan.

3.1. Emergency Action Levels

ICs/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, or 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.

Classifications are based on evaluation of each Unit. All classifications are to be based upon VALID indications, reports or conditions. Indications, reports or conditions are considered VALID when they are verified by (1) an instrument channel check, or (2) indications on related or redundant indications, or (3) by direct observation by plant personnel, such that doubt related to the indication's operability, the condition's existence, or the report's accuracy is removed. Implicit in this definition is the need for timely assessment.

With the emergency classes defined, the thresholds that must be met for each EAL to be placed under the emergency class can be determined. There are two basic approaches to determining these EALs. EALs and emergency class boundaries coincide for those continuously measurable, instrumented ICs, such as radioactivity, core temperature, coolant levels, etc. For these ICs, the EAL will be the threshold reading that most closely corresponds to the emergency class description using the best available information.

The Emergency Director must remain alert to events or conditions that lead to the conclusion that exceeding the EAL threshold is IMMINENT. Under certain plant conditions, an alternate instrument or a temporary instrument may be installed to facilitate monitoring the parameter. In addition, visual observation may be sufficient to detect that a parameter is approaching or has reached a classifiable threshold. In these cases, the classification of the event is appropriate even if the instrument

normally used to monitor the parameter is inoperable or has otherwise failed to detect the threshold. If, in the judgment of the Emergency Director, an IMMINENT situation is at hand, the classification should be made as if the threshold has been exceeded..

For discrete (discontinuous) events, the approach will have to be somewhat different. Typically, in this category are internal and external hazards such as FIRE or earthquake. The purpose for including hazards in EALs is to assure that station personnel and off-site emergency response organizations are prepared to deal with consequential damage these hazards may cause. If, indeed, hazards have caused damage to safety functions or fission product barriers, this should be confirmed by symptoms or by observation of such failures. Therefore, it may be appropriate to enter an Alert status for events approaching or exceeding design basis limits such as Operating Basis Earthquake, design basis wind loads, FIRE within VITAL AREAs, etc. This would give the operating staff additional support and improved ability to determine the extent of plant damage. If damage to barriers or challenges to Critical Safety Functions (CSFs) have occurred or are identified, then the additional support can be used to escalate or terminate the Emergency Class based on what has been found. Security events must reflect potential for increasing security threat levels.

The Emergency Operating Procedures (EOPs) contain detailed instructions regarding the monitoring of these functions and provides a scheme for classifying the significance of the challenge to the functions. In providing EALs based on these schemes, the emergency classification can flow from the EOP assessment rather than being based on a separate EAL assessment. This is desirable as it reduces ambiguity and reduces the time necessary to classify the event.

3.2. Treatment of Multiple Events and Emergency Class Upgrading

When multiple simultaneous events occur, the emergency classification level is based on the highest EAL reached. For example, two Alerts remain in the Alert category. Or, an Alert and a Site Area Emergency is a Site Area Emergency.

Although the majority of the EALs provide very specific thresholds, the Emergency Director must remain alert to events or conditions that lead to the conclusion that exceeding the EAL threshold is IMMINENT. If, in the judgment of the Emergency Director, an IMMINENT situation is at hand, the classification should be made as if the threshold has been exceeded. While this is particularly prudent at the higher emergency classes (as the early classification may provide for more effective implementation of protective measures), it is nonetheless applicable to all emergency classes.

3.3. Classifying Transient Events

There may be cases in which a plant condition that exceeded an EAL threshold was not recognized at the time of occurrence, but is identified well after the condition has occurred (e.g., as a result of routine log or record review) and the condition no longer exists. In these cases, an emergency should not be declared.

Reporting requirements of 10 CFR 50.72 are applicable and the guidance of NUREG-1022, Event Reporting Guidelines 10 CFR 50.72 and 50.73, should be applied.

Existing guidance for classifying transient events addresses the period of time of event recognition and classification (15 minutes). However, in cases when an EAL declaration criterion may be met momentarily during the normal expected response of the plant, declaration requirements should not be considered to be met when the conditions are a part of the designed plant response or result in appropriate operator actions.

3.4. Operating Mode Applicability

The plant operating mode that existed at the time that the event occurred, prior to any protective system or operator action initiated in response to the condition, is compared to the mode applicability of the EALs. If an event occurs, and a lower or higher plant operating mode is reached before the emergency classification can be made, the declaration shall be based on the mode that existed at the time the event occurred.

For events that occur in Cold Shutdown or Refueling, escalation is via EALs that have Cold Shutdown or Refueling for mode applicability, even if Safe/Stable Shutdown (or a higher mode) is entered during any subsequent heatup. In particular, the Fission Product Barrier Matrix EALs are applicable only to events that initiate in Safe/Stable Shutdown or higher.

ESBWR Operating Modes

Power Operations (1):	Mode Switch in Run
Startup (2):	Mode Switch in Startup or Refuel
Hot Shutdown (3):	Mode Switch in Shutdown, Average Reactor Coolant Temperature greater than 420 °F
Stable Shutdown (4)	Mode Switch in Shutdown, Average Reactor Coolant Temperature less than or equal to 420 °F and greater than 200 °F
Cold Shutdown (5):	Mode Switch in Shutdown, Average Reactor Coolant Temperature less than or equal to 200 °F
Refueling (6):	Mode Switch in Shutdown or Refuel, and one or more vessel head bolts less than fully tensioned.
Defueled (None)	All reactor fuel removed from reactor pressure vessel

4. Human Factors Considerations

Human factors considerations were included in the development of NEI 07-01.

5. Emergency Action Levels

This section of the appendix specifies each IC and EAL including basis information

5.1. Generic Arrangement

The information is presented by Recognition Categories:

- A - Abnormal Rad Levels / Radiological Effluent
- C - Cold Shutdown./ Refueling System Malfunction
- F - Fission Product Barrier Degradation
- H - HAZARDS or OTHER Conditions Affecting Plant Safety
- S - System Malfunction

The Initiating Conditions for each of the above Recognition Categories are in the order of NOUE, Alert, Site Area Emergency, and General Emergency. For all Recognition Categories, an Initiating Condition matrix versus Emergency Class is first shown. For Recognition Category F, the barrier-based EALs are presented in Table A1-F-2 .

With the exception of Recognition Category F, each of the EAL guides in Recognition Categories is structured in the following way:

- Recognition Category - As described above.
- Emergency Class - NOUE, Alert, Site Area Emergency or General Emergency.
- Initiating Condition – Symptom- or Event-Based, Generic Identification and Title.
- Operating Mode Applicability - These modes are defined in the Technical Specifications
- Emergency Action Level(s) – These EALs are conditions and indications that were considered to meet the criteria of the IC..
- Basis – Provides information that explains the IC and EALs. The bases are written to assist the personnel developing operator aids and procedures.

For Recognition Category F, basis information is presented in a format consistent with Tables A1-F-1 and A1-F-2. The presentation method shown for Fission Product Barrier Function Matrix was chosen to clearly show the synergism among the EALs and to support more accurate dynamic assessments.

5.2. Generic Bases

The primary threshold for NOUEs is operation outside the safety envelope for the plant as defined by plant Technical Specifications, including LCOs and Action Statement Times. In addition, certain precursors of more serious events are included in NOUE IC/EALs. This provides a clear demarcation between the lowest emergency class and "non-emergency" notifications specified by 10 CFR 50.72.

For a number of Alerts, IC/EALs are chosen based on hazards which may cause damage to plant safety functions (i.e., tornadoes, hurricanes, FIRE in plant VITAL AREAs) or require additional help directly (Control Room evacuation) and thus increased monitoring of the plant is warranted. The symptom-based and barrier-based IC/EALs are sufficiently anticipatory to address the results of multiple failures, regardless of whether there is or is not a common cause. Declaration of the Alert will already result in the staffing of the TSC for assistance and additional monitoring. Thus, direct escalation to the Site Area Emergency is unnecessary. Other Alerts, that have been specified, correspond to conditions which are consistent with the emergency class description.

The basis for declaring a Site Area Emergency and General Emergency is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.

With regard to the Hazards Recognition Category, the existence of a hazard that represents a potential degradation in the level of safety of the plant is the basis of NOUE classification. If the hazard results in VISIBLE DAMAGE to plant structures or equipment associated with safety systems or if system performance is affected, the event may be escalated to an Alert. The reference to “duration” or to “damage” to safety systems is intended only to size the event. Consequential damage from such hazards, if observed, would be the basis for escalation to Site Area Emergency or General Emergency, by entry to System Malfunction or Fission Product Barrier IC/EALs.

5.3. Site-Specific Implementation

Reserved.

5.4. Definitions

In the IC/EALs, selected words have been set in all capital letters. These words are defined terms having specific meanings as they relate to this procedure. Definitions of these terms are provided below:

BOMB: An explosive device suspected of having sufficient force to damage plant systems or structures.

CIVIL DISTURBANCE: A group of persons violently protesting station operations or activities at the site.

CONTAINMENT CLOSURE: The Tech. Spec. Section 3.6 required and site-specific procedurally defined action taken to secure primary or the Reactor Building and the associated structures, systems, and components as a functional barrier to fission product release under existing plant conditions.

EXPLOSION: A rapid, violent, unconfined combustion, or catastrophic failure of pressurized equipment that imparts energy of sufficient force to potentially damage permanent structures, systems, or components.

FIRE: Combustion characterized by heat and light. Sources of smoke, such as slipping drive belts or overheated electrical equipment do not constitute FIRES. Observation of flame is preferred but is NOT required if large quantities of smoke and heat are observed.

HOSTAGE: A person(s) held as leverage against the station to ensure that demands will be met by the station.

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 intimidates the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, projectiles, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the nuclear power plant. Non-terrorism-based EALs should be used to address such activities, (i.e., violent acts between individuals in the OWNER CONTROLLED AREA).

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

IMMINENT: Mitigation actions have been ineffective, additional actions are not expected to be successful, and trended information indicates that the event or condition will occur. Where “IMMINENT” timeframes are specified, they shall apply.

NORMAL PLANT OPERATIONS: Activities at the plant site associated with routine testing, maintenance, or equipment operations, in accordance with normal operating or administrative procedures. Entry into abnormal or emergency operating procedures, or deviation from normal security or radiological controls posture, is a departure from NORMAL PLANT OPERATIONS.

POINT OF ADDING HEAT: A reactor power level at which sufficient energy is being added to the reactor coolant from the reactor to result in a bulk coolant

temperature increase. [This value may vary slightly based on plant core loading and time of life.]

PROJECTILE: An object directed toward a nuclear power plant that could have an effect sufficient to cause concern for its continued operability, reliability, or safety of personnel.

PROTECTED AREA: Typically, the area which normally encompasses all controlled areas within the security PROTECTED AREA fence.

REACTOR BUILDING ISOLATION: See CONTAINMENT CLOSURE.

SECURITY CONDITION: Any security event as listed in the approved security contingency plan that constitutes a threat/compromise to site security, threat/risk to site personnel, or a potential degradation to the level of safety of the plant. A SECURITY CONDITION does not involve a HOSTILE ACTION.

SIGNIFICANT TRANSIENT: [TBD].

STRIKE ACTION: A work stoppage within the PROTECTED AREA by a body of workers to enforce compliance with demands made on (site-specific). The STRIKE ACTION must threaten to interrupt NORMAL PLANT OPERATIONS.

UNISOLABLE: A breach or leak that cannot be promptly isolated.

UNPLANNED: A parameter change or an event that is not the result of an intended evolution and requires corrective or mitigative actions.

VALID: An indication, report, or condition, is considered to be VALID when it is verified by (1) an instrument channel check, or (2) indications on related or redundant indicators, or (3) by direct observation by plant personnel, such that doubt related to the indicator's operability, the condition's existence, or the report's accuracy is removed. Implicit in this definition is the need for timely assessment.

VISIBLE DAMAGE: Damage to equipment or structure that is readily observable without measurements, testing, or analysis. Damage is sufficient to cause concern regarding the continued operability or reliability of affected structure, system, or component. Example damage includes: deformation due to heat or impact, denting, penetration, rupture, cracking, paint blistering. Surface blemishes (e.g., paint chipping, scratches) should not be included.

VITAL AREA: Any area, normally within the PROTECTED AREA, which contains equipment, systems, components, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation.

5.5 Abnormal Rad Levels/ Radiological Effluent EALs

Table A1-A: Recognition Category "A" Initiating Condition Matrix

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOUE
AG1 Off-site Dose Resulting from an Actual or IMMINENT Release of Gaseous Radioactivity Greater Than 1000 mrem TEDE or 5000 mrem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology. *Op. Modes: All*	**AS1** Off-site Dose Resulting from an Actual or IMMINENT Release of Gaseous Radioactivity Greater Than 100 mrem TEDE or 500 mrem Thyroid CDE for the Actual or Projected Duration of the Release. *Op. Modes: All*	**AA1** Any Release of Gaseous or Liquid Radioactivity to the Environment Greater Than 200 Times the Off-site Dose Calculation Manual for 15 Minutes or Longer. *Op. Modes: All*	**AU1** Any Release of Gaseous or Liquid Radio-activity to the Environment Greater Than Two Times the Off-site Dose Calculation Manual for 60 Minutes or Longer. *Op. Modes: All*
		AA3 Rise in Radiation Levels Within the Facility that Impedes Operation of Systems Required to Maintain Safe Operations or to Establish or Maintain Cold Shutdown *Op. Modes: All*	**AU2** UNPLANNED Rise in Plant Radiation Levels. *Op. Modes: All*
		AA2 Damage to Irradiated Fuel or Loss of Water Level that Has Resulted or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel. *Op. Modes: All*	

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

AU1

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Any Release of Gaseous or Liquid Radioactivity to the Environment Greater Than 2 Times the Off-site Dose Calculation Manual for 60 Minutes or Longer.

Operating Mode Applicability: All

Emergency Action Levels: (1 or 2 or 3)

Note: *The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the release duration has exceeded, or will likely exceed, the applicable time. In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown.*

1. VALID reading on any of the following radiation monitors greater than 2 times the alarm setpoint established by a current radioactivity discharge permit for 60 minutes or longer.

Plant Stack	D11-PRM-RMS-13	[TBD]
Liquid Radwaste Discharge	D11-PRM-RMS-11	[TBD]
Isolation Condenser Vent Exhaust	D11-PRM-RMS-19	[TBD]

2. VALID reading on any of the following radiation monitors greater than the reading shown for 60 minutes or longer:

Main Steamline	D11-PRM-RMS-01	[TBD]
Containment Purge Exhaust	D11-PRM-RMS-23	[TBD]
Drywell Sump LCW/HCW Discharge	D11-PRM-RMS-16	[TBD]
Turbine Bldg. Combined Ventilation Exhaust	D11-PRM-RMS-10	[TBD]
Radwaste Bldg. Ventilation Exhaust	D11-PRM-RMS-17	[TBD]

3. Confirmed sample analyses for gaseous or liquid releases indicates concentrations or release rates greater than 2 times (site-specific ODCM) for 60 minutes or longer.

Basis:

This IC addresses a potential or actual decrease in the level of safety of the plant as indicated by a radiological release that exceeds regulatory commitments for an extended period of time. The occurrence of extended, uncontrolled radioactive releases to the environment is indicative of a degradation in these features and/or controls.

The ODCM multiples are specified in ICs AU1 and AA1 only to distinguish between non-emergency conditions, and from each other. While these multiples obviously correspond to an off-site dose or dose rate, the emphasis in classifying these events is the

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

degradation in the level of safety of the plant, NOT the magnitude of the associated dose or dose rate.

This EAL includes any release for which a radioactivity discharge permit was not prepared, or a release that exceeds the conditions (e.g., minimum dilution flow, maximum discharge flow, alarm setpoints, etc.) on the applicable permit. The Emergency Director should not wait until 60 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 60 minutes. Also, if an ongoing release is detected and the starting time for that release is unknown, the Emergency Director should, in the absence of data to the contrary, assume that the release has exceeded 60 minutes.

Threshold #1 addresses radioactivity releases, that for whatever reason, cause effluent radiation monitor readings to exceed two times the Technical Specification limit and releases are not terminated within 60 minutes.

Threshold #2 addresses effluent or accident radiation monitors on non-routine release pathways (i.e., for which a discharge permit would not normally be prepared).

Threshold #3 addresses uncontrolled releases that are detected by sample analyses, particularly on unmonitored pathways, e.g., spills of radioactive liquids into storm drains, heat exchanger leakage in river water systems, etc.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

AU2

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

UNPLANNED Rise in Plant Radiation Levels.

Operating Mode Applicability: All

Emergency Action Levels: (1 or 2)

1. a. UNPLANNED water level drop in a refueling pathway as indicated by:

Rx Well Cavity	G21-FAPCS-LS-N020-Low	[TBD]
Buffer Pool	G21-FAPCS-LS-N019-Low	[TBD]
Upper Fuel Transfer Pool	G21-FAPCS-LS-N018-Low	[TBD]
Skimmer Surge Tank A/B Level	G21-FAPCS-LS-R621-Low,	[TBD]
	G21-LS-R622-Low-Low	[23 feet]
Spent Fuel Storage Pool	G21-FAPCS-LS-R634-Low,	[TBD]
	G21-LS-R632	[TBD],
	G21-LS-R633	[TBD]
Lower Fuel Transfer Pool Visual observation	G21-FAPCS-LS-N026-Low	[TBD]

AND

b. VALID rise in area radiation reading indicated by:

Refueling Floor Area #1, EL 34000 (Reactor Building)	D21-ARM-RMS-01
Refueling Floor Area #2, EL 34000 (Reactor Building)	D21-ARM-RMS-02
New Fuel Buffer Pool, EL 27000 (Reactor Building)	D21-ARM-RMS-03
New Fuel Buffer Pool, EL 27000 (Reactor Building)	D21-ARM-RMS-04
Fuel Handling Machine (IFTS), EL 34000 (Reactor Building)	D21-ARM-RMS-40
Spent Fuel Floor, EL 4650 (Fuel Building)	D21-ARM-RMS-01
Fuel Handling Machine, EL 4650, (Fuel Building)	D21-ARM-RMS-02
Fuel Transfer Cask Area, EL 4650 (Fuel Building)	D21-ARM-RMS-03
IFTS Fuel Building Isolation Valve Room (Inside), EL 4600	D21-ARM-RMS-12

2. VALID Area Radiation Monitor readings or survey results indicate a rise by a factor of 1000 over normal* levels.

*Normal levels can be considered as the highest reading in the past twenty-four hours excluding the current peak value.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

Basis:

This IC addresses elevated radiation levels as a result of water level lowering but above the RPV flange or events that have resulted, or may result, in unexpected rise in radiation dose rates within plant buildings. These radiation levels represent a loss of control over radioactive material and may represent a potential degradation in the level of safety of the plant.

Classification as a NOUE is warranted as a precursor to a more serious event. The refueling pathway is a site specific combination of cavities, tubes, canals and pools.
While a radiation monitor could detect a rise in dose rate due to a drop in the water level, it might not be a reliable indication of whether or not the fuel is covered. For refueling events where the water level drops below the RPV flange classification would be via CU2. This event escalates to an Alert per IC AA2 if irradiated fuel outside the reactor vessel is uncovered. For events involving irradiated fuel in the reactor vessel, escalation would be via the Fission Product Barrier Matrix for events in operating modes 1-4.

Threshold #2 addresses elevated in-plant radiation levels encountered during operation of plant processes that represent a degradation in the control of radioactive material, and represent a potential degradation in the level of safety of the plant. This EAL excludes in-plant radiation levels that may result from use of radiographic sources. A specific list of ARMs is not required as it would restrict the applicability of the Threshold. The intent is to identify loss of control of radioactive material in any monitored area. This event escalates to an Alert per IC AA3 if the increase in dose rates impedes personnel access necessary for safe operation.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

AA1

Initiating Condition -- ALERT

Any Release of Gaseous or Liquid Radioactivity to the Environment Greater Than 200 Times the Off-site Dose Calculation Manual for 15 Minutes or Longer.

Operating Mode Applicability: All

Emergency Action Levels: (1 or 2 or 3)

Note: *The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the release duration has exceeded, or will likely exceed, the applicable time. In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown.*

1. VALID reading on any effluent monitor that exceeds 200 times the alarm setpoint established by a current radioactivity discharge permit for 15 minutes or longer.

Plant Stack	D11-PRM-RMS-13	[TBD]
Liquid Radwaste Discharge	D11-PRM-RMS-11	[TBD]
Isolation Condenser Vent Exhaust	D11-PRM-RMS-19	[TBD]

2. VALID reading on any of the following radiation monitors greater than the reading shown for 15 minutes or longer:

Main Steamline	D11-PRM-RMS-01	[TBD]
Containment Purge Exhaust	D11-PRM-RMS-23	[TBD]
Drywell Sump LCW/HCW Discharge	D11-PRM-RMS-16	[TBD]
Turbine Bldg. Combined Ventilation Exhaust	D11-PRM-RMS-10	[TBD]
Radwaste Bldg. Ventilation Exhaust	D11-PRM-RMS-17	[TBD]

3. Confirmed sample analyses for gaseous or liquid releases indicates concentrations or release rates, greater than 200 times {site specific ODCM valus} for 15 minutes or longer.

Basis:

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

This IC addresses a potential or actual decrease in the level of safety of the plant as indicated by a radiological release that exceeds regulatory commitments for an extended period of time. The occurrence of extended, uncontrolled radioactive releases to the environment is indicative of a degradation in the features and/or controls established to prevent unintentional releases, or control and monitor intentional releases.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

The ODCM multiples are specified in ICs AU1 and AA1 only to distinguish between non-emergency conditions, and from each other. While these multiples obviously correspond to an off-site dose or dose rate, the emphasis in classifying these events is the degradation in the level of safety of the plant, NOT the magnitude of the associated dose or dose rate.

This EAL includes any release for which a radioactivity discharge permit was not prepared, or a release that exceeds the conditions (e.g., minimum dilution flow, maximum discharge flow, alarm setpoints, etc.) on the applicable permit.

The Emergency Director should not wait until 15 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 15 minutes. Also, if an ongoing release is detected and the starting time for that release is unknown, the Emergency Director should, in the absence of data to the contrary, assume that the release has exceeded 15 minutes.

Threshold #1 addresses radioactivity releases that for whatever reason cause effluent radiation monitor readings that exceed two hundred times the alarm setpoint established by the radioactivity discharge permit. This alarm setpoint may be associated with a planned batch release, or a continuous release path.

Threshold #2 addresses effluent or accident radiation monitors on non-routine release pathways (i.e., for which a discharge permit would not normally be prepared).
Threshold #3 addresses uncontrolled releases that are detected by sample analyses, particularly on unmonitored pathways, e.g., spills of radioactive liquids into storm drains, heat exchanger leakage in river water systems, etc.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

AA2

Initiating Condition -- ALERT

Damage to Irradiated Fuel or Loss of Water Level that Has or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel.

Operating Mode Applicability: All

Emergency Action Levels: (1 or 2)

1. A VALID alarm or elevated reading on any of the following due to damage to irradiated fuel or loss of water level

Refueling Floor Area #1, EL 34000 (Reactor Building)	D21-ARM-RMS-01
Refueling Floor Area #2, EL34000 (Reactor Building)	D21-ARM-RMS-02
New Fuel Buffer Pool, EL 27000 (Reactor Building)	D21 -ARM-RMS -03
New Fuel Buffer Pool, EL 27000 (Reactor Building)	D21 -ARM-RMS -04
Fuel Handling Machine (IFTS), EL 34000 (Reactor Building)	D21-ARM-RMS-40
Spent Fuel Floor, EL 4650 (Fuel Building)	D21-ARM-RMS-01
Fuel Handling Machine, EL 4650 (Fuel Building)	D21-ARM-RMS-02
Fuel Transfer Cask Area, EL 4650 (Fuel Building)	D21-ARM-RMS-03
IFTS Fuel Building Isolation Valve Room (Inside), EL 4650	D21-ARM-RMS-12

2. A water level drop in the reactor refueling pathway resulting in irradiated fuel becoming uncovered as indicated by:

Rx Well Cavity	G21-FAPCS-LS-N020-Low	[TBD]
Buffer Pool	G21-FAPCS-LS-N019-Low	[TBD]
Upper Fuel Transfer Pool	G21- FAPCS-LS-N018-Low	[TBD]
Skimmer Surge Tank A/B Level	G21-FAPCS-LS-R621-Low,	[TBD]
	G21-FAPCS-LS-R622-Low-Low	[23 feet]
Spent Fuel Storage Pool	G21-FAPCS-LS-R634-Low,	[TBD]
	G21-FAPCS-LS-R632,	[TBD]
	G21-FAPCS-LS-R633	[TBD]
Lower Fuel Transfer Pool	G21-FAPCS-LS-N026-Low	[TBD]
Visual observation		

Basis:

This IC addresses specific events that have resulted, or may result, in unexpected rise in radiation dose rates within plant buildings, and may be a precursor to a radioactivity release to the environment. These events represent a loss of control over radioactive material and represent degradation in the level of safety of the plant.

Threshold #1 addresses radiation monitor indications of fuel uncovery and/or fuel damage. Elevated readings on ventilation monitors may be indication of a radioactivity release from the fuel, confirming that damage has occurred. Raised background at the

monitor due to water level lowering may mask raised ventilation exhaust airborne activity and needs to be considered. Application of this threshold requires understanding of the actual radiological conditions present in the vicinity of the monitor.

In Threshold #2, site-specific indications may include instrumentation such as water level and local area radiation monitors, and personnel (e.g., refueling crew) reports. The refueling pathway is a site specific combination of cavities, tubes, canals and pools.

Escalation, if appropriate, would occur via IC AS1 or AG1 or Emergency Director judgment.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

AA3

Initiating Condition -- ALERT

Rise in Radiation Levels Within the Facility That Impedes Operation of Systems Required to Maintain Safe Operations or to Establish or Maintain Cold Shutdown

Operating Mode Applicability: All

Emergency Action Levels:

1. Dose rate greater than 15 mR/hr in the following areas requiring continuous occupancy to maintain plant safety functions:

Main Control Room	D11-PRM-RMS-04A, B
Technical Support Center	D11-PRM-RMS-20
Central Alarm Station	D11-PRM-RMS-[TBD]
Secondary Alarm Station	D11-PRM-RMS-[TBD]

Basis:

The cause and/or magnitude of the increase in radiation levels is not a concern of this IC. The Emergency Director must consider the source or cause of the increased radiation levels and determine if any other IC may be involved.

Areas requiring continuous occupancy include the Control Room and TSC.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

AS1

Initiating Condition -- SITE AREA EMERGENCY

Off-site Dose Resulting from an Actual or IMMINENT Release of Gaseous Radioactivity Greater Than100 mrem TEDE or 500 mrem Thyroid CDE for the Actual or Projected Duration of the Release.

Operating Mode Applicability: All

Emergency Action Levels: (1 or 2 or 3)

Note: *If dose assessment results are available at the time of declaration, the classification should be based on dose assessment instead of radiation monitor values. While necessary declarations should not be delayed awaiting results, the dose assessment should be initiated / completed in order to determine if the classification should be subsequently escalated.*

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

1. VALID reading on any of the following radiation monitors greater than the reading shown for 15 minutes or longer:

Plant Stack	D11-PRM-RMS-13	[Setpoint TBD]
Isolation Condenser Vent Exhaust	D11-PRM-RMS-19	[Setpoint TBD]

2. Dose assessment using actual meteorology indicates doses greater than 100 mrem TEDE or 500 mrem thyroid CDE at or beyond the site boundary.

3. Field survey results indicate closed window dose rates greater than100 mR/hr expected to continue for 60 minutes or longer; or analyses of field survey samples indicate thyroid CDE greater than 500 mrem for one hour of inhalation, at or beyond the site boundary.

Basis:

This IC addresses radioactivity releases that result in doses at or beyond the site boundary that exceed a small fraction of the EPA Protective Action Guides (PAGs). Releases of this magnitude are associated with the failure of plant systems needed for the protection of the public

The Emergency Director should not wait until 15 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 15 minutes.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

AG1

Initiating Condition -- GENERAL EMERGENCY

Off-site Dose Resulting from an Actual or IMMINENT Release of Gaseous Radioactivity Greater Than 1000 mrem TEDE or 5000 mrem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology.

Operating Mode Applicability: All

Emergency Action Levels: (1 or 2 or 3)

Note: *If dose assessment results are available at the time of declaration, the classification should be based on dose assessment instead of radiation monitor values. Do not delay declaration awaiting dose assessment results.*

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

1. VALID reading on any of the following radiation monitors greater than the reading shown for 15 minutes or longer:

Plant Stack	D11-PRM-RMS-13	[Setpoint TBD]
Isolation Condenser Vent Exhaust	D11-PRM-RMS-19	[Setpoint TBD]

2. Dose assessment using actual meteorology indicates doses greater than 1000 mrem TEDE or 5000 mrem thyroid CDE at or beyond the site boundary.

3. Field survey results indicate closed window dose rates greater than 1000 mR/hr expected to continue for 60 minutes or longer; or analyses of field survey samples indicate thyroid CDE greater than 5000 mrem for one hour of inhalation, at or beyond site boundary.

Basis:

This IC addresses radioactivity releases that result in doses at or beyond the site boundary that exceed the EPA Protective Action Guides (PAGs). Public protective actions will be necessary. Releases of this magnitude are associated with the failure of plant systems needed for the protection of the public and likely involve fuel damage.

The Emergency Director should not wait until 15 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 15 minutes.

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

5.6 Cold Shutdown/Refueling System Malfunction EALs

Table A1-C: Recognition Category "C" Initiating Condition Matrix

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOUE
CG1 Loss of RPV Inventory Affecting Fuel Clad Integrity with Containment Challenged. *Op. Modes: Cold Shutdown, Refueling*	**CS1** Loss of RPV Inventory Affecting Core Decay Heat Removal Capability. *Op. Modes: Cold Shutdown, Refueling*	**CA1** Loss of RCS/RPV Inventory. *Op. Modes: Cold Shutdown, Refueling*	**CU1** RCS Leakage *Op. Mode: Cold Shutdown*
			CU2 UNPLANNED Loss of RCS/RPV Inventory *Op. Mode: Refueling*
			CU3 All Safety Related DC Batteries Not Being Charged for Greater Than 30 Minutes Due to Loss of Power to PIP Busses. *Op. Modes: Cold Shutdown, Refueling, Defueled*
		CA4 Inability to Maintain Plant in Cold Shutdown. *Op. Modes: Cold Shutdown, Refueling*	**CU4** UNPLANNED Loss of Decay Heat Removal Capability. *OP. Modes: Cold Shutdown, Refueling*
			CU6 UNPLANNED Loss of All On-site or Off-site Communications Capabilities. *Op. Modes: Cold Shutdown, Refueling, Defueled*
			CU7 UNPLANNED Loss of Required DC Power for 15 Minutes or longer. *Op. Modes: Cold Shutdown, Refueling*

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOUE
			CU8 Inadvertent Criticality. *Op Modes:, Cold Shutdown, Refueling*

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

CU1

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

RCS Leakage.

Operating Mode Applicability: Cold Shutdown

Emergency Action Levels:

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

1. RCS leakage results in the inability to maintain or restore RPV level greater than Level 2 setpoint [338.5 inches (8597 mm)] on B21-NBS-LI R604A-D Wide Range for 15 minutes or longer.

Basis:

This IC is included as a NOUE because it is considered to be a potential degradation of the level of safety of the plant. The inability to establish and maintain level is indicative of loss of RCS inventory. Prolonged loss of RCS Inventory may result in escalation to the Alert level via either IC CA1 (Loss of RCS/RPV Inventory with Irradiated Fuel in the RPV) or CA4 (Inability to Maintain Plant in Cold Shutdown with Irradiated Fuel in the RPV).

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

CU2

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

UNPLANNED Loss of RCS/RPV Inventory.

Operating Mode Applicability: Refueling

Emergency Action Levels: (1 or 2)

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

1. RPV level drop below the RPV flange for 15 minutes or longer.

2. RPV level cannot be determined with a loss of RPV inventory as indicated by unexplained Drywell Equipment or Floor Drain Sumps level rise on Drywell K10-HCW Sump LE-[TBD] OR Drywell K10-LCW Sump LE-[TBD]

Basis:

This IC is included as a NOUE because it may be a precursor of more serious conditions and, as result, is considered to be a potential degradation of the level of safety of the plant. Refueling evolutions that decrease RCS water level below the RPV flange are carefully planned and procedurally controlled. An UNPLANNED event that results in water level decreasing below the RPV flange warrants declaration of a NOUE due to the reduced RCS inventory that is available to keep the core covered. The allowance of 15 minutes was chosen because it is reasonable to assume that level can be restored within this time frame using one or more of the redundant means of refill that should be available. If level cannot be restored in this time frame then it may indicate a more serious condition exists. Continued loss of RCS Inventory will result in escalation to the Alert level via either IC CA1 (Loss of RCS/RPV Inventory with Irradiated Fuel in the RPV) or CA4 (Inability to Maintain Plant in Cold Shutdown with Irradiated Fuel in the RPV).

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

CU3

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

All Safety Related DC Batteries Not Being Charged for 30 Minutes or Longer Due to Loss of Power to PIP Busses.

Operating Mode Applicability: Cold Shutdown
Refueling
Defueled

Emergency Action Level:

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

1. Loss of all AC power capability to PIP busses 1000A3 AND 1000B3 for 30 minutes or longer.

Basis:

The off-site AC power system supplies power for the unit in cold shutdown, refueling, and defueled conditions. Both the normal off-site and standby on-site AC power systems are non-Class 1E with no Technical Specification requirements. All safety-related functions associated with the unit in cold shutdown and refueling are provided by the safety-related on-site Class 1E DC power systems.

Loss of DC power potentially compromises all safety related plant systems requiring electric power.

Escalation to an Alert, if appropriate, is by Abnormal Radiation Levels / Radiological Effluent, or Emergency Director Judgment ICs. Thirty minutes was selected as a threshold to exclude transient or momentary power losses, and is appropriate because of the passive cooling systems and the on-site safety-related Class 1E DC power systems.

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

CU4

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

UNPLANNED Loss of Decay Heat Removal Capability.

Operating Mode Applicability:	Cold Shutdown Refueling
Emergency Action Levels:	(1 or 2)

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

1. An event results in RCS temperature exceeding 200 F on C51-TC-[TBD]

2. Loss of all RCS temperature and RPV level indication for 15 minutes or longer.

Basis:

This IC is included as a NOUE because it may be a precursor of more serious conditions and, as a result, is considered to be a potential degradation of the level of safety of the plant. Monitoring RCS temperature and RPV level will determine if escalation to the Alert level via CA4 or CA1 will occur if required.

Any reduction of RCS inventory to the predetermined setpoint will result in an Alert based on CA1 or CA4.

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

CU6

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

UNPLANNED Loss of All On-site or Off-site Communications Capabilities.

Operating Mode Applicability:	Cold Shutdown Refueling Defueled
Emergency Action Levels:	(1 or 2)

1. Loss of all of the following on-site communications capability affecting the ability to perform routine operations:

   - Plant Page/party Line
   - PABX
   - Sound Powered Phones
   - Plant Radios

2. Loss of all of the following off-site communication methods affecting the ability to perform offsite notifications:

   - Operational Hot Line
   - UHF Radio Systems
   - Emergency Notification System
   - Health Physics Network
   - Reactor Safety Counterpart Link
   - Protective Measures Counterpart Link
   - Management Counterpart Link

Basis:

The purpose of this IC and its associated EALs is to recognize a loss of communications capability that either defeats the plant operations staff ability to perform routine tasks necessary for plant operations or the ability to communicate problems with off-site authorities. The loss of off-site communications ability is expected to be significantly more comprehensive than the condition addressed by 10 CFR 50.72.

The availability of one method of ordinary off-site communications is sufficient to inform state and local authorities of plant conditions.

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

CU7

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

UNPLANNED Loss of Required DC Power for 15 minutes or longer.

Operating Mode Applicability: Cold Shutdown
Refueling

Emergency Action Level:

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

1. a. Loss of All Vital DC Busses 11, 12, 21, 22, 31, 32, 41, AND 42 based on bus voltage less than [TBD] V for 15 minutes or longer.

   AND

   b. Failure to restore power to at least one required DC bus in less than 15 minutes from the time of loss.

Basis:

The purpose of this IC and its associated EALs is to recognize a loss of the Class 1E DC, which provides electrical power for safety related and vital control and monitoring instrumentation loads. It also provides power for safe shutdown when all the on-site and off-site AC power sources are lost and cannot be recovered for 72 hours.

UNPLANNED is included in this IC to preclude the declaration of an emergency as a result of planned maintenance activities.

Bus voltage of [TBD] VAC is the minimum bus voltage necessary for the operation of safety-related instrumentation and controls. This voltage value incorporates a margin significantly longer than the allowed 15 minutes of operation before the onset of inability to operate those loads.

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

CU8

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Inadvertent Criticality.

Operating Mode Applicability: Cold Shutdown
Refueling

Emergency Action Levels:

1. An UNPLANNED SRNM sustained positive period.

Basis:

This IC addresses criticality events that occur in Cold Shutdown or Refueling modes such as fuel assembly loading errors (mis-located and mis-oriented). This IC indicates a potential degradation of the level of safety of the plant, warranting a NOUE classification.

Escalation would be by Emergency Director judgment.

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

CA1

Initiating Condition -- ALERT

Loss of RCS/RPV Inventory.

Operating Mode Applicability:	Cold Shutdown Refueling
Emergency Action Levels:	(1 or 2)

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

1. RCS inventory reduced below Level 1 setpoint [218.4 inches (5547 mm) above TAF] on RPV Water Level B21-NBS-LI R604A-D Wide Range for 15 minutes or longer.

2. RCS/RPV level cannot be determined for 30 minutes or longer with a loss of RCS/RPV inventory as indicated by unexplained Drywell Equipment or Floor Drain Sumps level rise on Drywell K10-HCW Sump LE-[TBD] OR Drywell K10-LCW Sump LE-[TBD]

Basis:

These thresholds serve as precursors to a loss of ability to adequately cool the fuel. The magnitude of this loss of water indicates that makeup systems have not been effective and may not be capable of preventing further RPV level lowering and potential core uncovery. This condition will result in a minimum classification of Alert. The inability to restore and maintain level after reaching this setpoint would therefore be indicative of a failure of the RCS barrier.

The Level 1 actuation setpoint was chosen to indicate that those makeup efforts are failing. The inability to restore and maintain level after reaching this setpoint would therefore be indicative of a failure of the RCS barrier.

If all level indication were to be lost during a loss of RCS inventory event, the operators would need to determine that RPV inventory loss was occurring by observing sump or tank level changes.

The 30-minute duration for the loss of level indication was chosen to allow CA1 to be an effective precursor to CS1. This provides time to increase makeup and isolate leakage prior to core uncovery. Whether or not the actions in progress will be effective should be apparent within 30 minutes.

If RPV level continues to decrease then escalation to Site Area Emergency will be via CS1 (Loss of RPV Inventory Affecting Core Decay Heat Removal Capability).

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

CA4

Initiating Condition -- ALERT

Inability to Maintain Plant in Cold Shutdown with Irradiated Fuel in the RPV.

Operating Mode Applicability: Cold Shutdown
Refueling

Emergency Action Levels: (1 or 2)

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

1. An UNPLANNED event results in RCS temperature exceeding 200 degrees F as indicated by any of the following for greater than the specified duration on table:
   - Core Inlet Temperature, C51-TC-[TBD],
   - RWCU Bottom Head Suction Temperature G31-RWCU-SDC-TT-N005, -N006, A-1,B-1 through A-4, B-4
   - RWCU Suction Temperature G31-RWCU-SDC-TT-N001, -N002, A-1, B-1 through A-4, B-4

Table: RCS Reheat Duration Thresholds

RCS	REACTOR BUILDING ISOLATION	Duration
Intact	N/A	60 minutes*
Open	Established	20 minutes*
	Not Established	0 minutes

* If an RCS heat removal system is in operation within this time frame and RCS temperature is being reduced, the EAL is not applicable.

2. An UNPLANNED event results in RCS Pressure increase greater than 10 psi due to a loss of RCS cooling.

Basis:

For Threshold 1, the RCS Reheat Duration Threshold table addresses complete loss of functions required for core cooling for greater than 60 minutes during refueling and cold shutdown modes when RCS integrity is established. [The 60 minute time frame should allow sufficient time to restore cooling without there being a substantial degradation in plant safety.

The RCS Reheat Duration Threshold table also addresses the complete loss of functions required for core cooling for greater than 20 minutes during refueling and cold shutdown modes when CONTAINMENT CLOSURE is established but RCS integrity is

not established. The allowed 20 minute time frame was included to allow operator action to restore the heat removal function, if possible.

Finally, complete loss of functions required for core cooling during refueling and cold shutdown modes when neither CONTAINMENT CLOSURE nor RCS integrity are established.

The note (*) indicates that this EAL is not applicable if actions are successful in restoring an RCS heat removal system to operation and RCS temperature is being reduced within the specified time frame.

In Threshold 2, the 10 psi pressure increase covers situations where, due to high decay heat loads, the time provided to restore temperature control, should be less than 60 minutes. The RCS pressure setpoint chosen should be 10 psi or the lowest pressure that the site can read on installed Control Board instrumentation that is equal to or greater than 10 psi.

Escalation to Site Area Emergency would be via CS1 should boiling result in significant RPV level loss leading to core uncovery.

A loss of Technical Specification components alone is not intended to constitute an Alert. The same is true of a momentary UNPLANNED excursion above the Technical Specification cold shutdown temperature limit when the heat removal function is available.

The Emergency Director must remain alert to events or conditions that lead to the conclusion that exceeding the EAL threshold is IMMINENT. If, in the judgment of the Emergency Director, an IMMINENT situation is at hand, the classification should be made as if the threshold has been exceeded.

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

CS1

Initiating Condition -- SITE AREA EMERGENCY

Loss of RCS/RPV Inventory Affecting Core Decay Heat Removal Capability.

Operating Mode Applicability:	Cold Shutdown Refueling
Emergency Action Levels:	(1 or 2 or 3)

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

1. WITH REACTOR BUILDING ISOLATION NOT established:

   RPV level less than Level 0.5 Setpoint [39.4 inches (1000 mm) above TAF] on B21-NBS-LI-R615A-D

   OR

2. With REACTOR BUILDING ISOLATION established

   RPV level less than Level 0 Setpoint [0 inches (0 mm)] on B21-NBS-LI-R615A-D

   OR

3. RPV level cannot be monitored for 60 minutes or longer with a loss of RPV inventory as indicated by unexplained Drywell Equipment or Floor Drain Sumps level rise on Drywell K10-HCW Sump LE-[TBD] OR Drywell K10-LCW Sump LE-[TBD]

Basis:

Under the conditions specified by this IC, continued lowering in RPV level is indicative of a loss of inventory control. Inventory loss may be due to an RPV breach, pressure boundary leakage, or continued boiling in the RPV.

The 60-minute duration allows sufficient time for actions to be performed to recover needed cooling equipment and is considered to be conservative.

Declaration of a Site Area Emergency is warranted under the conditions specified by the IC. Escalation to a General Emergency is via CG1 (Loss of RPV Inventory Affecting Fuel Clad Integrity with Containment Challenged with Irradiated Fuel in the RPV) or radiological effluent IC AG1 (Off-site Dose Resulting from an Actual or IMMINENT Release of Gaseous Radioactivity Exceeds 1000 mrem TEDE or 5000 mrem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology).

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

CG1

Initiating Condition -- GENERAL EMERGENCY

Loss of RPV Inventory Affecting Fuel Clad Integrity with Containment Challenged.

Operating Mode Applicability: Cold Shutdown
Refueling

Emergency Action Level:

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

1. a. CONTAINMENT challenged as indicated by one or more of the following:
   - Explosive mixture inside containment
   - Pressure above [TBD value]
   - REACTOR BUILDING ISOLATION not established
   - Reactor Building radiation monitors above [TBD value]

   AND

   b. Core uncovery for 30 minutes or longer as indicated by EITHER:

   - Less than Level 0 Setpoint [0 inches (0 mm)] on B21-NBS-LI-R615A-D.

   OR

   - RPV level cannot be monitored with core uncovery indicated by EITHER of the following:
     - Drywell Radiation Monitors T62-RMS-RDT-[TBD] reading greater than {site-specific} high setpoint
     - Unexplained Drywell Equipment or Floor Drain Sumps level rise on Drywell K10-HCW Sump LE-[TBD] OR Drywell K10-LCW Sump LE-[TBD]

Basis:

These conditions represent the inability to restore and maintain RPV level to above the top of active fuel. Fuel damage is probable if RPV level cannot be restored, as available decay heat will cause boiling, further reducing the RPV level. With the CONTAINMENT breached or challenged then the potential for unmonitored fission product release to the environment is high. This represents a direct path for radioactive inventory to be released to the environment. This is consistent with the definition of a General Emergency. The General Emergency is declared on the occurrence of the loss or IMMINENT loss of function of all three barriers.

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

Analysis indicates that core damage may occur within an hour following continued core uncovery therefore, conservatively, 30 minutes was chosen.

If CONTAINMENT CLOSURE is re-established prior to exceeding the 30 minute core uncovery time limit then escalation to General Emergency would not occur.

Sump or tank level rise must be evaluated against other potential sources of leakage such as cooling water sources inside the containment to ensure they are indicative of RCS leakage.

As water level in the RPV lowers, the dose rate above the core will increase. The dose rate due to this core shine should result in up-scaled radiation monitor indication and possible alarm. Additionally, post-TMI studies indicated that the installed nuclear instrumentation will operate erratically when the core is uncovered.

The General Emergency is declared on the occurrence of the loss or IMMINENT loss of function of all three barriers. RCS barrier failure resulting in core uncovery for 30 minutes or more may cause fuel clad failure. With the CONTAINMENT breached or challenged then the potential for unmonitored fission product release to the environment is high. This represents a direct path for radioactive inventory to be released to the environment. This is consistent with the definition of a General Emergency.

FISSION PRODUCT BARRIERS

5.7 FISSION PRODUCT BARRIER DEGRADATION EALs

Table A1-F-1: Recognition Category "F" Initiating Condition Matrix

See Table A1-F-2 for EAL Thresholds

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOUE
FG1 Loss of ANY Two Barriers AND Loss or Potential Loss of Third Barrier *Op. Modes: Power Operation, Hot Standby, Startup, Safe/Stable Shutdown*	**FS1** Loss or Potential Loss of ANY Two Barriers *Op. Modes: Power Operation, Hot Standby, Startup, Safe/Stable Shutdown*	**FA1** ANY Loss or ANY Potential Loss of EITHER Fuel Clad OR RCS *Op. Modes: Power Operation, Hot Standby, Startup, Safe/Stable Shutdown*	**FU1** ANY Loss or ANY Potential Loss of Containment *Op. Modes: Power Operation, Hot Standby, Startup, Safe/Stable Shutdown*

FISSION PRODUCT BARRIERS

NOTES

1. The logic used for these initiating conditions reflects the following considerations:

   - The Fuel Clad Barrier and the RCS Barrier are weighted more heavily than the Containment Barrier (See Sections 3.4 and 3.8). NOUE ICs associated with RCS and Fuel Clad Barriers are addressed under System Malfunction ICs.

   - At the Site Area Emergency level, there must be some ability to dynamically assess how far present conditions are from the threshold for a General Emergency. For example, if Fuel Clad and RCS Barrier "Loss" EALs existed, that, in addition to off-site dose assessments, would require continual assessments of radioactive inventory and containment integrity. Alternatively, if both Fuel Clad and RCS Barrier "Potential Loss" EALs existed, the Emergency Director would have more assurance that there was no immediate need to escalate to a General Emergency.

   - The ability to escalate to higher emergency classes as an event deteriorates must be maintained. For example, RCS leakage steadily increasing would represent an increasing risk to public health and safety.

IV.

   - The Containment Barrier should not be declared lost or potentially lost based on exceeding Technical Specification action statement criteria, unless there is an event in progress requiring mitigation by the Containment barrier. When no event is in progress (Loss or Potential Loss of either Fuel Clad and/or RCS) the Containment Barrier status is addressed by Technical Specifications.

Table A1-F-2: EAL Fission Product Barrier Table
Thresholds For LOSS or POTENTIAL LOSS of Barriers*

*Determine which combination of the three barriers are lost or have a potential loss and use the following key to classify the event. Also, multiple events could occur which result in the conclusion that exceeding the loss or Potential loss thresholds is IMMINENT. In this IMMINENT loss situation use judgment and classify as if the thresholds are exceeded.

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
Loss of ANY two Barriers AND Loss or Potential Loss of Third Barrier	Loss or Potential Loss of ANY two Barriers	ANY loss or ANY Potential Loss of EITHER Fuel Clad or RCS	ANY loss or ANY Potential Loss of Containment

Fuel Clad Barrier Threshold Values		RCS Barrier Threshold Values		Containment Barrier Threshold Values	
LOSS	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**
1. Primary Coolant Activity Level		**1. Primary Containment Pressure**		**1. Primary Containment Conditions**	
1. Primary coolant activity greater than [TBD-300 uCi/gm]	Not Applicable	1. Primary containment pressure greater than 1.85 psig on T62-CMS-PI-[TBD]-A-D due to RCS leakage	Not Applicable	1. Primary containment pressure rise followed by a rapid unexplained drop in primary containment pressure **OR** 2. Primary containment pressure response not consistent with LOCA conditions	1. Primary containment pressure 45 psig on T62-CMS-PI-[TBD]-A-D and rising **OR** 2. H_2 greater than 6% AND O_2 greater than 5% **OR** 3. RPV pressure AND suppression pool temperature cannot be maintained below the HCTL
OR		**OR**		**OR**	
2. Reactor Vessel Water Level		**2. Reactor Vessel Water Level**		**2. Reactor Vessel Water Level**	
1. RPV water level cannot be restored and maintained above Post Accident Monitor Fuel Zone Range 0 inches (0 mm) B21-LI-R615A-D	1. RPV water level cannot be restored and maintained above Level 0.5 Setpoint Post Accident Monitor Fuel Zone Range 39.4 inches (1000 mm) B21-LI-R615A-D	1. RPV water level cannot be restored and maintained above Level 0.5 Setpoint Post Accident Monitor Fuel Zone Range 39.4 inches (1000 mm) B21- LI-R615A-D	Not Applicable	Not Applicable	1. Primary Containment Flooding is required.
OR		**OR**		**OR**	

Table A1-F-2: EAL Fission Product Barrier Table
Thresholds For LOSS or POTENTIAL LOSS of Barriers*

*Determine which combination of the three barriers are lost or have a potential loss and use the following key to classify the event. Also, multiple events could occur which result in the conclusion that exceeding the loss or Potential loss thresholds is IMMINENT. In this IMMINENT loss situation use judgment and classify as if the thresholds are exceeded.

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
Loss of ANY two Barriers AND Loss or Potential Loss of Third Barrier	Loss or Potential Loss of ANY two Barriers	ANY loss or ANY Potential Loss of EITHER Fuel Clad or RCS	ANY loss or ANY Potential Loss of Containment

Fuel Clad Barrier Threshold Values		RCS Barrier Threshold Values		Containment Barrier Threshold Values	
LOSS	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**
3. Not Applicable		**3. RCS Leak Rate**		**3. Primary Containment Isolation Failure or Bypass**	
Not applicable	Not applicable	1. UNISOLABLE Main Steamline Break as indicated by: Failure of both valves in any one line to close **AND** 1a. Steamline High Flow greater than 140% rated **OR** 1b. Main Steam Line Low Pressure less than 750 psig **OR** 1c. Main Steam Tunnel Ambient Temperature greater than [TBD] **OR** 2. Automatic Depressurization System automatically OR manually initiated.	1. RCS leak greater than 100 gpm in the drywell. **OR** 2. UNISOLABLE primary system leakage outside primary containment as indicated by exceeding EITHER of the following: 2a. Max Safe Operating Temperature. **OR** 2b. Max Safe Area Radiation.	1. Failure of all valves in any one line to close AND direct downstream pathway to the environment exists after a primary containment isolation signal **OR** 2. Intentional primary containment venting per EOPs **OR** 3. UNISOLABLE primary system leakage outside Containment as indicated by exceeding EITHER of the following: 3a. Max Safe Operating Temperature. **OR** 3b. Max Safe Area Radiation.	1. Feedline break as indicated by: [TBD]
OR		**OR**		**OR**	

Table A1-F-2: EAL Fission Product Barrier Table
Thresholds For LOSS or POTENTIAL LOSS of Barriers*

*Determine which combination of the three barriers are lost or have a potential loss and use the following key to classify the event. Also, multiple events could occur which result in the conclusion that exceeding the loss or Potential loss thresholds is IMMINENT. In this IMMINENT loss situation use judgment and classify as if the thresholds are exceeded.

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
Loss of ANY two Barriers AND Loss or Potential Loss of Third Barrier	Loss or Potential Loss of ANY two Barriers	ANY loss or ANY Potential Loss of EITHER Fuel Clad or RCS	ANY loss or ANY Potential Loss of Containment

Fuel Clad Barrier Threshold Values		RCS Barrier Threshold Values		Containment Barrier Threshold Values	
LOSS	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**
4. Primary Containment Radiation Monitoring		**4. Primary Containment Radiation Monitoring**		**4. Primary Containment Radiation Monitoring**	
1. Primary containment radiation monitor reading greater than (5% clad failure dispersed in the drywell) R/hr on [TBD]	Not Applicable	1. Primary containment radiation monitor reading greater than (normal operating chemistry dispersed in the drywell) R/hr on [TBD]	Not Applicable	Not applicable	1. Primary containment radiation monitor reading greater than (20% clad failure dispersed in the drywell) R/hr on [TBD]
OR		OR			OR
5. Other Indications		**5. Other Indications**		**5. Other Indications**	
1. [MSL Rad Monitors Drywell Fission Product Monitor – TBD]	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
OR		OR			OR
6. Emergency Director Judgment		**6. Emergency Director Judgment**		**6. Emergency Director Judgment**	
Emergency Director that indicates Loss or Potential Loss of the Fuel Clad Barrier		1. Any condition in the judgment of the Emergency Director that indicates Loss or Potential Loss of the RCS Barrier		1. Any condition in the judgment of the Emergency Director that indicates Loss or Potential Loss of the Containment barrier	

FISSION PRODUCT BARRIERS

Basis Information For Table A1-F-2
Emergency Action Level
Fission Product Barrier Reference Table

Fuel Clad Barrier Thresholds: (1 or 2 or 3 or 4 or 5 or 6)

1. Primary Coolant Activity Level

This [TBD] value corresponds to 300 μCi/gm I-131 equivalent. Assessment by the EAL Task Force indicates that this amount of coolant activity is well above that expected for iodine spikes and corresponds to less than 5% fuel clad damage.

There is no potential loss associated with this condition.

2. Reactor Vessel Water Level

The "Loss" value is the top of active fuel which is used in EOPs to indicate challenge of core cooling. This is the minimum value to assure core cooling without further degradation of the clad.

Level 0.5 corresponds to a water level 39.4 inches above the top of the active fuel. The "Potential Loss" Threshold is the same as the RCS barrier "Loss" Threshold #2. Thus, this Threshold indicates a "Loss" of RCS barrier and a "Potential Loss" of the Fuel Clad Barrier. This Threshold appropriately escalates the emergency class to a Site Area Emergency.

3. Not applicable

4. Primary Containment Radiation Monitoring

The [TBD] reading is a value which indicates the release of reactor coolant, with elevated activity indicative of fuel damage, into the drywell.

There is no potential loss associated with this condition.

5. Other Indications

Main Steam Line Monitors and the Drywell Fission Product Monitor at the specified values are indicative of fuel clad failure.

6. Emergency Director Judgment

This Threshold addresses any other factors that are to be used by the Emergency Director in determining whether the Fuel Clad barrier is lost or potentially lost. In addition, the inability to monitor the barrier should also be incorporated in this Threshold as a factor in Emergency Director judgment that the barrier may be considered lost or potentially lost. (See also IC SG1, " Prolonged Loss of All Off-site and On-site AC Power for greater than 72 hours.", for additional information.)

FISSION PRODUCT BARRIERS

RCS Barrier Thresholds: (1 or 2 or 3 or 4 or 5 or 6)

The RCS Barrier is the reactor coolant system pressure boundary and includes the reactor vessel and all reactor coolant system piping up to the isolation valves.

1. Primary Containment Conditions

1.85 psig drywell pressure is based on the drywell high pressure set point which indicates a LOCA.

There is no potential loss associated with this condition.

2. Reactor Vessel Water Level

Level 0.5 corresponds to a water level 39.4 inches above the top of the active fuel.

There is no potential loss associated with this condition.

3. RCS Leak Rate

An UNISOLABLE MSL break is a breach of the RCS barrier. Thus, this Threshold is included for consistency with the Alert emergency classification. Automatic Depressurization System automatically or manually initiated indicates a breach of the RCS.

The potential loss of RCS based on leakage is set at a level indicative of a breach of the RCS but which is well within the makeup capability of the CRD high pressure injection. Core uncovery is not a significant concern for a 100 gpm leak, however, break propagation leading to significantly larger loss of inventory is possible.

Potential loss of RCS based on primary system leakage outside the drywell is determined from site-specific temperature or area radiation Max Normal setpoints in the areas of the plant which indicate a direct path from the RCS to areas outside primary containment. The indicators should be confirmed to be caused by RCS leakage.

4. Primary Containment Radiation Monitoring

The [TBD] reading is a value which indicates the release of reactor coolant to the drywell.

There is no potential loss associated with this condition.

5. Other Indications

Not applicable.

6. Emergency Director Judgment

FISSION PRODUCT BARRIERS

This Threshold addresses any other factors that are to be used by the Emergency Director in determining whether the RCS barrier is lost or potentially lost. In addition, the inability to monitor the barrier should also be incorporated in this Threshold as a factor in Emergency Director judgment that the barrier may be considered lost or potentially lost. (See also IC SG1, " Prolonged Loss of All Off-site and On-site AC Power for greater than 72 hours.", for additional information.)

PRIMARY CONTAINMENT BARRIER THRESHOLDS: (1 or 2 or 3 or 4 or 5 or 6)

The Primary Containment Barrier includes the drywell, the wetwell, their respective interconnecting paths, and other connections up to and including the outermost containment isolation valves. Containment Barrier Thresholds are used primarily as discriminators for escalation from an Alert to a Site Area Emergency or a General Emergency.

1. Primary Containment Conditions

Rapid unexplained loss of pressure (i.e., not attributable to drywell spray or condensation effects) following an initial pressure increase indicates a loss of containment integrity. The 45 psig for potential loss of containment is based on the primary containment design pressure. Existence of an explosive mixture means hydrogen and oxygen concentration of at least the lower deflagration limit curve exists.

The Heat Capacity Temperature Limit (HCTL) is the highest suppression pool temperature from which Emergency RPV Depressurization will not raise:

- Suppression chamber temperature above the maximum temperature capability of the suppression chamber and equipment within the suppression chamber which may be required to operate when the RPV is pressurized,
- Suppression chamber pressure above Primary Containment Pressure Limit A, while the rate of energy transfer from the RPV to the containment is greater than the capacity of the containment vent.

The HCTL is a function of RPV pressure and suppression pool water level. It is utilized to preclude failure of the containment and equipment in the containment necessary for the safe shutdown of the plant and therefore, the inability to maintain plant parameters below the limit constitutes a potential loss of containment.

2. Reactor Vessel Water Level

There is no loss threshold associated with this condition.

The entry into the Primary Containment Flooding emergency procedure indicates reactor vessel water level cannot be restored and that a core melt sequence is in progress. [Entry into Containment Flooding procedures is a logical escalation in response to the inability to maintain reactor vessel level.

FISSION PRODUCT BARRIERS

The conditions in this potential loss Threshold represent a potential core melt sequences which, if not corrected, could lead to vessel failure and increased potential for containment failure.

3. Containment Isolation Failure or Bypass

This Threshold addresses the inability to isolate the containment when containment isolation is required. Also, an intentional venting of primary containment for pressure control per EOPs to the environment is considered a loss of containment. Containment venting for temperature or pressure when not in an accident situation should not be considered. In addition, the presence of area radiation or temperature alarms high setpoint indicating UNISOLABLE primary system leakage outside the drywell are covered after a containment isolation. The indicators should be confirmed to be caused by RCS leakage.

The use of the modifier “direct” in defining the release path discriminates against release paths through interfacing liquid systems. The existence of an in–line charcoal filter does not make a release path indirect since the filter is not effective at removing fission noble gases.

4. Containment Radiation Monitoring

There is no loss associated with this condition.

The [TBD] reading is a value which indicates significant fuel damage well in excess of that required for loss of RCS and Fuel Clad. A major release of radioactivity requiring off-site protective actions from core damage is not possible unless a major failure of fuel cladding allows radioactive material to be released from the core into the reactor coolant. Regardless of whether containment is challenged, this amount of activity in containment, if released, could have such severe consequences that it is prudent to treat this as a potential loss of containment, such that a General Emergency declaration is warranted.

5. Other Indications

Not applicable.

FISSION PRODUCT BARRIERS

6. Emergency Director Judgment

This Threshold addresses any other factors that are to be used by the Emergency Director in determining whether the Containment barrier is lost or potentially lost. In addition, the inability to monitor the barrier should also be incorporated in this Threshold as a factor in Emergency Director judgment that the barrier may be considered lost or potentially lost. The Containment Barrier should not be declared lost or potentially lost based on exceeding Technical Specification Action Statement criteria, unless there is an event in progress requiring mitigation by the Containment barrier. When no event is in progress (Loss or Potential Loss of either Fuel Clad and/or RCS) the Containment Barrier status is addressed by Technical Specifications. (See also IC SG1, " Prolonged Loss of All Off-site and On-site AC Power for greater than 72 hours.", for additional information.)

5.8 Hazards Or Other Conditions Affecting Plant Safety EALs

Table A1-H: Recognition Category "H" Initiating Condition Matrix

GENERAL EMERGENCY		SITE AREA EMERGENCY		ALERT		NOUE	
				HA1	Natural or Destructive Phenomena Affecting VITAL AREAS. *Op. Modes: All*	**HU1**	Natural or Destructive Phenomena Affecting the PROTECTED AREA. *Op. Modes: All*
				HA2	FIRE or EXPLOSION Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe/Stable Shutdown. *Op. Modes: All*	**HU2**	FIRE Within PROTECTED AREA Boundary Not Extinguished Within 15 Minutes of Detection OR EXPLOSION within the Protected Area Boundary *Op. Modes: All*
				HA3	Access To a VITAL AREA Is Prohibited Due To Release of Toxic, Corrosive, Asphyxiant or Flammable Gases Which Jeopardizes Operation of Systems Required to Maintain Safe Operations or Safely Shutdown the Reactor *Op. Modes: All*	**HU3**	Release of Toxic, Corrosive, Asphyxiant, or Flammable Gases Deemed Detrimental to NORMAL PLANT OPERATIONS. *Op. Modes: All*
		HS2	Control Room Evacuation Has Been Initiated and Plant Control Cannot Be Established. *Op. Modes: All*	**HA5**	Control Room Evacuation Has Been Initiated. *Op. Modes: All*		
HG1	HOSTILE ACTION Resulting in Loss Of Physical Control of the Facility. *Op. Modes: All*	**HS4**	HOSTILE ACTION within the PROTECTED AREA *Op. Modes: All*	**HA4**	HOSTILE ACTION within the OWNER CONTROLLED AREA or Airborne Attack Threat. *Op. Modes: All*	**HU4**	Confirmed SECURITY CONDITION or Threat Which Indicates a Potential Degradation in the Level of Safety of the Plant. *Op. Modes: All*
HG2	Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of a General Emergency. *Op. Modes: All*	**HS3**	Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of a Site Area Emergency. *Op. Modes: All*	**HA6**	Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of an Alert. *Op. Modes: All*	**HU5**	Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of a NOUE. *Op. Modes: All*

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY

HU1

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Natural or Destructive Phenomena Affecting the PROTECTED AREA.

Operating Mode Applicability: All

Emergency Action Level: (1 or 2 or 3 or 4)

1. Seismic event identified by any 2 of the following:
   - Earthquake felt in plant.
   - Seismic event confirmed by [site-specific indication or method TBD].
   - National Earthquake Center.

2. Tornado striking within PROTECTED AREA boundary .

3. Turbine failure resulting in casing penetration or damage to turbine or generator seals.

4. Severe weather with indications of sustained high winds greater than or equal to 74 mph within the PROTECTED AREA boundary.

Basis:

These Thresholds are categorized on the basis of the occurrence of an event of sufficient magnitude to be of concern to plant operators

Threshold #1: Damage may be caused to some portions of the site, but should not affect ability of safety functions to operate.

The National Earthquake Center can confirm that an earthquake has occurred in the area of the plant.

Threshold #2 is based on the assumption that a tornado striking (touching down) within the PROTECTED AREA may have potentially damaged plant structures containing functions or systems required for safe shutdown of the plant If such damage is confirmed visually or by other in-plant indications, the event may be escalated to Alert.

Threshold #3 addresses main turbine rotating component failures of sufficient magnitude to cause observable damage to the turbine casing or to the seals of the turbine generator. This Threshold is consistent with the definition of a NOUE while maintaining the anticipatory nature desired and recognizing the risk to non-safety related equipment. Escalation of the emergency classification is based on potential damage done by projectiles generated by the failure. These events would be classified by the radiological ICs or Fission Product Barrier ICs.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY

Threshold #4 addresses the site-specific phenomena of the hurricane based on the severe weather mitigation procedure. This event can also be a precursor to more serious events.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY

HU2

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

FIRE Within the PROTECTED AREA Boundary Not Extinguished Within 15 Minutes of Detection OR EXPLOSION within the PROTECTED AREA Boundary.

Operating Mode Applicability: All

Emergency Action Level: (1 or 2)

1. FIRE not extinguished in less than 15 minutes of Control Room notification or receipt of a Control Room FIRE alarm in any of the following areas:

   - Containment
   - Reactor Building
   - Fuel Building
   - Control Building
   - Turbine Building
   - Electrical Building
   - Radwaste Building

2. EXPLOSION within the Protected Area boundary.

Basis:

The purpose of Threshold #1 is to address the magnitude and extent of FIREs that may be potentially significant precursors to damage to safety systems. As used here, “detection” is visual observation and report by plant personnel or sensor alarm indication. The 15 minute time period begins with a credible notification that a FIRE is occurring, or indication of a VALID fire detection system alarm. Validation of a fire detection system alarm includes actions that can be taken with the Control Room or other nearby site-specific location to ensure that the alarm is not spurious. An alarm is assumed to be an indication of a FIRE unless it is disproved within the 15 minute period by personnel dispatched to the scene.

The 15 minute duration is to size the FIRE and to discriminate against small FIREs that are readily extinguished. Fires inside the protected area, located near equipment, that last 15 minutes or longer can result in a challenge to the site fire brigade. This represents a degradation in plant operational status.

For Threshold #2 only those EXPLOSIONS of sufficient force to damage permanent structures or equipment within the PROTECTED AREA should be considered. The Emergency Director also needs to consider any security aspects of the EXPLOSION, if applicable.

Escalation to a higher emergency class is by IC HA2, "FIRE Affecting the Operability of Plant Safety Systems Required for the Current Operating Mode".

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY

HU3

Initiating Condition – NOTIFICATION OF UNUSUAL EVENT

Release of Toxic, Corrosive, Asphyxiant, or Flammable Gases Deemed Detrimental to NORMAL PLANT OPERATIONS.

Operating Mode Applicability: All

Emergency Action Levels: (1 or 2)

1. Toxic, corrosive, asphyxiant or flammable gases in amounts that have or could adversely affect NORMAL PLANT OPERATIONS.

2. Report by Local, County or State Officials for evacuation or sheltering of site personnel based on an off-site event.

Basis:

This IC is based on the existence of uncontrolled releases of toxic or flammable gas that may enter the site boundary and affect NORMAL PLANT OPERATIONS.

During the initial stages of a potential gas release, actions that are taken as precautions (such as pre-cautionary evacuation of a room or area while conditions are assessed) do not constitute an adverse affect on NORMAL PLANT OPERATIONS.

The fact that SCBA may be worn does not eliminate the need to declare the event.

It is intended that releases of toxic, corrosive, asphyxiant or flammable gases are of sufficient quantity, and the release point of such gases is such that NORMAL PLANT OPERATIONS would be affected.

An asphyxiant is a gas capable of reducing the level of oxygen in the body to dangerous levels. Most commonly, asphyxiants work by merely displacing air in an enclosed environment. This reduces the concentration of oxygen below the normal level of around 19%, which can lead to breathing difficulties, unconsciousness or even death.

Escalation of this Threshold is via HA3, which involves a quantified a release of toxic or flammable gas affecting access to VITAL AREAs.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY

HU4

Initiating Condition – NOTIFICATION OF UNUSUAL EVENT

Confirmed SECURITY CONDITION or Threat Which Indicates a Potential Degradation in the Level of Safety of the Plant.

Operating Mode Applicability: All

Emergency Action Levels: (1 or 2 or 3)

1. A SECURITY CONDITION that does NOT constitute a HOSTILE ACTION as reported by the security shift supervision.

2. A credible site specific security threat notification.

3. A validated notification from NRC providing information of an aircraft threat.

Basis:

Reference is made to security shift supervision because these individuals are the designated personnel on-site qualified and trained to confirm that a security event is occurring or has occurred. Training on security event classification confirmation is closely controlled due to the strict secrecy controls placed on the plant Safeguards Contingency Plan.

Threshold #1 is based on Site Security Plans. Security events which do not represent a potential degradation in the level of safety of the plant, are reported under 10 CFR 73.71 or in some cases under 10 CFR 50.72. Security events assessed as HOSTILE ACTIONS are classifiable under HA4, HS4 and HG1.

This threshold is based on site specific security plans.

Threshold #2 is to ensure that appropriate notifications for the security threat are made in a timely manner. This includes information of a credible threat.

Threshold #3 is to ensure that notifications for the security threat are made in a timely manner and that Off-site Response Organizations and plant personnel are at a state of heightened awareness regarding the credible threat. Only the plant to which the specific threat is made need declare the Notification of Unusual Event.

A higher initial classification could be made based upon the nature and timing of the threat and potential consequences.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY

HU5

Initiating Condition – NOTIFICATION OF UNUSUAL EVENT

Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of a NOUE.

Operating Mode Applicability: All

Emergency Action Level:

1. Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring off-site response or monitoring are expected unless further degradation of safety systems occurs.

Basis:

This EAL addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the NOUE emergency class.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY

HA1

Initiating Condition -- ALERT

Natural or Destructive Phenomena Affecting the Plant VITAL AREAS.

Operating Mode Applicability: All

Emergency Action Levels: (1 or 2 or 3 or 4 or 5 or 6)

1. Seismic event greater than Operating Basis Earthquake (OBE) {0.10g} as indicated by seismic instrumentation.
   AND

   Confirmed by EITHER:
   - Earthquake felt in plant
   - National Earthquake Center

2. Tornado resulting in VISIBLE DAMAGE to any of the following structures containing safety systems or components OR Control Room indication of degraded performance of those systems.

   - Containment Building
   - Reactor Building
   - Control Building
   - Electrical Building

3. Vehicle crash within PROTECTED AREA boundary and resulting in VISIBLE DAMAGE to any of the following structures containing safety systems or components OR Control Room indication of degraded performance of those safety systems:

   - Containment
   - Reactor building
   - Fuel Building
   - Control Building
   - Turbine Building
   - Electrical Building
   - Radwaste Building

4. Turbine failure-generated projectiles result in any VISIBLE DAMAGE to or penetration of the Electrical Building.

5. Internal flooding in any areas of the plant that creates an industrial safety hazard (e.g., electric shock) that precludes access necessary to operate or monitor equipment.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY

6. Sustained hurricane winds greater than 74 mph within PROTECTED AREA boundary resulting in VISIBLE DAMAGE to plant structures containing equipment necessary for safe shutdown, or has caused damage as evidenced by Control Room indication of degraded performance of those systems.

Basis:

These Thresholds escalate from HU1 in that the occurrence of the event has resulted in VISIBLE DAMAGE to plant structures or areas containing equipment necessary for a safe shutdown, or has caused damage to the safety systems in those structures evidenced by control indications of degraded system response or performance. The occurrence of VISIBLE DAMAGE and/or degraded system response is intended to discriminate against lesser events. The initial "report" should not be interpreted as mandating a lengthy damage assessment prior to classification. No attempt is made in this Threshold to assess the actual magnitude of the damage. The significance here is not that a particular system or structure was damaged, but rather, that the event was of sufficient magnitude to cause this degradation. Escalation to higher classifications occur on the basis of System Malfunctions.

Seismic events of this magnitude can result in a plant VITAL AREA being subjected to forces beyond design limits, and thus damage may be assumed to have occurred to plant safety systems.

Wind loads of this magnitude can cause damage to safety functions.

Threshold #4 addresses the threat to safety related equipment imposed by projectiles generated by main turbine rotating component failures. This list of areas includes all areas containing safety structure, system, or component, their controls, and their power supplies.

Note that this Threshold would not normally be applicable in cold shutdown, refueling, or defueled modes since steam is not normally available to rotate the main turbine in these plant conditions. If steam from alternate sources is being used to rotate the main turbine for testing, then this EAL would be applicable in these shutdown modes.

This Threshold is, therefore, consistent with the definition of an ALERT in that if projectiles have damaged or penetrated areas containing safety structure, system, or component the potential exists for substantial degradation of the level of safety of the plant.

Threshold #5 addresses the effect of internal flooding that has created industrial safety hazards (e.g., electrical shock) that preclude necessary access to operate or monitor safety equipment.

Threshold #6 covers the site-specific phenomena of a hurricane. The threshold value is based on damage attributable to the wind.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY

HA2

Initiating Condition -- ALERT

FIRE or EXPLOSION Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe/Stable Shutdown.

Operating Mode Applicability: All

Emergency Action Level:

1. FIRE or EXPLOSION resulting in VISIBLE DAMAGE to any of the following structures containing safety systems, or components **OR** Control Room indication of degraded performance of those safety systems:

   - Containment
   - Reactor building
   - Fuel Building
   - Control Building
   - Turbine Building
   - Electrical Building
   - Radwaste Building

Basis:

The reference to damage of systems is used to identify the magnitude of the FIRE / EXPLOSION and to discriminate against minor FIREs / EXPLOSIONs. The reference to safety systems is included to discriminate against FIREs / EXPLOSIONs in areas having a low probability of affecting safe operation. The significance here is not that a safety system was degraded but the fact that the FIRE / EXPLOSION was large enough to cause damage to these systems.

The inclusion of a "VISIBLE DAMAGE" should not be interpreted as mandating a lengthy damage assessment prior to classification. No attempt is made in this Threshold to assess the actual magnitude of the damage. The occurrence of the EXPLOSION with reports of evidence of damage is sufficient for declaration. The Emergency Director also needs to consider any security aspects of the EXPLOSIONs.

Escalation to a higher emergency class, if appropriate, will be based on System Malfunction, Fission Product Barrier Degradation, Abnormal Rad Levels / Radiological Effluent, or Emergency Director Judgment ICs.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY

HA3

Initiating Condition -- ALERT

Access to a VITAL AREA Is Prohibited Due To Release of Toxic, Corrosive, Asphyxiant or Flammable Gases Which Jeopardizes Operation of Systems Required to Maintain Safe Operations or Safely Shutdown the Reactor.

Operating Mode Applicability: All

Emergency Action Levels:

1. Access to a VITAL AREA is prohibited due to toxic, corrosive, asphyxiant, or flammable gases which jeopardizes operation of systems required to maintain safe operations or safely shutdown the reactor.

Basis:

Gases in a Plant Vital Area can affect the ability to safely operate or safely shutdown the reactor.

Escalation to a higher emergency class, if appropriate, will be based on System Malfunction, Fission Product Barrier Degradation, Abnormal Rad Levels / Radioactive Effluent, or Emergency Director Judgment ICs.

During the initial stages of a potential gas release, actions that are taken as precautions (such as pre-cautionary evacuation of a room or area while conditions are assessed) do not constitute jeopardizing operation of systems required to maintain safe operations or safely shutdown the reactor.

The fact that self contained breathing apparatus (SCBA) may be worn does not eliminate the need to declare the event

An asphyxiant is a gas capable of reducing the level of oxygen in the body to dangerous levels. Most commonly, asphyxiants work by merely displacing air in an enclosed environment. This reduces the concentration of oxygen below the normal level of around 19%, which can lead to breathing difficulties, unconsciousness or even death.

This Threshold addresses concentrations at which gases can ignite/support combustion. An uncontrolled release of flammable gasses within a facility structure has the potential to affect safe operation of the plant by limiting either operator or equipment operations due to the potential for ignition and resulting equipment damage/personnel injury.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY

HA4

Initiating Condition - ALERT

HOSTILE ACTION Within the OWNER CONTROLLED AREA or Airborne Attack Threat.

Operating Mode Applicability: All

Emergency Action Level: (1 or 2)

1. A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLED AREA as reported by the (site specific security shift supervision). A validated notification from NRC of an airliner attack threat within 30 minutes of the site.

Basis:

These EALs address the contingency for a very rapid progression of events, such as that experienced on September 11, 2001. They are not premised solely on the potential for a radiological release. Rather the issue includes the need for rapid assistance due to the possibility for significant and indeterminate damage from additional air, land or water attack elements.

The fact that the site is under serious attack or is an identified attack target with minimal time available for further preparation or additional assistance to arrive requires a heightened state of readiness and implementation of protective measures that can be effective (such as on-site evacuation, dispersal or sheltering).

Threshold #1 addresses the potential for a very rapid progression of events due to a HOSTILE ACTION. It is not intended to address incidents that are accidental events or acts of civil disobedience, such as small aircraft impact, hunters, or physical disputes between employees within the OWNER CONTROLLED AREA. Those events are adequately addressed by other EALs.

Threshold #2 addresses the immediacy of an expected threat arrival or impact on the site within a relatively short time.

The intent of this EAL is to ensure that notifications for the airliner attack threat are made in a timely manner and that OROs and plant personnel are at a state of heightened awareness regarding the credible threat. Airliner is meant to be a large aircraft with the potential for causing significant damage to the plant.

This EAL is met when a plant receives information regarding an airliner attack threat from NRC and the airliner is within 30 minutes of the plant. Validation is performed by calling the NRC or by other approved methods of authentication. Only the plant to which the specific threat is made need declare the Alert.

The NRC Headquarters Operations Officer will communicate to the licensee if the threat involves an airliner (airliner is meant to be a large aircraft with the potential for causing significant damage to the plant). The status and size of the plane may be provided by the NRC.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY

HA5

Initiating Condition -- ALERT

Control Room Evacuation Has Been Initiated.

Operating Mode Applicability: All

Emergency Action Level:

1. Abnormal Operating Procedure [TBD] Forced Control Room Evacuation, requires Control Room evacuation.

Basis:

With the Control Room evacuated, additional support, monitoring and direction through the Technical Support Center and/or other emergency response facilities is necessary. Inability to establish plant control from outside the Control Room will escalate this event to a Site Area Emergency.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY

HA6

Initiating Condition -- ALERT

Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of an Alert.

Operating Mode Applicability: All

Emergency Action Level:

1. Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

Basis:

This Threshold addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the Alert emergency class.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY

HS2

Initiating Condition – - SITE AREA EMERGENCY

Control Room Evacuation Has Been Initiated and Plant Control Cannot Be Established.

Operating Mode Applicability: All

Emergency Action Level:

1. a. Control room evacuation has been initiated.

   AND

   b. Control of the plant cannot be established per [procedure TBD] in less than [TBD] minutes.

Basis:

Expeditious transfer of safety systems has not occurred but fission product barrier damage may not yet be indicated. The intent of this IC is to capture those events where control of the plant cannot be reestablished in a timely manner. The determination of whether or not control is established at the remote shutdown panel is based on Emergency Director judgment. The Emergency Director is expected to make a reasonable, informed judgment within the site-specific time for transfer that control of the plant from the remote shutdown panel has been achieved.

The intent of the EAL is to establish control of important plant equipment and knowledge of important plant parameters in a timely manner. Primary emphasis should be placed on those components and instruments that supply protection for and information about safety functions. These safety functions are reactivity control (ability to shutdown the reactor and maintain it shutdown), reactor water level (ability to cool the core), and decay heat removal (ability to maintain a heat sink) for a ESBWR.

Escalation of this event, if appropriate, would be by Fission Product Barrier Degradation, Abnormal Rad Levels/Radiological Effluent, or Emergency Director Judgment ICs.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY

HS3

Initiating Condition – -SITE AREA EMERGENCY

Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of a Site Area Emergency.

Operating Mode Applicability: All

Emergency Action Level:

1. Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve 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 result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary.

Basis:

This EAL addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the emergency class description for Site Area Emergency.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY

HS4

Initiating Condition – - SITE AREA EMERGENCY

HOSTILE ACTION Within the PROTECTED AREA.

Operating Mode Applicability: All

Emergency Action Level:

1. A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the site security shift supervision.

Basis:

This condition represents an escalated threat to plant safety above that contained in the Alert in that a HOSTILE FORCE has progressed from the OWNER CONTROLLED AREA to the PROTECTED AREA.

This EAL addresses the contingency for a very rapid progression of events, such as that experienced on September 11, 2001. It is not premised solely on the potential for a radiological release. Rather the issue includes the need for rapid assistance due to the possibility for significant and indeterminate damage from additional air, land or water attack elements.

The fact that the site is under serious attack with minimal time available for further preparation or additional assistance to arrive requires offsite emergency response organization readiness and preparation for the implementation of protective measures.

This EAL addresses the potential for a very rapid progression of events due to a HOSTILE ACTION. It is not intended to address incidents that are accidental events or acts of civil disobedience, such as small aircraft impact, hunters, or physical disputes between employees within the PROTECTED AREA. Those events are adequately addressed by other EALs.

Escalation of this emergency classification level, if appropriate, would be based on actual plant status after impact or progression of attack.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY

HG1

Initiating Condition – GENERAL EMERGENCY

HOSTILE ACTION Resulting in Loss of Physical Control of the Facility.

Operating Mode Applicability: All

Emergency Action Level: (1 or 2)

1. A HOSTILE ACTION has occurred such that plant personnel are unable to operate equipment required to maintain safety functions.

2. A HOSTILE ACTION has caused failure of Spent Fuel Cooling Systems and IMMINENT fuel damage is likely for a freshly off-loaded reactor core in pool.

Basis:

This IC encompasses conditions under which a HOSTILE ACTION has resulted in a loss of physical control of VITAL AREAS (containing vital equipment or controls of vital equipment) required to maintain safety functions and control of that equipment cannot be transferred to and operated from another location.

If control of the plant equipment necessary to maintain safety functions can be transferred to another location, then the above initiating condition is not met.

This EAL also addresses failure of spent fuel cooling systems as a result of HOSTILE ACTION if IMMINENT fuel damage is likely.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY

HG2

Initiating Condition – GENERAL EMERGENCY

Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of a General Emergency.

Operating Mode Applicability: All

Emergency Action Level:

1. Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve actual or IMMINENT substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels at or beyond, the site boundary.

Basis:

This EAL addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the General Emergency class.

SYSTEM MALFUNCTIONS

5.9 System Malfunction EALs

Table A1-S: Recognition Category "S" Initiating Condition Matrix

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOUE
SG1 All Safety Related DC Batteries Not Being Charged for Greater Than 72 Hours Due to Loss of Power to PIP Busses. *Op. Modes: Power Operation, Startup, Hot Standby, Safe/Stable Shutdown*	**SS1** All Safety Related DC Batteries Not Being Charged for 24 Hours or Longer Due to Loss of Power to PIP Busses. *Op. Modes: Power Operation, Startup, Hot Standby, Safe/Stable Shutdown*	**SA1** All Safety Related DC Batteries Not Being Charged for 60 Minutes or Longer Due to Loss of Power to PIP Busses. *Op. Modes: Power Operation, Startup, Hot Standby, Safe/Stable Shutdown*	**SU1** All Safety Related DC Batteries Not Being Charged for 30 Minutes or Longer Due to Loss of Power to PIP Busses. *Op. Modes: Power Operation, Startup, Hot Standby, Safe/Stable Shutdown*
SG2 Automatic Scram (Trip) and All Manual Actions Fail to Shutdown the Reactor and Indication of an Extreme Challenge to the Ability to Cool the Core Exists. *Op. Modes: Power Operation, Startup*	**SS2** Automatic Scram (Trip) Fails to Shutdown the Reactor and Manual Actions Taken From the Reactor control Console are NOT Successful in Shutting Down the Reactor *Op. Modes: Power Operation, Startup*	**SA2** Automatic Scram (Trip) Fails to Shutdown the Reactor and the Manual Actions Taken From the Reactor Control Console are Successful in Shutting Down the Reactor *Op. Modes: Power Operation, Startup*	**SU2** Inability to Reach Required Shutdown Mode Within Technical Specification Limits. *Op. Modes: Power Operation, Startup, Hot Standby, Safe/Stable Shutdown*
	SS6 Inability to Monitor a SIGNIFICANT TRANSIENT in Progress. *Op. Modes: Power Operation, Startup, Hot Standby, Safe/Stable Shutdown*	**SA4** Loss of Indicating and Monitoring Functions *Op. Modes: Power Operation, Startup, Hot Standby, Safe/Stable Shutdown*	
	SS3 Loss of All Vital DC Power for 15 Minutes or Longer. *Op. Modes: Power Operation, Startup, Hot Standby, Safe/Stable Shutdown*		**SU4** Fuel Clad Degradation. *Op. Modes: Power Operation, Startup, Hot Standby*
			SU5 RCS Leakage. *Op. Modes: Power Operation, Startup, Hot Standby, Safe/Stable Shutdown*
			SU6 UNPLANNED Loss of All On-site OR Off-site Communications Capabilities. *Op. Modes: Power Operation, Startup, Hot Standby, Safe/Stable Shutdown*

SYSTEM MALFUNCTIONS

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOUE
			SU8 Inadvertent Criticality. *Op Modes: Hot Standby, Safe/Stable Shutdown*

SYSTEM MALFUNCTION

SU1

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

All Safety Related DC Batteries Not Being Charged for 30 Minutes or Longer Due to Loss of Power to PIP Busses.

Operating Mode Applicability:

Power Operation
Startup
Hot Standby
Safe/Stable Shutdown

Emergency Action Level:

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

1. PIP Busses 1000A3 and 1000B3 de-energized for 30 minutes or longer.

Basis:

Prolonged de-energization of the PIP busses reduces required redundancy and potentially degrades the level of safety of the plant by rendering the plant more vulnerable to a complete loss of DC Power. 30 minutes was selected as a threshold to exclude transient or momentary losses of AC power.

SYSTEM MALFUNCTION

SU2

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Inability to Reach Required Shutdown Mode Within Technical Specification Limits.

Operating Mode Applicability:

Power Operation
Startup
Hot Standby
Safe/Stable Shutdown

Emergency Action Level:

1. Plant is not brought to required operating mode within Technical Specifications LCO Action Statement Time.

Basis:

Limiting Conditions of Operation (LCOs) require the plant to be brought to a required shutdown mode when the Technical Specification required configuration cannot be restored. Depending on the circumstances, this may or may not be an emergency or precursor to a more severe condition. An immediate NOUE is required when the plant is not brought to the required operating mode within the allowable Action Statement time in the Technical Specifications. Declaration of a NOUE is based on the time at which the LCO-specified Action Statement time period elapses under the site Technical Specifications and is not related to how long a condition may have existed.

SYSTEM MALFUNCTION

SU4

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Fuel Clad Degradation.

Operating Mode Applicability: Power Operation
Startup
Hot Standby

Emergency Action Levels: (1 or 2)

1. [TBD] radiation monitor readings indicating fuel clad degradation greater than Technical Specification 3.4.3 allowable limits.

2. [TBD] coolant sample activity value indicating fuel clad degradation greater than Technical Specification 3.4.3 allowable limits.

Basis:

This IC is included as a NOUE because it is considered to be a potential degradation in the level of safety of the plant and a potential precursor of more serious problems. EAL #1 addresses site-specific radiation monitor readings such as BWR air ejector monitors, PWR failed fuel monitors, etc., that provide indication of fuel clad integrity. EAL #2 addresses coolant samples exceeding coolant Technical Specifications for iodine spike. Escalation of this IC to the Alert level is via the Fission Product Barrier Degradation Monitoring ICs.

SYSTEM MALFUNCTION

SU5

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

RCS Leakage.

Operating Mode Applicability:	Power Operation Startup Hot Standby Safe/Stable Shutdown
Emergency Action Levels:	(1 or 2)

1. Unidentified or pressure boundary leakage greater than 50 gpm.

2. Total leakage greater than 75 gpm.

Basis:

This IC is included as a NOUE because it may be a precursor of more serious conditions and, as result, is considered to be a potential degradation of the level of safety of the plant. The value for the unidentified leakage (including the pressure boundary) was selected as it is observable with normal Control Room indications and is 10 times the Technical Specification limit. Lesser values must generally be determined through time-consuming surveillance tests (e.g., mass balances).

Relief valve normal operation should be excluded from this IC. However, a relief valve that operates and fails to close per design should be considered applicable to this IC if the relief valve cannot be isolated.

The EAL for identified leakage is set at a higher value due to the lesser significance of identified leakage in comparison to unidentified or pressure boundary leakage and is 2.5 times the Technical Specification limit. In either case, escalation of this IC to the Alert level is via Fission Product Barrier Degradation ICs.

SYSTEM MALFUNCTION

SU6

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

UNPLANNED Loss of All On-site or Off-site Communications Capabilities.

Operating Mode Applicability:	Power Operation Startup Hot Standby Safe/Stable Shutdown
Emergency Action Levels:	(1 or 2)

1. Loss of all of the following on-site communication methods affecting the ability to perform routine operations:

   - Plant Page/Party Line
   - PABX
   - Sound Powered Phones
   - Plant Radios

2. Loss of all of the following off-site communication methods affecting the ability to perform offsite notifications:

   - Operational Hot Line
   - UHF Radio Systems
   - Emergency Notification System
   - Health Physics Network
   - Reactor Safety Counterpart Link
   - Protective Measures Counterpart Link
   - Management Counterpart Link

Basis:

The purpose of this IC and its associated EALs is to recognize a loss of communications capability that either defeats the plant operations staff ability to perform routine tasks necessary for plant operations or the ability to communicate problems with off-site authorities. The loss of off-site communications ability is expected to be significantly more comprehensive than the condition addressed by 10 CFR 50.72.

The availability of one method of ordinary off-site communications is sufficient to inform state and local authorities of plant conditions.

SYSTEM MALFUNCTION

SU8

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Inadvertent Criticality.

OPERATING MODE APPLICABILITY — Hot Standby
Safe/Stable Shutdown

Emergency Action Level:

1. UNPLANNED SRNM Short Period Alarm.

Basis:

This IC addresses inadvertent criticality events. This IC indicates a potential degradation of the level of safety of the plant, warranting a NOUE classification. This IC excludes inadvertent criticalities that occur during planned reactivity changes associated with reactor startups.

Escalation would be by the Fission Product Barrier Matrix, as appropriate to the operating mode at the time of the event, or by Emergency Director judgment.

SYSTEM MALFUNCTION

SA1

Initiating Condition -- ALERT

All Safety Related DC Batteries Not Being Charged for Greater Than 60 Minutes Due to Loss of Power to PIP Busses.

Operating Mode Applicability:

Power Operation
Startup
Hot Standby
Safe/Stable Shutdown

Emergency Action Level:

1. PIP Busses 1000A3 and 1000B3 de-energized for greater than 60 minutes.

Basis:

This IC and the associated EALs are intended to provide an escalation from IC SU1. Prolonged de-energization of the PIP busses reduces required redundancy and potentially degrades the level of safety of the plant by rendering the plant more vulnerable to a complete loss of DC Power. 60 minutes was selected as an escalation to ensure augmented support is available to the operating crew.

The condition indicated by this IC is the degradation of the AC power systems.

SYSTEM MALFUNCTION

SA2

Initiating Condition -- ALERT

Automatic Scram (Trip) Fails to Shutdown the Reactor AND the Manual Actions Taken from the Reactor Control Console are Successful in Shutting Down the Reactor

Operating Mode Applicability: Power Operation
Startup

Emergency Action Level:

1. a. An Automatic Reactor Protection System actuation failed to shutdown the reactor.

   AND

   b. Manual actions taken at the reactor control console successfully shutdown the reactor as indicated by less than [0.25% power].

Basis:

A manual actuation is any set of actions by the reactor operator(s) at the reactor control console which causes or should cause control rods to be rapidly inserted into the core and shuts down the reactor (e.g., reactor trip button, Alternate Rod Insertion).
If actions taken at the reactor control console fail to shutdown the plant, the event would escalate to a Site Area Emergency.

This condition indicates failure of the automatic protection system to scram (trip) the reactor. This condition is more than a potential degradation of a safety system in that a front line automatic protection system did not function in response to a plant transient. Thus the plant safety has been compromised because design limits of the fuel may have been exceeded. An Alert is indicated because conditions may exist that lead to potential loss of fuel clad or RCS.

SYSTEM MALFUNCTION

SA4

Initiating Condition -- ALERT

Loss of Indicating and Monitoring Functions.

Operating Mode Applicability:

Power Operation
Startup
Hot Standby
Safe/Stable Shutdown

Emergency Action Level:

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

1. Loss of any three Q-DCIS Indicating and Monitoring Functions for 15 minutes or longer.

Basis:

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

This Alert will be escalated to a Site Area Emergency if the operating crew cannot monitor the transient in progress.

SYSTEM MALFUNCTION

SS1

Initiating Condition -- SITE AREA EMERGENCY

All Safety Related DC Batteries Not Being Charged for 24 Hours or Longer Due to Loss of Power to PIP Busses.

Operating Mode Applicability:

Power Operation
Startup
Hot Standby
Safe/Stable Shutdown

Emergency Action Level:

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

1. PIP Busses 1000A3 and 1000B3 de-energized for 24 hours or longer.

Basis:

Prolonged de-energization of the PIP busses reduces required redundancy and potentially degrades the level of safety of the plant by rendering the plant more vulnerable to a complete loss of DC Power. 24 hours was selected as a threshold to escalate for recognition of the seriousness of the issue in that power has been unable to be restored through normal and abnormal operating procedures.

Escalation to General Emergency is via Fission Product Barrier Degradation or IC SG1, “Prolonged Loss of All Off-site and On-site AC Power for greater than 72 hours."

SYSTEM MALFUNCTION

SS2

Initiating Condition -- SITE AREA EMERGENCY

Automatic Scram (Trip) Fails to Shutdown the Reactor AND Manual Actions Taken from the Reactor Control Console are NOT Successful in Shutting Down the Reactor

Operating Mode Applicability: Power Operation
Startup

Emergency Action Level:

1. a. An Automatic Reactor Protection System actuation failed to shutdown the reactor.

   AND

   b. Manual actions taken at the reactor control console DO NOT shutdown the reactor as indicated by greater than [0.25% power].

Basis:

Under these conditions, the reactor is producing more heat than the maximum decay heat load for which the safety systems are designed [*typically 3 to 8% power*]. A Site Area Emergency is indicated because conditions exist that lead to IMMINENT loss or potential loss of both fuel clad and RCS.

A manual trip/scram initiation is not considered successful if action away from the Control Room control panels was required to trip/scram the reactor.

A manual trip/scram is any set of actions by the reactor operator(s) at the Control Room control panels which causes control rods to be rapidly inserted into the core and brings the reactor subcritical.

Escalation of this event to a General Emergency would be due to a prolonged condition leading to challenges in maintaining core-cooling or heat sink.

SYSTEM MALFUNCTION

SS3

Initiating Condition -- SITE AREA EMERGENCY

Loss of All Vital DC Power for 15 Minutes or Longer.

Operating Mode Applicability: Power Operation
Startup
Hot Standby
Safe/Stable Shutdown

Emergency Action Level:

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

1. Less than 210V on all Vital DC Busses 11, 12, 21, 22, 31, 32, 41, and 42 for 15 minutes or longer.

Basis:

Loss of all DC power compromises ability to monitor and control plant safety functions. Prolonged loss of all DC power will cause core uncovering and loss of containment integrity when there is significant decay heat and sensible heat in the reactor system. Fifteen minutes for the initiating condition was selected as a threshold to exclude transient or momentary power losses.

Escalation to a General Emergency would occur by Abnormal Rad Levels/Radiological Effluent, Fission Product Barrier Degradation, or Emergency Director judgment ICs.

SYSTEM MALFUNCTION

SS6

Initiating Condition -- SITE AREA EMERGENCY

Inability to Monitor a SIGNIFICANT TRANSIENT in Progress.

Operating Mode Applicability: Power Operation
Startup
Hot Standby
Safe/Stable Shutdown

Emergency Action Level:

1. a. UNPLANNED Loss of all Q-DCIS Indicating and Monitoring Functions

   AND

   b. A SIGNIFICANT TRANSIENT as indicated by [TBD] in progress.

Basis:

This IC recognizes the inability of the Control Room staff to monitor the plant response to a transient. A Site Area Emergency is considered to exist if the Control Room staff cannot monitor safety functions needed for protection of the public.

SYSTEM MALFUNCTION

SG1

Initiating Condition -- GENERAL EMERGENCY

All Safety Related DC Batteries Not Being Charged for Greater Than 72 Hours Due to Loss of Power to PIP Busses.

Operating Mode Applicability:

Power Operation
Startup
Hot Standby
Safe/Stable Shutdown

Emergency Action Level:

1. PIP Busses 1000A3 and 1000B3 de-energized for greater than 72 hours.

Basis:

The DC Battery design is for at least 72 hours of safety related power. If the DC busses have been de-energized, then the reactor is being maintained in a safe shutdown condition by gravity and natural circulation by refilling the Isolation Condenser and PCC Pools using the on-site Fire Protection System.

This IC is specified to assure that in the unlikely event of a prolonged station blackout, timely recognition of the seriousness of the event occurs and that declaration of a General Emergency occurs as early as is appropriate, based on a reasonable assessment of the event trajectory.

The likelihood of restoring at least one bus should be based on a realistic appraisal of the situation since a delay in an upgrade decision based on only a chance of mitigating the event could result in a loss of valuable time in preparing and implementing public protective actions.

Under these conditions, fission product barrier monitoring capability may be degraded. Although it may be difficult to predict when power can be restored, it is necessary to give the Emergency Director a reasonable idea of how quickly to declare a General Emergency based on two major considerations:

1. Are there any present indications that core cooling is already degraded to the point that Loss or Potential Loss of Fission Product Barriers is IMMINENT?

2. If there are no present indications of such core cooling degradation, how likely is it that power can be restored in time to assure that a loss of two barriers with a potential loss of the third barrier can be prevented?

Thus, indication of continuing core cooling degradation must be based on Fission Product Barrier monitoring with particular emphasis on Emergency Director judgment as it relates to IMMINENT Loss or Potential Loss of fission product barriers and degraded ability to monitor fission product barriers.

SYSTEM MALFUNCTION

SG2

Initiating Condition -- GENERAL EMERGENCY

Automatic Scram (Trip) and All Manual Actions Fail to Shutdown the Reactor and Indication of an Extreme Challenge to the Ability to Cool the Core Exists.

Operating Mode Applicability: Power Operation
Startup

Emergency Action Level:

1. Automatic scram and ALL Manual actions failed to shutdown the reactor.

   AND

   EITHER of the following exists or has occurred due to continued power generation:

   a. RPV level less than Level 0 Setpoint [0 inches (0 mm)] on B21-NBS-LI-R615A-D

      OR

   b. RPV pressure and suppression pool temperature cannot be maintained below the Heat Capacity Temperature Limit (HCTL) Curve

Basis:

Automatic and manual trip/scram are not considered successful if action away from the Control Room control panels was required to trip/scram the reactor.

Under the conditions of this EAL, efforts to bring the reactor subcritical to the extent that the reactor is producing more heat than the maximum decay heat load for which the safety systems were designed are not successful. This situation could be a precursor for a core melt sequence.

In the event either of these challenges exists at a time that the reactor has not been brought below the power associated with the Safety System Design, a core melt sequence exists. In this situation, core degradation can occur rapidly. For this reason, the General Emergency declaration is intended to be anticipatory of the fission product barrier matrix declaration to permit maximum off-site intervention time.

Appendix 2 – Radiological Assessment and Monitoring

1. Introduction

This appendix describes the basis for the Grand Gulf Nuclear Station Unit 3 (GGNS) atmospheric transport and diffusion assessment capability, as discussed in Appendix 2 to NUREG-0654/FEMA-REP-1, Rev. 1, "Meteorological Criteria for Emergency Preparedness at Operating Nuclear Power Plants."[6] Three topics are identified in Appendix 2 to NUREG-0654/FEMA-REP-1:

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

Because meteorological measurements are discussed elsewhere in this COL application, only a brief discussion of this topic is provided in this Appendix. The majority of this Appendix provides a description of the conceptual design for the atmospheric transport and diffusion assessment models used by Entergy at the GGNS site.

2. Discussion

10 CFR 50.47 requires that the Emergency Plan provide "adequate methods, systems, and equipment for assessing and monitoring actual or potential off-site consequences of a radiological emergency condition are in use."[7] Appendix E to 10 CFR 50 requires that emergency facilities and equipment shall include "equipment for determining the magnitude of and for continuously assessing the impact of the release of radioactive materials to the environment."[8]

DOSECALC is site-specific software for emergency dose projection at the GGNS site. Based on user input variables which reflect plant status and accident type, DOSECALC chooses from previously identified nuclide spectra and rapidly calculates initial dose projections. DOSECALC will perform dose calculations based on the following accident types:

- Loss of Coolant Accident (LOCA)
- Spent Fuel
- Steam Line Break Outside Containment
- LOCA-Containment Isolated

[6] U.S. Nuclear Regulatory Commission, NUREG-0654/FEMA REP-1, Rev.1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Washington, DC, November 1980
[7] 10 CFR 50.47(b)(9)
[8] 10 CFR 50, Appendix E, IV.E.2

2.1. Meteorological Measurements

Appendix 2 to NUREG-0654-FEMA-REP-1, provides clarification of the requirement in 10 CFR 50 Appendix E that "the nuclear power plant operator shall have meteorological measurements from primary and backup systems."[9]

Unit 3 relies on the existing GGNS Unit 1 meteorological data system, which includes an on-site meteorological tower, located approximately 5,300 feet northwest of the facility. The facility also utilizes a back-up meteorological system which provides meteorological information to the Control Room, if the primary meteorological system fails, as described in Subsection 2.7.5.2.2 of the GGNS Early Site Permit. In the unlikely event that both the primary and backup meteorological systems are inoperable, the tertiary means of obtaining wind speed and direction data is through the National Weather Service or the U.S. Army Corps of Engineers, Waterway Experiment Station in Vicksburg, MS.

The on-site meteorological measurements program has been designed to meet requirements at least as stringent as those described in Regulatory Guide 1.23 as well as NUREG-0654/FEMA-REP-1.

The on-site meteorological measurement system provides data to the Control Room and personnel via the plant computer. Meteorological parameters are reported at less than or equal to ten second reading, a fifteen minute average, and hourly averages. These measurements are described in Subsection 2.7.5 of the GGNS Early Site Permit.

This design addresses the guidance provided in Supplement 1 to NUREG-0737[10].

2.2. Atmospheric Transport and Diffusion Assessment

Atmospheric transport and diffusion assessment requirements are discussed in Appendix E to 10 CFR 50, which states, "the means to be used for determining the magnitude of and for continually assessing the impact of the release of radioactive material shall be described."[11] Two classes of atmospheric transport and diffusion models are discussed in NUREG-0654/FEMA-REP-1. This Appendix discusses the model used for GGNS, which addresses guidance associated with the "Class B" model described in Appendix 2 of NUREG-0654/FEMA-REP-1, "a numerical model which predicts the spatial and temporal variations of plume distribution and provides estimates of deposition and relative concentration of radioactivity within

[9] NUREG-0654, Rev. 1, Appendix 2, "Meteorological Criteria for Emergency Preparedness at Operating Nuclear Power Plants," Washington, DC, November 1980
[10] U.S. Nuclear Regulatory Commission, NUREG-0737, Supplement 1, "Clarification of TMI Action Plan Requirements," Washington, DC, January 1983
[11] 10 CFR 50, Appendix E, IV.B

the plume exposure and ingestion pathway emergency planning zones for the duration of any radioactive materials releases during a declared emergency."[12]

2.3. Remote Interrogation

Guidance concerning remote interrogation is also discussed in Appendix 2 of NUREG-0654/FEMA-REP-1. The guidance supports the requirement in 10 CFR 50, Appendix E for "provisions for communications among the nuclear power reactor control room, the on-site technical support center and the near-site emergency operations facility; and among the nuclear facility, the principal State and local emergency operations centers, and field assessment teams."[13] NRC Regulatory Guide 1.23, Rev. 1 also discusses remote interrogation capability. Remote polling of meteorological data for GGNS is available through the Emergency Response Data System (ERDS), which is activated by the licensee at an Alert or higher classification.

3. Conceptual Design Description: Atmospheric Transport and Diffusion Assessment

The remainder of this Appendix focuses on the conceptual design for the atmospheric transport and diffusion assessment models used by GGNS Unit 3. The conceptual design addresses the following program elements for accident assessment that demonstrate compliance with requirements in 10 CFR 50.47(b)(9) and addresses evaluation criteria from NUREG-0654/FEMA-REP-1 discussed in Section II.I of this plan:

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

3.1. Overview, Introduction, and Functions

The DOSECALC software package is designed for use by GGNS to address its emergency preparedness and accident analyses needs. Section 3.2 discusses accident calculations. Section 3.3 discusses data acquisition methods. Section

[12] NUREG-0654, Rev. 1, Appendix 2, "Meteorological Criteria for Emergency Preparedness at Operating Nuclear Power Plants," Washington, DC, November 1980
[13] 10 CFR 50, Appendix E, IV.E.9.c

3.4 describes the modeling methods used. Section 3.5 describes the various output options available.

3.1.1. Summary and Purpose

DOSECALC is a radiological dose assessment model. It is a variable trajectory, puff advection model and is designed to satisfy the requirements of EPA 400-R-92-001[14].

DOSECALC has the ability to accept automatic input of weather data and reactor shutdown times. Release pathway and isotopic spectra rely on selection of source term scenarios from user-specified menus. Data can be acquired from the plant process monitor data or keyed in manually. A user may also overwrite data if better information becomes available.

DOSECALC provides both screen displays and printed reports.

The report options menu provides the user with several choices for obtaining hard copy output of model generated data after each time step.

3.1.2. General Software Specifications

The DOSECALC software has been developed using the C programming language and is designed to operate under the UNIX operating system on HP and PC workstations.

3.1.3. User Interface

DOSECALC has full screen data entry routines with menu-driven option selections. DOSECALC has the ability to communicate with the plant meteorological data system. The meteorological data system has the capability to check each piece of digital data to determine that it is between the minimum and maximum instrument limits. Meteorological quality indication and the sample time are recorded with each value.

3.2. Accident Calculations

DOSECALC provides the opportunity to calculate the source term using a variety of methods and plant-specific accident types. For each 15 minute time step, the user is required to estimate the total noble gas, total iodine and total particulate release rates from plant specific radiation monitor readings and flow rates, by direct input, by back-calculating from field data, or by a grab sample analysis. Radiation monitor readings and associated flow rates can be downloaded directly from the plant's computer network or entered manually. Because DOSECALC is tailored to GGNS, a number of radiation monitors can be used to develop release rates.

[14] U.S. Environmental Protection Agency, EPA 400-R-92-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents", Washington, D.C., May 1992

The ESBWR Process Radiation Monitoring System (RMS) has a variety of detectors used to monitor post-accident conditions that are used as inputs to perform off-site dose calculations, including:

- Isolation Condenser Vent Discharge RMS
- Refuel Handling Area Air Exhaust RMS
- Fuel Building Main Area HVAC RMS
- Containment Purge Exhaust RMS
- Main Steamline (MSL) RMS
- Turbine Building Combined Ventilation Exhaust RMS
- Radwaste Building Ventilation Exhaust RMS
- Fuel Building Combined Ventilation Exhaust RMS
- Plant Stack RMS

Back-calculations of the release source term can be made using data from radiological field teams.

For post-accident isotopic mixtures, ESBWR DCD Tier 2 Chapter 15 scenarios identify that the alternative source term in Regulatory Guide 1.183[15] will be used, as well as the accident source term models described in NUREG-1465[16].

For each available accident type, DOSECALC maintains an initial inventory of isotopes. The accident type defines the initial isotopic distribution to be modeled. Once reactor trip occurs, these inventories are allowed to change in time according to isotope specific half-life and decay of parent isotopes.

From the total release rate, the model apportions contributions from each isotope based on the isotopic distribution for the accident type selected.

3.3. Data Acquisition

In its standard operating mode (auto-mode is discussed below), the user can manually enter an accident type and source term calculation method, then DOSECALC queries the plant network for reactor shutdown time and meteorological conditions. (In the event of an anticipated transient without scram (ATWS) event, the DOSECALC code allows for manual data entry to handle this scenario.)

[15] U.S. Nuclear Regulatory Commission, Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," Washington, DC, July 2000

[16] U.S. Nuclear Regulatory Commission, NUREG-1465, "Accident Source Terms for Light-Water Nuclear Power Plants," Washington, DC, February 1995

DOSECALC automatically queries the plant's network for the necessary data, using the plant-specific data selection hierarchy. If data are not available from the network, they can be entered manually. Meteorological data required by DOSECALC include wind speed and direction, ambient temperature, precipitation rate and delta-temperature.

3.4. Modeling

Plume trajectories are calculated using meteorological data obtained from the on-site meteorological tower. Puffs are transported by the horizontal wind field, which varies with time. Both continuous and intermittent releases from various release points may be considered.

The program can provide both real-time and forecast (projection) dose and deposition information. Meteorological conditions and source term data are allowed to vary in time, and the transport and diffusion component of the program produces dose projections at the site boundary and 2, 5, 10, 15 and 20 mile radii.

Forecasts (projections) provide a user with the capability of predicting dose rates and doses for any future time step (i.e., avoided dose for the forecast period) and is accessible after each real-time update. Doses are calculated every 60 seconds or until overridden by the DOSECALC workstation operator.

Puffs are transported in space using current meteorological data.

Downwind concentrations associated with the release of contaminants from a source point are influenced by a number of factors including: (1) the strength of the release; (2) the release characteristics (e.g., release height); (3) surface features which may produce mechanical turbulence; (4) turbulence associated with the atmosphere's thermal structure (i.e., stability class); and (5) wind speed and direction. Source strength and release characteristics are based on the facility's design and operation. On-site buildings may induce mechanical turbulence near release points so as to enhance the initial dispersion of a plume.

For real-time modeling, the most common method of evaluating plume dispersion is through the use of mathematical diffusion equations with the assumption that contaminants are distributed in a Gaussian fashion around the plume centerline (the centerline paralleling the wind direction).

In DOSECALC, this Gaussian distribution is assumed for both the vertical and lateral dimensions (at right angles with the plume transport direction). The shape of the Gaussian distribution (or "bell curve") at any distance is designed to provide a relationship between the spread (or width) of the plume and the concentration away from the plume centerline. Since a Gaussian distribution's shape is defined by its standard deviation and a plume's concentration is related to the level of atmospheric turbulence (or stability category), data have been derived to relate these two parameters (i.e., standard deviation to turbulence levels). These methods involve defining the standard deviation, for both the vertical and lateral dimensions, of the Gaussian plume as a function of downwind distance and

stability class. DOSECALC uses NUREG/CR-3332[17], Ch. 2 methodology for Gaussian plume calculations.

Radioisotopes released to the atmosphere are assumed to be distributed in a Gaussian manner, between the surface boundary and mixing height. The diffusion of released materials is expressed in terms of a normalized concentration, X/Q. Normalized concentrations are multiplied by a source strength, Q, to provide an estimate of cloud concentration, X (curies per cubic meter). For gamma radiation, which can extend beyond the physical edge of the concentration plume, a different set of X/Q values (referred to as "gamma X/Qs") is calculated using finite plume techniques.

3.5. Data Output

DOSECALC data screens provide information on accident isotopic mix, containment radiation readings, site release parameters, projected off-site doses (TEDE, thyroid, skin) and projected plume data. The program also has the ability to generate and print out Emergency Notification Forms.

Dose and dose rates can be reported using either units of rem or mrem. Ground level concentrations are reported as microcuries per cubic centimeter, while deposition is given in units of microcuries per square centimeter.

[17] John E. Till and H. Robert Meyer, Radiological Assessment, A Textbook on Environmental Dose Analysis, NUREG/CR-3332, ORNL-5968, September 1983, prepared for USNRC, Washington, D.C.

Appendix 3 –Alert and Notification System Description

1. Summary

The Grand Gulf Nuclear Station (GGNS) Alert and Notification System Report, submitted as supplemental information, describes the physical means of alerting the public within the GGNS Plume Exposure Pathway EPZ. The design process used an Acoustic Technology, Inc. (ATI) field-proven acoustic model to provide an adequate acoustic alert signal to the EPZ. The updated FEMA-43 report describes the upgrade of the siren system to meet any new site development after approximately 20 years from the installation of the original system. This upgrade meets the guidelines set forth in 44 CFR 350 Planning Standard E, Appendix 3 of NUREG-0654/FEMA REP-1, and FEMA-43, "The Standard Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants (FEMA-43)."

The current design uses 43 Penetrator-10 high-power electro-mechanical ACA sirens located within the geographical area of approximately a 10-mile radius around the plant, which defines the GGNS Plume Exposure Pathway EPZ (see Figure I-1 of this plan). Figure A3-1 illustrates the locations of the sirens.

Regulatory guidelines state that an acceptable siren system design can be achieved by providing a 70 dBC acoustic alert signal for areas with a population density exceeding 2,000 persons per square mile and a 60 dBC alert signal for other inhabited areas. The current GGNS siren system design establishes a minimum acoustic signal of 60 dBC for populated areas with density less than 2,000 people per square mile. The population density of greater than 2,000 people per square mile would be covered with 70 dBC.

The minimum acceptable design objectives for systems providing a physical means of initial notification of the public are listed in NUREG-0654/FEMA-REP-1 and FEMA-43 as follows:

a) "Capability for providing both an alert signal and informational or instructional message to the population on an area wide basis throughout the 10 mile EPZ, within 15 minutes."

b) "The initial notification system will assure direct coverage of essentially 100% of the population within 5 miles of the site."

c) "Special arrangements will be made to assure 100% coverage within 45 minutes of the population who may not have received the initial notification within the entire plume exposure EPZ."

ATI evaluated the 60 dBC siren contours within the Grand Gulf EPZ. Based on these requirements and the geographic and demographic characteristics of the site, the current siren system provides adequate acoustic coverage. A field verification has been conducted to evaluate new population growth.

2. Acoustic Criteria of Siren System

NUREG-0654/FEMA-REP-1 (FEMA 43) indicates that an acoustic signal of 10 dB above the average daytime ambient level is acceptable criterion for the design of a siren system.

NUREG-0654/FEMA-REP-1 also indicates that the determination of adequate siren sound levels can be achieved by either of two options. Field surveys can be conducted

to determine typical daytime ambient sound levels, and the siren system can be designed to achieve 10 dB above the documented ambient. As an alternative to field surveys, in areas with population density below 2,000 persons/square mile, a sound level of 50 dBC can be assumed and the siren system can be designed to produce a minimum of 60 dBC. In the original design of GGNS siren system, since the population in the EPZ of Grand Gulf Station is below 2,000 people per square mile, the assumed sound level of 50 dBA is used to generate the minimum 60 dBC siren sound coverage criteria. An evaluation of the GGNS EPZ population was conducted in 2003. It was determined that the EPZ population has increased only slightly (9%) since 1986, and most of that population growth occurred in one specific area of the EPZ. Accordingly, no changes are needed.

Based upon FEMA's April 1985 independent technical review and public survey results, International Energy Associates Limited (IEAL) concluded that the design and implementation of the alert and notification system for the Grand Gulf Nuclear Station and its supporting procedures conform sufficiently to the acceptance criteria stated in FEMA-43 for evaluation criterion E.6 of NUREG-0654/FEMA-REP-1, to support a FEMA finding that the alert and notification system is adequate.

3. Special Alerting

Claiborne County and Tensas Parish use institutional alerting receivers, which are used to supplement the siren system. The receivers are radio controlled. These have been placed in businesses, schools, hospitals, and other indoor areas that might contain large numbers of people. The public and private schools within the 10-mile EPZ are equipped with tone alert radios. The Claiborne County Civil Defense (CCCD) Director and Tensas Parish Office of Homeland Security and Emergency Preparedness (TPHLS/EP) Coordinator place receivers in institutions and other facilities as deemed appropriate. The receivers in Tensas Parish operate on a different frequency than the receivers in Claiborne County. The Director and Coordinator activate them from the CCCD and TPHLS/EP offices, respectively, at the same time as the rest of the alert and notification system. Route alerting, performed by local authorities, may also be used to supplement the system.

4. Meteorological Considerations

FEMA-43 guidelines suggest that the average summer daytime weather conditions be used to calculate siren sound contours. Average summer (June, July and August) weather conditions were used as input for the computer model analyses for siren acoustic coverage. The following lists weather conditions used:

- Temperature (elevation 33 feet) 78° F
- Relative Humidity 81%
- Wind Speed 4 mph
- Wind Direction 145°

Where N = 0 & E = 90° at this low speed, the wind effect is minimal.

5. Siren Acoustic Computer Model Analysis

The siren sound levels within the GGNS Plume Exposure Pathway EPZ were calculated by a computer model developed by ATI. ATI utilized the same database to extend the

analysis to 60 dBC contours. The computer model evaluates meteorological factors, topographical factors, and ground surface conditions. These factors can affect the propagation of the sound signal generated by a siren.

6. Factors for Calculation of Siren Sound Levels

The various factors considered in the sound propagation analysis by the computer model are summarized as follows:

A. Hemispherical Wave Divergence

The change in the sound pressure level from hemispherical divergence is uniform in all directions and occurs at a rate of 6 dB per doubling of distance from the sound source. This non-dissipative sound pressure level attenuation is a result of the decrease in energy density (energy per unit area) of the propagating sound wave. The energy density of a sound wave decreases as the distance from a sound source increases because of the increase in the surface area over which the constant energy of the wave is distributed.

B. Atmospheric Absorption

Molecular (atmospheric) absorption further reduces the sound energy. This dissipative sound level attenuation is from inelastic collisions of air molecules. Absorption is highly dependent on the temperature and the relative humidity of the air, and is quite pronounced at large distances and at high frequencies.

C. Barrier Attenuation Effects

A mound of earth, a hill or a structure, if large enough, is a partial barrier to sound and can reduce sound levels within its shadow zone.

The sound attenuation, which is caused by a barrier, is estimated by the computer model. The computer model determines the effective barrier height, which is the height above the line-of-sight from the siren to the receiver location. The other two essential dimensions are the distance from the siren to the barrier, and the distance from the barrier to the receiver. These dimensions are used to calculate the attenuation of sound from the barriers. Topographical data from USGS maps are used to calculate the sound attenuation from barrier effects caused be the high elevations generating acoustic shadow zones behind ridges and hills.

D. Near-Field Interference Factors

Obstructions taller than the height of the siren horn, such as trees, foliage and high structures, and in very close proximity to the siren pole can cause excessive attenuation. This excessive attenuation can produce significant difference for the 60 dBC siren coverage at large distances.

E. Ground Effects

Sound attenuation is a function of the ground cover and the siren's height. The ground cover conditions were read directly from USGS maps at various directions and distances from the installed siren location.

These conditions were used to calculate the sound attenuation due to the absorptive effect of the different ground coverings. The primary path of the outdoors-sound propagation is the direct line-of-sight path; the secondary path is the ground-reflected path. Both of these paths are subject to sound attenuation due to the effect of ground cover between the sound source and distant locations.

In general, five types of ground cover are distinguishable from USGS maps for evaluation by the ATI computer model:

- Dense vegetation – forests, mangrove, and thick brush attenuate sound to the greatest extent.
- Wooded marsh – vegetation attenuates sound, but water reelects sound to a certain extent, so attenuation by this ground cover is not as great as that by denser vegetation.
- Water, marshes – water acts as a reflector for sound propagation, so attenuation over water is very slight.
- Open fields – where there is no dense vegetation or other barriers to sound, attenuation is slight.
- Urban and suburban areas – sound reflects well from pavement at acute incidence angles. Sound is attenuated to a significant extent, however, in urban areas close to the siren; buildings act as sound barriers and reflection is poor because of high incidence angles. In urban areas further away from the siren, sound propagates with a low attenuation rate as a result of increased reflection due to the lowered angle of incidence.

F. Wind Shadows

Wind gradients near the ground are usually positive; that is, wind speed increases with height. As a result, a wind shadow zone is most commonly encountered upwind of a siren because headwinds with positive wind gradients bend sound upward. Downwind, the sound rays are bent downward and no shadow zone is produced. Crosswind, there is a zone of transition.

7. Siren Characteristics

The ATI computer model requires the input of the siren type and rating. The computer analysis considers the siren sound output and fundamental frequency in computing the siren sound pressure levels. Vendors of commercial sirens claim that their sirens produce a sound level of 125 dBC at 100 feet. However, their sirens were tested in the field and in an anechoic chamber (Free Field Test) and the actual recorded sound level was approximately 122 dBC for dual tone rotating sirens. As a result of actual laboratory and field testing, the siren sound level at 100 feet that is used in the ATI computer model is 122 dBC rather than 125 dBC as claimed by siren vendors. The ratings of 122 dBC for commercial sirens should be considered as further conservation in our design.

8. Verification of the Siren Acoustic Computer Model

The accuracy of the model was checked during siren field testing. Comparisons were made between measured sound levels of randomly selected sirens and the sound levels predicted by the computer model. Excellent agreement between the measured and predicted sound levels was found. It should be noted that the model-predicted values are slightly less (by 1-3 dB) than the measured sound levels. This indicates that the computer model is conservative in its prediction of sound level contours.

9. Description of Maintenance and Testing Methods for the Siren System

Alert and Notification System (ANS)

Siren tests (Growl or Complete Cycle) are conducted by the Claiborne County Civil Defense (CCCD) and Tensas Parish Office of Homeland Security and Emergency Preparedness (TPHLS/EP) agencies and generally scheduled for 11:30 a.m. for Tensas Parish and 12:00 noon for Claiborne County on the first Monday of each month. At the discretion of the local agency directors, monthly siren tests may be rescheduled or cancelled.

The siren operability percentage is determined for the total system after each siren test.

Annual ANS training is conducted by GGNS Emergency Preparedness for Claiborne County Civil Defense, Claiborne County Sheriff's Office, Tensas Parish Office of Homeland Security and Emergency Preparedness and Tensas Parish Sheriff's Office.

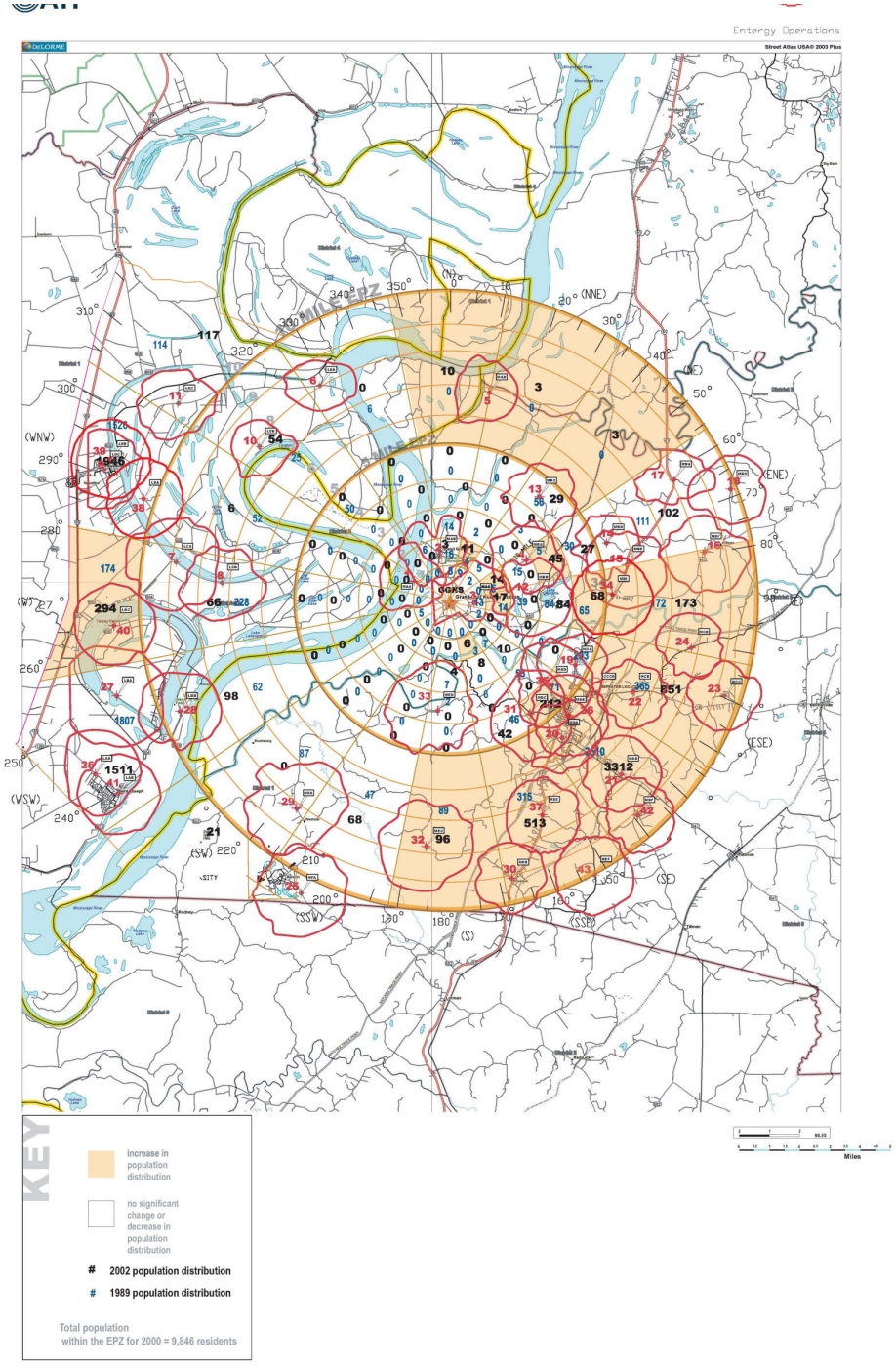
Testing Procedure

The testing procedure sends the signal two (2) times. This provides adequate signal to the sirens. The time-out timer will automatically stop the sirens after approximately four minutes; however, the sirens can be stopped manually.

Maintenance Procedure

Sirens may be polled, reset, resynchronized, and/or growl tested by Claiborne County Civil Defense or Tensas Parish Office of Homeland Security and Emergency Preparedness at their discretion to acquire system status. Problems identified during such activities are reported to GGNS. GGNS initiates appropriate maintenance processes to have any problems corrected.

Figure A3-1– Alert and Notification System Siren Locations



Appendix 4 – Evacuation Time Estimate

1. Introduction

The Grand Gulf Nuclear Station ETE report, published separately, describes the analyses undertaken and the results obtained by a study to develop Evacuation Time Estimates (ETE) for the GGNS located in Claiborne County, MS. Evacuation time estimates provide state and local governments with site-specific information needed for Protective Action decision-making.

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

- Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, NUREG 0654/FEMA-REP-1, Rev. 1, November 1980
- Analysis of Techniques for Estimating Evacuation Times for Emergency Planning Zones, NUREG/CR-1745, November 1980
- State of the Art in Evacuation Time Estimate Studies for Nuclear Power Plants, NUREG/CR-4831, March 1992
- Development of Evacuation Time Estimates for Nuclear Power Plants, NUREG/CR-6863, January 2005

2. Planning Basis and Assumptions

The major activities associated with the GGNS ETE project are briefly described below in chronological sequence:

- Attended “kick-off” meetings with GGNS personnel, Enercon Services and emergency management personnel representing state and local governments.
- Accessed U.S. Census Bureau data files for the year 2000. Studied Geographical Information Systems (GIS) maps of the area in the vicinity of the facility, then conducted a detailed field survey of the highway network.
- Synthesized this information to create an analysis network representing the highway system topology and capacities within the EPZ, extending 15 miles radially from the plant.
- Designed and sponsored a telephone survey of residents within the EPZ to gather focused data needs for this ETE study that were not contained within the census database. The survey instrument was reviewed and modified by state and county personnel prior to the survey.
- Data collection forms (provided to the counties at the kick-off meeting) were returned with data pertaining to employment, transients, and special facilities in each county.
- The traffic demand and trip-generation rate of evacuating vehicles were estimated from the gathered data. The trip generation rate reflected the estimated mobilization time (i.e., the time required by evacuees to prepare for the evacuation trip) that was computed using the results of the telephone survey of EPZ residents.
- The EPZ is partitioned into 16 Emergency Response Planning Areas (ERPAs). These existing ERPAs were accepted as the basis for the ETE analysis presented herein.

- "Regions" are groups of contiguous ERPA for which ETE are calculated. The configurations of these Regions depend upon wind direction and the radial extent of the impacted area. Each Region, other than those that approximate circular areas, approximates a "key-hole section" within the EPZ as required by NUREG 0654. A total of 12 Scenarios were evaluated for all Regions. Thus, there are a total of12x9=108 evacuation cases.
- The time-varying external circumstances are represented as Evacuation Scenarios, each described in terms of the following factors: (1) Season (Summer, Winter); (2) Day of Week (Midweek, Weekend); (3) Time of Day (Midday, Evening); and (4) Weather (Good, Rain, Ice). One special scenario involving construction of a new unit at the GGNS site was considered.
- The Planning Basis for the calculation of ETE is:
    - A rapidly escalating accident that quickly assumes the status of General Emergency such that the Advisory to Evacuate is virtually coincident with the siren alert.
    - While an unlikely accident scenario, this planning basis will yield ETE, measured as the elapsed time from the Advisory to Evacuate until the last vehicle exits the impacted Region, that represent "upper bound" estimates. This conservative Planning Basis is applicable for all initiating events including the prospect of a terrorist attack.
- If the emergency occurs while schools are in session, the ETE study assumes that the children will be evacuated by bus directly to reception centers located outside the EPZ. Parents, relatives, and neighbors are advised to not pick up their children at school prior to the arrival of the buses dispatched for that purpose. The ETE for school children are calculated separately.
- Evacuees who do not have access to a private vehicle will either ride-share with relatives, friends or neighbors, or be evacuated by buses provided as specified in the county evacuation plans. Those in special facilities will likewise be evacuated with public transit, as needed: bus, van, or ambulance, as required. Separate ETEs are calculated for the transit-dependent evacuees and for those evacuated from special facilities.

3. Computation of ETE

Each ETE quantifies the aggregate evacuation time estimated for the population within one of the Evacuation Regions to completely evacuate from that Region, under the circumstances defined for the Evacuation Scenarios. Separate ETEs are calculated for transit-dependent evacuees, including school children for applicable scenarios.

Except for Region R09, which is the evacuation of the entire EPZ, only a portion of the people within the EPZ would be advised to evacuate. That is, the Advisory to Evacuate applies only to those people occupying the specified impacted region. It is assumed that 100 percent of the people within the impacted region will evacuate in response to this Advisory. The people occupying the remainder of the EPZ outside the impacted region may be advised to take shelter.

The computation of ETE assumes that a portion of the population within the EPZ, but outside the impacted region, will elect to "voluntarily" evacuate. These voluntary evacuees could impede those others who are evacuating from within the impacted region. The impedance that could be caused by voluntary evacuees is considered in the computation of ETE for the impacted region.

The computational procedure is outlined as follows:

- A link-node representation of the highway network is coded. Each link represents a unidirectional length of highway; each node usually represents an intersection or merge point. The capacity of each link is estimated based on the field survey observations and on established procedures.
- The evacuation trips are generated at locations called "zonal centroids" located within the EPZ. The trip generation rates vary over time reflecting the mobilization process, and from one location (centroid) to another depending on population density and on whether a centroid is within, or outside, the impacted area.
- The computer models compute the routing patterns for evacuating vehicles that are compliant with federal guidelines (outbound relative to the location of GGNS), then simulate the traffic flow movements over space and time. This simulation process estimates the rate that traffic flow exits the impacted region.
- The ETE statistics provide the elapsed times for 50 percent, 90 percent, 95 percent and 100 percent, respectively, of the population within the impacted region, to evacuate from within the impacted region. These statistics are presented in tabular and graphical formats.

4. Traffic Management

The study includes the development of a comprehensive traffic management plan designed to expedite the evacuation of people from within an impacted region. This plan is also designed to control access into the EPZ after returning commuters have rejoined their families.

The plan takes the form of detailed schematics specifying: (1) the directions of evacuation travel to be facilitated, and other traffic movements to be discouraged; (2) the equipment needed (cones, barricades) and their deployment; (3) the locations of these "Traffic Control Points" (TCP); (4) the priority assigned to each traffic control point indicating its relative importance and how soon it should be manned relative to others; and (5) the number of traffic control personnel required.

This plan was reviewed with state and local law enforcement personnel.

5. Results

A compilation of selected information is presented in the figures and tables provided in the body of the report. The maximum calculated ETE, for clearing 100% of the population of the Plume Exposure Pathway EPZ, is approximately four hours. The ETE did not identify any impediments to the development of emergency plans for the GGNS site.

Tables A4-1 through A4-3 provide summaries of the estimated evacuation times for the general population, schools, and transit-dependent populations, respectively..

Table A4-1 Time To Clear The Indicated Area of 100 Percent of the Affected Population

	Summer		Summer		Summer		Winter		Winter		Winter		Winter	Winter
	Midweek		Weekend		Midweek Weekend		Midweek		Weekend		Midweek Weekend		Weekend	Midweek
	(1)	(2)	(3)	(4)	(5)	Scenario	(6)	(7)	(8)	(9)	(10)	Scenario	(11)	(12)
	Midday		Midday		Evening		Midday		Midday		Evening		Midday	Midday
Region (ERPA)	Good Weather	Rain	Good Weather	Rain	Good Weather	Region (ERPA)	Good Weather	Rain	Good Weather	Rain	Good Weather	Region (ERPA)	Alcorn Football + New Plant Construction	New Plant Construction
Entire 2 Mile Region, 5 Mile Region, and EPZ														
RO1 (1)	2:50	3:00	2:20	2:20	2:20	RO1 (1)	2:50	2:50	2:20	2:20	2:20	RO1 (1)	2:50	2:50
RO2 (1, 2A, 3A, 4A, 5A)	4:00	4:00	3:50	3:50	3:50	RO2 (1, 2A, 3A, 4A, 5A)	4:00	4:00	3:50	3:50	3:50	RO2 (1, 2A, 3A, 4A, 5A)	4:00	4:00
RO3 (All)	4:10	4:10	4:00	4:00	4:00	RO3 (All)	4:00	4:10	4:00	4:00	4:00	RO3 (All)	4:10	4:00
2 Mile Ring + Wind to 5 Miles														
RO4 Wind to NE (1, 2A)	4:00	4:00	3:50	3:50	3:50	RO4 Wind to NE (1, 2A)	4:00	4:00	3:50	3:50	3:50	RO4 Wind to NE (1, 2A)	4:00	4:00
RO5 Wind to SE (1, 3A, 4A, 5A)	4:00	4:00	3:50	3:50	3:50	RO5 Wind to SE (1, 3A, 4A, 5A)	4:00	4:00	3:50	3:50	3:50	RO5 Wind to SE (1, 3A, 4A, 5A)	4:00	4:00
Wind to NW Same as R1 (1)	2:50	3:00	2:20	2:20	2:20	Wind to NW Same as R1 (1)	2:50	2:50	2:20	2:20	2:20	Wind to NW Same as R1 (1)	2:50	2:50
Wind to SW Same as R1 (1)	2:50	3:00	2:20	2:20	2:20	Wind to SW Same as R1 (1)	2:50	2:50	2:20	2:20	2:20	Wind to SW Same as R1 (1)	2:50	2:50
5 Mile Ring + Wind to EPZ Boundary														
RO6 Wind to NE (1, 2A, 2B, 3A, 4A, 5A, 7)	4:00	4:00	3:50	3:50	3:50	RO6 Wind to NE (1, 2A, 2B, 3A, 4A, 5A, 7)	4:00	4:00	3:50	3:50	3:50	RO6 Wind to NE (1, 2A, 2B, 3A, 4A, 5A, 7)	4:00	4:00
RO7 Wind to SE (1, 2A, 3A, 3B, 4A, 4B, 5A, 5B, 6)	4:00	4:00	4:00	4:00	3:50	RO7 Wind to SE (1, 2A, 3A, 3B, 4A, 4B, 5A, 5B, 6)	4:00	4:00	3:50	4:00	3:50	RO7 Wind to SE (1, 2A, 3A, 3B, 4A, 4B, 5A, 5B, 6)	4:10	4:00
R08 Wind to NW (1, 2A, 3A, 4A, 5A, 7, 8, 9, 12)	4:00	4:00	3:50	3:50	3:50	R08 Wind to NW (1, 2A, 3A, 4A, 5A, 7, 8, 9, 12)	4:00	4:00	3:50	3:50	3:50	R08 Wind to NW (1, 2A, 3A, 4A, 5A, 7, 8, 9, 12)	4:00	4:00
RO9 Wind to SW (1, 2A, 3A, 4A, 5A, 5B, 6, 10, 11)	4:10	4:10	3:50	3:50	4:00	RO9 Wind to SW (1, 2A, 3A, 4A, 5A, 5B, 6, 10, 11)	4:00	4:00	3:50	3:50	4:00	RO9 Wind to SW (1, 2A, 3A, 4A, 5A, 5B, 6, 10, 11)	4:10	4:00

Table A4-2 - School Evacuation Time Estimates - Good Weather											
Schools	Driver Mobilization Time (min)	Travel Time from Depot (min)	Loading Time (min)	Dist to EPZ Boundary (mi.) Major Road	Dist to EPZ Boundary (mi.) Local Road	Travel Time to EPZ Bdry (min)	ETE (hr:min)	Dist EPZ Bndry to R.C. Major Road	Dist EPZ Bndry to R.C. Local Road	Travel Time EPZ Bdry to RC (min)	ETE to R.C. (hr:min)
Claiborne County Schools											
A.W. Watson Elementary School	90	30	5	4.2	2.8	11	2:20	38.1	0.7	48	3:05
Chamberlain-Hunt Academy	90	30	5	3.9	0.8	7	2:15	41.1	0.7	51	3:05
Claiborne Educational Foundation	90	30	5	3.9	0.6	6	2:15	41.1	0.7	51	3:05
Port Gibson High	90	30	5	4.2	2.2	10	2:15	38.1	0.7	48	3:05
Port Gibson Middle School	90	30	5	3.9	1	7	2:15	41.1	0.7	51	3:05
Reachout Foundation	90	30	5	2.6	0.3	4	2:10	38.1	0.7	48	3:00
						Average ETE:	2:15	Average:		50	3:04
Tensas Parish Schools											
Davidson High School	90	30	5	3.1	0.2	5	2:10	27.6	0	34	2:45
Newellton Christian Academy	90	30	5	7.5	1.3	12	2:20	17.2	0	21	2:40
Newellton Elementary	90	30	5	7.5	0.8	11	2:20	17.2	0	21	2:40
Tensas Academy	90	30	5	3.1	0.2	5	2:10	27.6	0	34	2:45
Tensas Charter School	90	30	5	7.5	0.8	11	2:20	17.2	0	21	2:40
Tensas Elementary	90	30	5	2.4	0.2	4	2:10	27.6	0	34	2:45
Tensas High School	90	30	5	2.5	0.2	4	2:10	27.6	0	34	2:45
						Average ETE:	2:14	Average:		28	2:42

Table A4-3 Transit-Dependent Evacuation Time Estimates												
GOOD WEATHER												
	Single Wave					**Second Wave**						
County/ Pariish	**Mobilization (min)**	**Travel Time to EPZ (min)**	**Route Travel Time (min)**	**Pickup Time (min)**	**ETE (hr:min)**	**Arrive at RC (min)**	**Unload (min)**	**Driver Rest (min)**	**Return to EPZ (min)**	**Route Travel Time (min)**	**Pickup Time (min)**	**ETE (hr:min)**
Claiborne	90	30	20	15	**2:35**	185	5	15	50	20	15	**4:50**
Tensas	90	30	20	15	**2:35**	165	5	15	30	20	15	**4:10**
RAIN												
Claiborne	90	35	23	20	**2:50**	210	10	15	55	23	20	**5:35**
Tensas	90	35	23	20	**2:50**	185	10	15	35	23	20	**4:50**

NOTE: The second wave of transit bus trips are only required if there are not sufficient buses to evacuate everyone in the first wave. If bus resources are sufficient, the one wave ETE should be used.

The following figures illustrate selected information from the ETE:

- Figure A4-1 – illustrates the Plume Exposure Pathway EPZ, and Emergency Response Planning Areas
- Figure A4-2 – illustrates the permanent resident population of the Plume Exposure Pathway EPZ in a sector format
- Figure A4-3 – illustrates the locations of reception centers for the Plume Exposure Pathway EPZ population
- Figures A4-4 through A4-7 – illustrate the evacuation routes for the Plume Exposure Pathway EPZ population

Figure A4-1 - Grand Gulf Nuclear Station 2007 Permanent Resident Population by ERPA

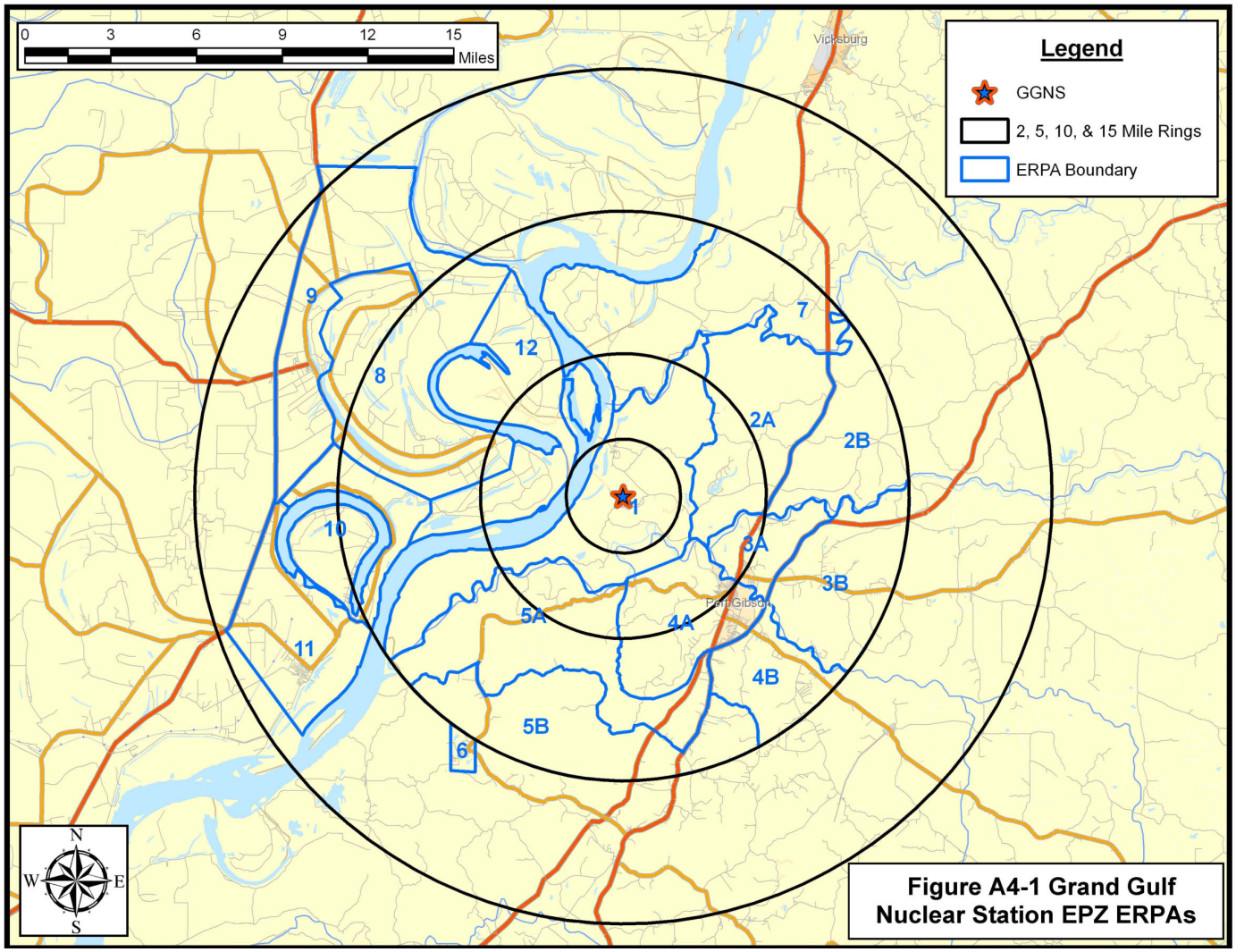
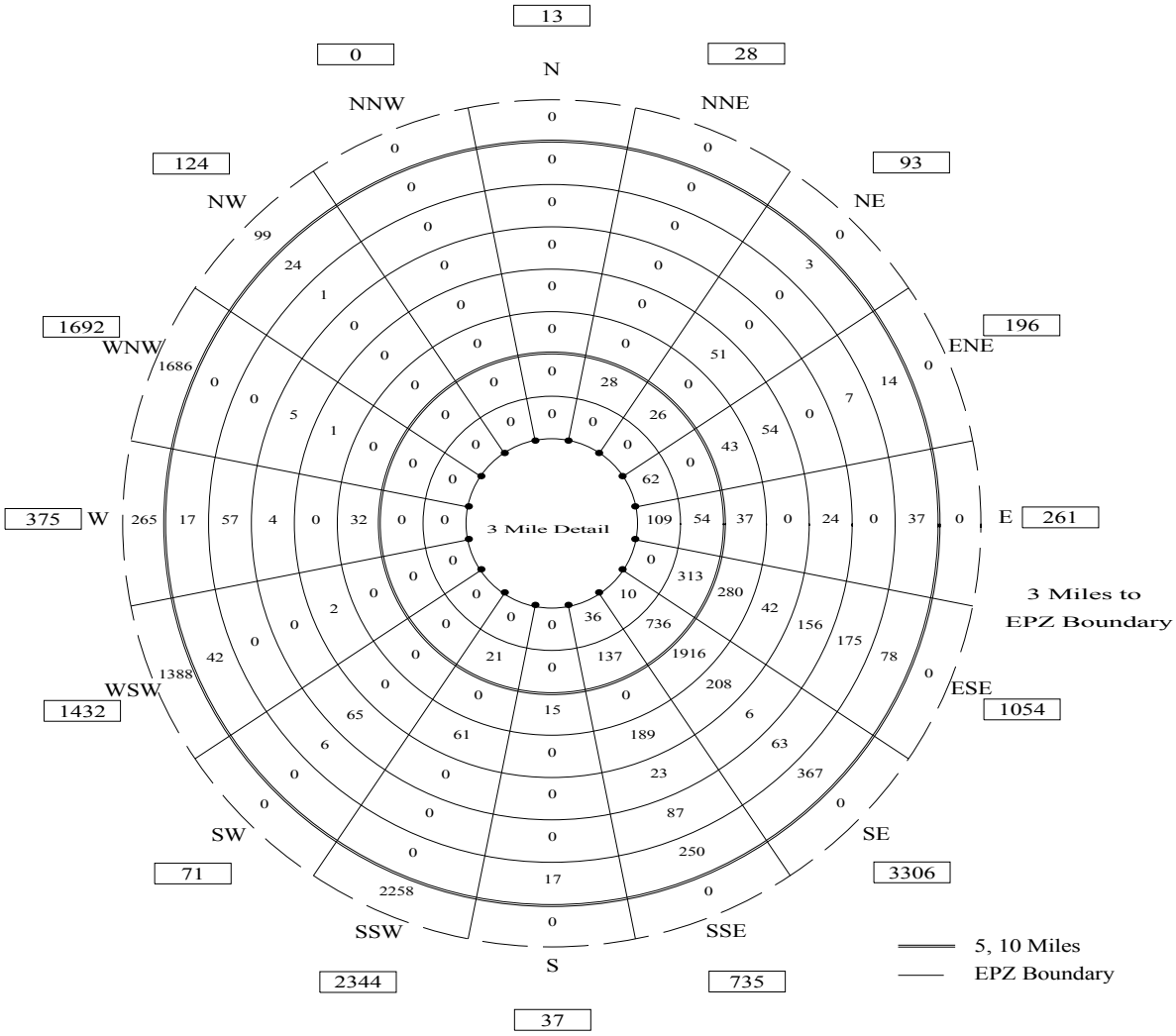


Figure A4-2 - Grand Gulf Nuclear Station 2007 Permanent Resident Population by Sector



Resident Population			
Miles	Ring Subtotal	Total Miles	Cumulative Total
0-1	0	0-1	0
1-2	65	0-2	65
2-3	9	0-3	74
3-4	217	0-4	291
4-5	1315	0-5	1606
5-6	2323	0-6	3929
6-7	608	0-7	4537
7-8	283	0-8	4820
8-9	396	0-9	5216
9-10	849	0-10	6065
10-EPZ	5696	0-EPZ	11761

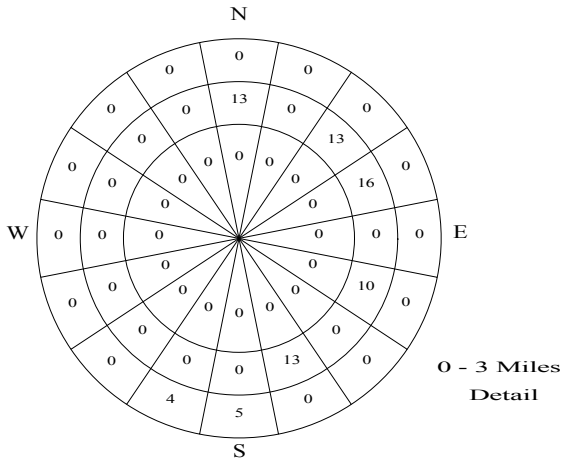


Figure A4-3 – General Population Reception Centers

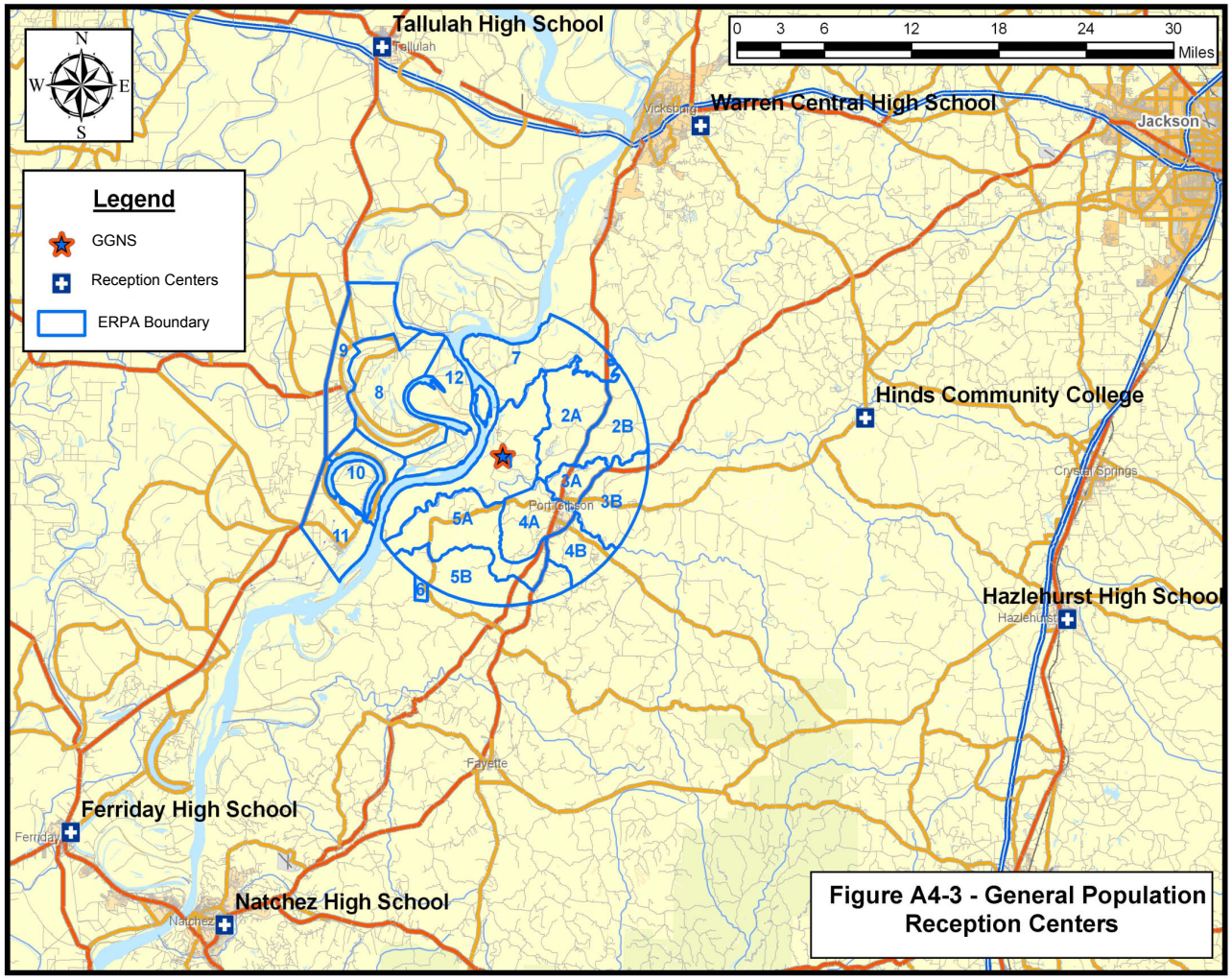


Figure A4-4 – Evacuation Route Map for the Northeastern Quadrant

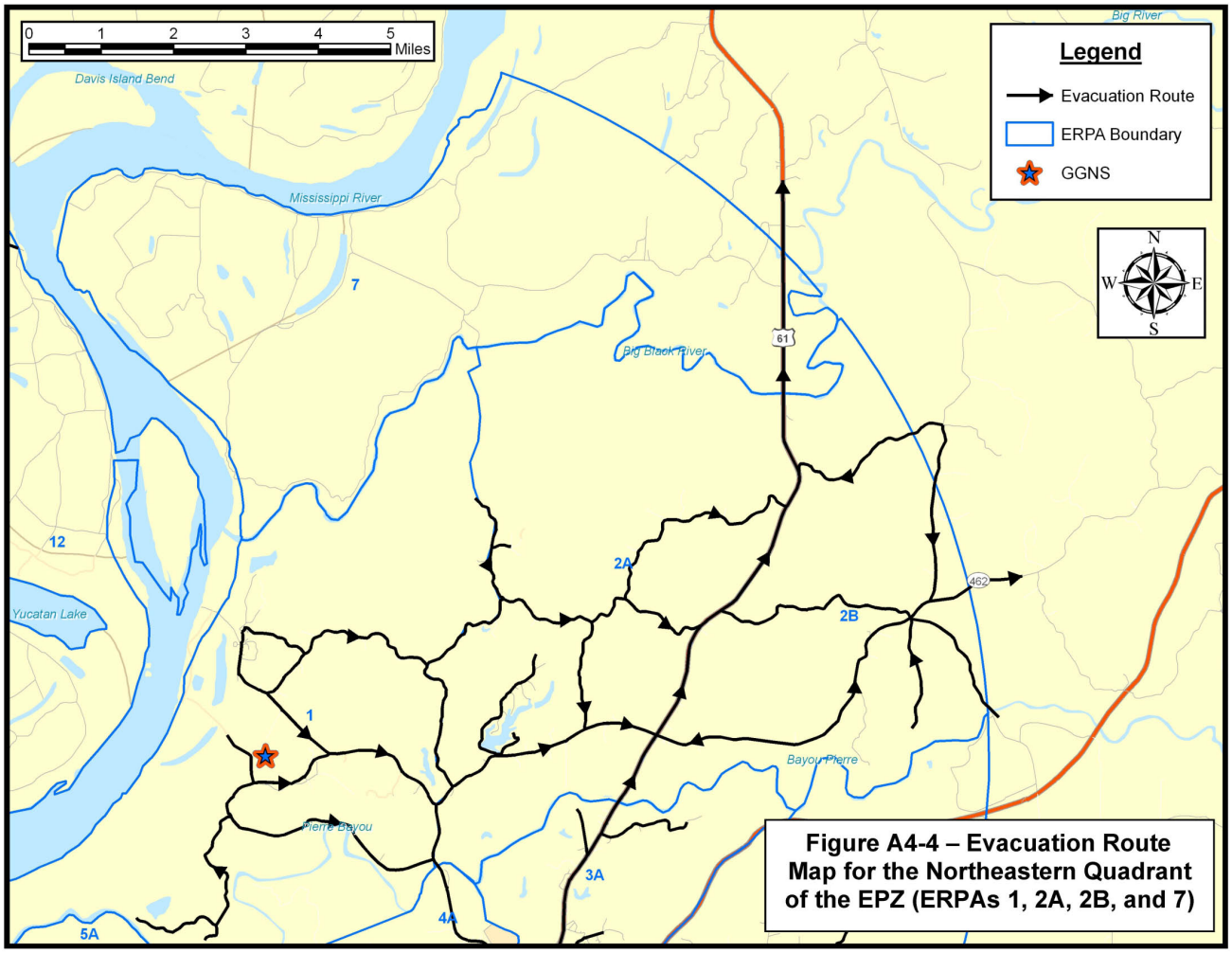


Figure A4-5 - Evacuation Route Map for the Southeastern Quadrant

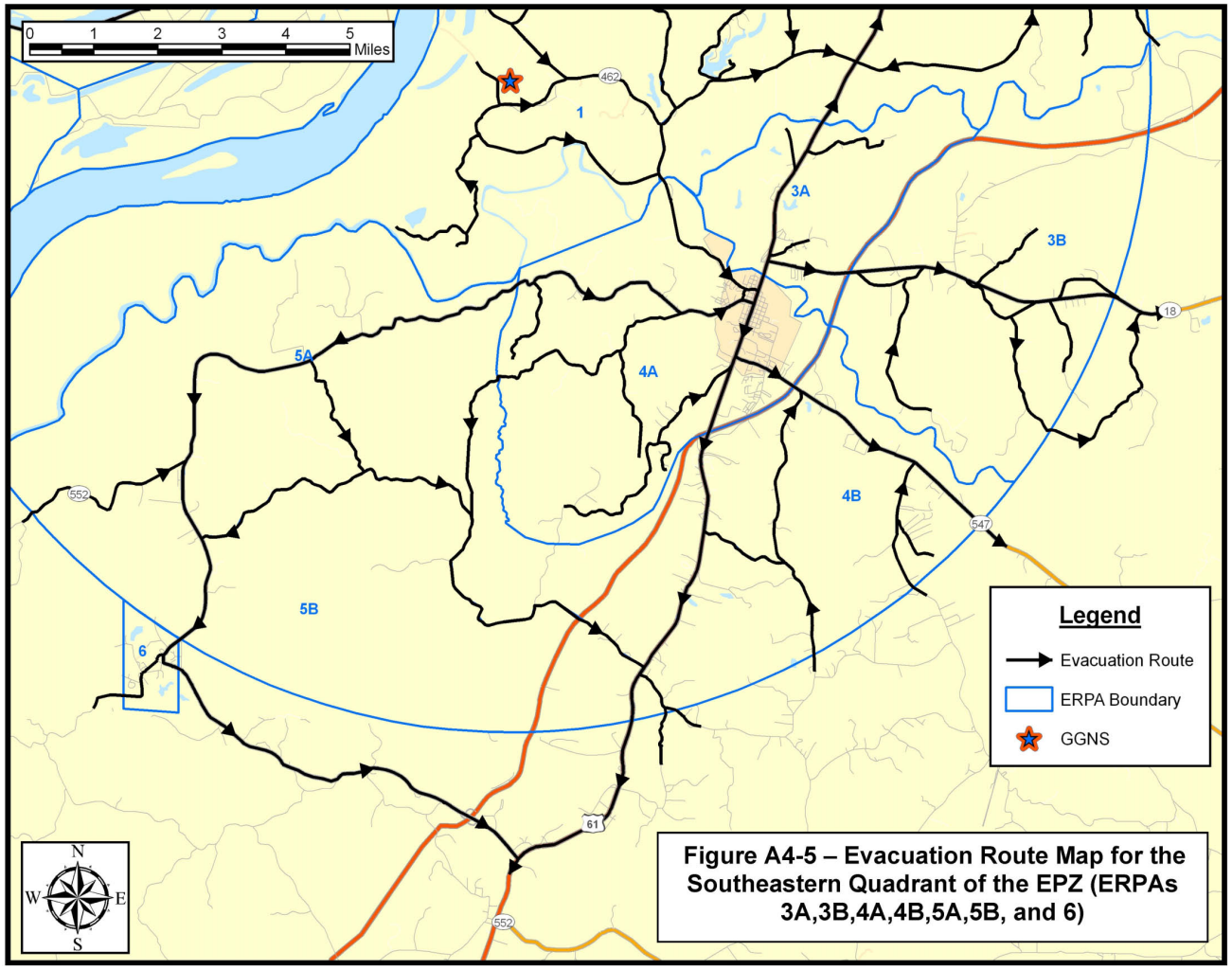


Figure A4-6 - Evacuation Route Map for the Southwestern Quadrant

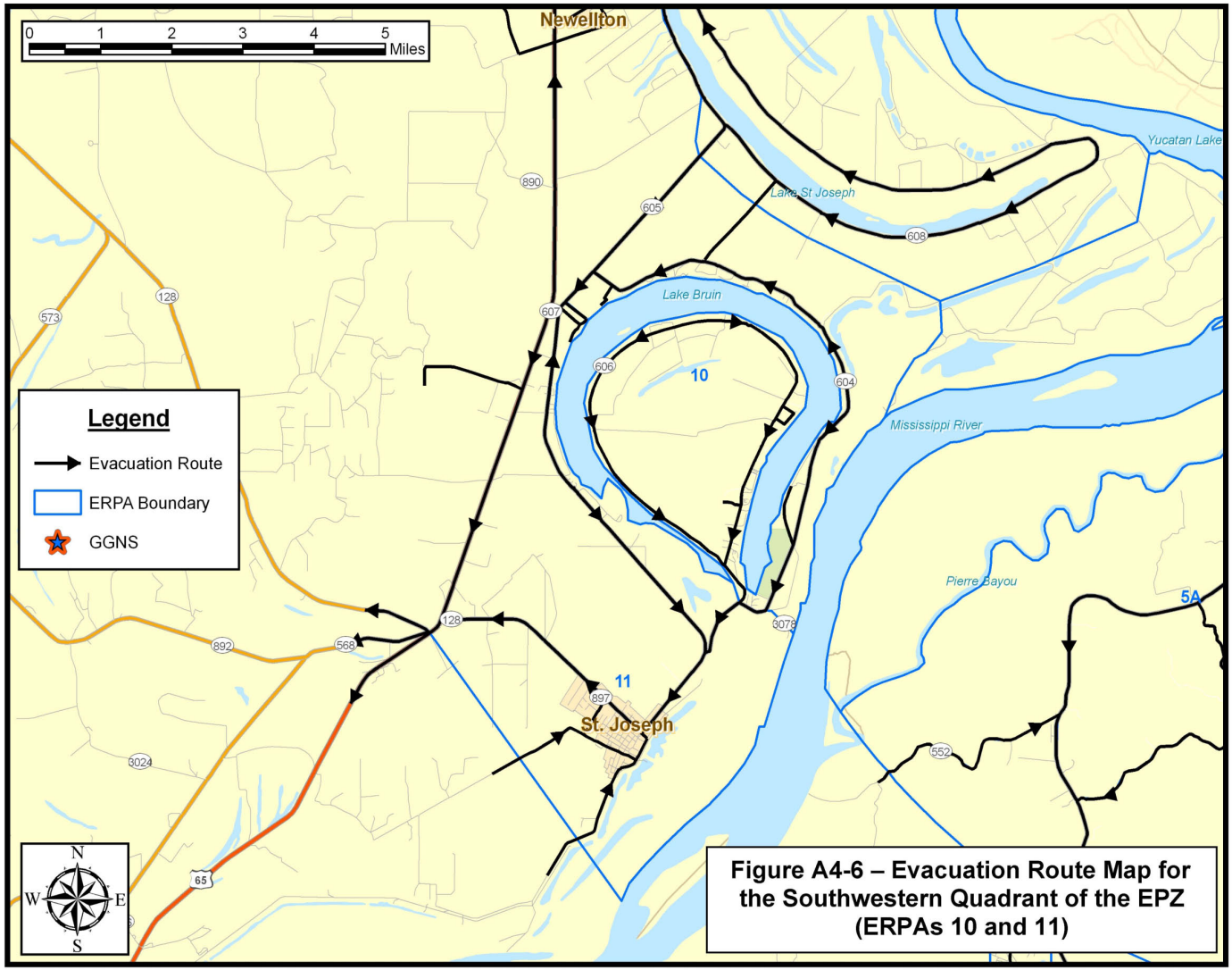
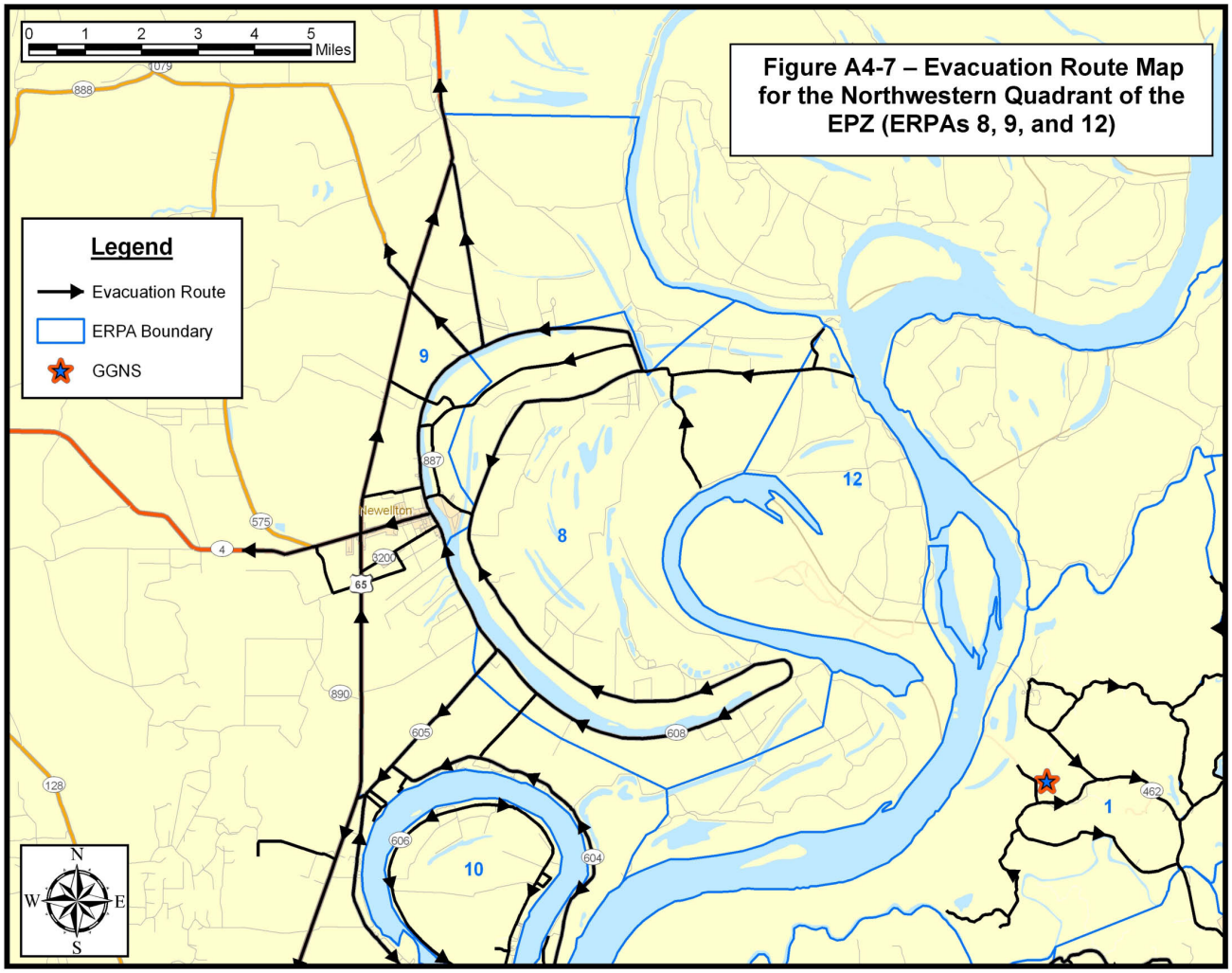


Figure A4-7 - Evacuation Route Map for the Northwestern Quadrant



Appendix 5 – Emergency Plan Procedures - Topical List

Emergency Plan Procedures address a range of actions needed to implement the contents of this emergency plan. The Emergency Plan Procedures address, at a minimum, the following topics, including parenthetical references to the affected sections of this plan:

- Emergency Response Organization (II.A.1, I.B.1)
- Emergency Classification (II.D)
- Notifications Associated with Emergency Conditions (II.E, II.L.1)
- Emergency Communications (II.F)
- Emergency Response Facilities (II.H)
- Off-Site Dose Calculations (II.I)
- Protective Action Recommendations (II.J.7, II.J.10)
- Activation of the Emergency Response Organization (II.B)
- Site Accountability and Evacuation (II.J.4, II.J.5)
- Core Damage Assessment and Accident Consequence Assessment (II.I)
- Radiation Protection Under Emergency Conditions (II.K)
- Plume Tracking and Assessment of Off-site Radiological Conditions (II.I)
- Respiratory Protection and Distribution of Radioprotective Drugs (II.J.6)
- Personnel Monitoring (II.K.2, II.K.3)
- Decontamination (II.K.5, II.K.7)
- Obtaining and Analyzing High Activity Samples Under Emergency Conditions (II.I)
- Emergency Media Relations (II.G)
- Recovery and Reentry (II.M)

Additional plant procedures address various activities that are required to support the ongoing maintenance of emergency preparedness. These supporting procedures are not included within the body of the emergency plan implementing procedures. These supporting procedures address, at a minimum, the following topics, including parenthetical references to the affected sections of this plan:

- Emergency Equipment Inventory and Operational Tests (II.H.10)
- Conduct of Emergency Drills and Exercises (II.N)
- Testing of Emergency Communications Systems (II.N, II.F)
- Emergency Plan Training (II.G.5, II.O, II.P.1)
- Maintaining Emergency Preparedness (II.P)
- Determination of Individual Radiation Doses (K.3)

Appendix 6 – Emergency Equipment and Supplies

EOI maintains inventories of emergency equipment and supplies for use by emergency response personnel in the ERFs and by EOI's off-site field monitoring teams. The actual inventories are based on the activities that occur in, or are dispatched from, each individual facility. Actual inventories are established in inventory lists in accordance with implementing procedures. Emergency kit inventories typically include the following:

- Radiation survey instrument(s)
- Surface contamination control and survey supplies
- Air sampling equipment and sampling media
- Scaler(s) or other appropriate radio-analytical counting instrument(s)
- Protective clothing
- Contamination control and decontamination supplies
- Respiratory protection equipment
- Radiological control posting and warning supplies
- Personnel monitoring equipment (record and instantaneous reading dosimeters)
- Radioiodine blocking agent
- Emergency lighting equipment
- Appropriate maps
- Computer equipment
- Plans, procedures, and drawings
- Communications equipment
- Administrative and recordkeeping supplies
- Batteries and other expendable supplies
- First aid supplies (e.g., bandages, stretchers, splints, topical ointments)
- Communications equipment
- Procedures

Appendix 7 – Certification Letters

Entergy
P.O. Box 756
Port Gibson, MS 39150
Tel 601 437 6409

William R. Brian
Vice President - Operations
Grand Gulf Nuclear Station

November 28, 2007

Mr. Roderick L. Devoual
Claiborne County Civil Defense
P.O. Box 558
Port Gibson, MS 39150

Dear Mr. Devoual,

As previously indicated in public announcements and meetings, Entergy, in cooperation with NuStart Energy Development Corporation (NuStart), is developing a Combined License (COL) application for submission to the U.S. Nuclear Regulatory Commission (NRC), consistent with the requirements of 10 CFR 52, for an additional unit at the Grand Gulf Nuclear Site near Port Gibson, Mississippi. The purpose of this initiative is to develop a COL application that will ultimately lead to NRC approval to construct and operate a new commercial nuclear generating unit at the site.

A key part of this COL application is the development of emergency plans which provide information sufficient to demonstrate compliance with pertinent regulatory requirements. These plans take credit, to the extent practical, for the site, federal, state, and local plans already in place for other nuclear generating units in Mississippi and Louisiana. With the cooperation of affected state, and local agencies, Entergy and NuStart have developed Part 5 of the COL application, the "Grand Gulf Unit 3 Combined License Application Emergency Plan," Revision C dated October 25, 2007. The emergency plan includes the emergency classification system required by 10 CFR 50. Entergy and NuStart have worked with the nuclear industry to develop a set of initiating conditions and emergency action levels consistent with this emergency classification system and appropriate to the proposed nuclear plant design.

In addition to the COL Emergency Plan, evacuation time estimates have been developed with input from various State and local government agencies in Mississippi and Louisiana. The evacuation time estimate report is included in the COL application.

Emergency planning provisions of 10 CFR 52 and the COL application process require that Entergy and NuStart "make good faith efforts to obtain certifications from the local and State governmental agencies with emergency planning responsibilities." At this time, we are seeking certification from Claiborne County Civil Defense that:

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

The actual emergency planning arrangements would be finalized in a letter of agreement at a later stage in the new facilities' licensing process.

Claiborne County Civil Defense's participation in these emergency planning efforts is greatly appreciated. Your signature on page 3 of this letter also indicates that you concur with the emergency classification system, initiating conditions and emergency action levels and evacuation time estimates proposed in the Grand Gulf Unit 3 Emergency Plan. Please sign and return a copy of this letter at your earliest convenience.

Sincerely,

William R. Brian, for
Site Vice President, Grand Gulf Nuclear Station

The Claiborne County Civil Defense has reviewed the emergency plan supporting the Combined License Application for a new nuclear generating unit at the Grand Gulf Nuclear Station, and Claiborne County Civil Defense certifies its commitment that:

- the proposed emergency plans are practicable;
- Claiborne County Civil Defense is committed to participating in further development of the plans, including any required field demonstrations; and
- Claiborne County Civil Defense is committed to executing their responsibilities under the plans in the event of an emergency.

Furthermore, Claiborne County Civil Defense concurs with the proposed emergency classification system, initiating conditions, emergency action levels described in the Combined License Application Emergency Plan and Grand Gulf Nuclear Station Development of Evacuation Time Estimates prepared by KLD Associates, Inc. dated September, 2007.

It is my understanding that the specific nature of arrangements in support of emergency preparedness for operation of the proposed new nuclear unit will be clearly established in a properly executed and binding letter of agreement that will be included in the Grand Gulf Unit 3 Emergency Plan if and when Entergy proceeds with construction and operation of this nuclear facility.

Signature: Roderick L. Devoual

01-16-08

Mr. Roderick L. Devoual, Date
Director, Claiborne County Civil Defense

Return to:
Thomas L. Williamson
Project Manager, GGNS COLA
Entergy Nuclear
1340 Echelon Parkway
Jackson, MS 39213

Entergy
P.O. Box 756
Port Gibson, MS 39150
Tel 601 437 6409

William R. Brian
Vice President - Operations
Grand Gulf Nuclear Station

November 28, 2007

Mr. Jeffery P. Meyers
Emergency & Radiological Services Division
Louisiana Department of Environmental
Quality
602 N. Fifth Street
Baton Rouge, LA 70802

Dear Mr. Meyers,

As previously indicated in public announcements and meetings, Entergy, in cooperation with NuStart Energy Development Corporation (NuStart), is developing a Combined License (COL) application for submission to the U.S. Nuclear Regulatory Commission (NRC), consistent with the requirements of 10 CFR 52, for an additional unit at the Grand Gulf Nuclear Site near Port Gibson, Mississippi. The purpose of this initiative is to develop a COL application that will ultimately lead to NRC approval to construct and operate a new commercial nuclear generating unit at the site.

A key part of this COL application is the development of emergency plans which provide information sufficient to demonstrate compliance with pertinent regulatory requirements. These plans take credit, to the extent practical, for the site, federal, state, and local plans already in place for other nuclear generating units in Mississippi and Louisiana. With the cooperation of affected state, and local agencies, Entergy and NuStart have developed Part 5 of the COL application, the "Grand Gulf Unit 3 Combined License Application Emergency Plan," Revision C dated October 25, 2007. The emergency plan includes the emergency classification system required by 10 CFR 50. Entergy and NuStart have worked with the nuclear industry to develop a set of initiating conditions and emergency action levels consistent with this emergency classification system and appropriate to the proposed nuclear plant design.

In addition to the COL Emergency Plan, evacuation time estimates have been developed with input from various State and local government agencies in Mississippi and Louisiana. The evacuation time estimate report is included in the COL application.

Emergency planning provisions of 10 CFR 52 and the COL application process require that Entergy and NuStart "make good faith efforts to obtain certifications from the local and State governmental agencies with emergency planning responsibilities." At this time, we are seeking certification from Emergency & Radiological Services Division Louisiana Department of Environmental Quality that:

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

The actual emergency planning arrangements would be finalized in a letter of agreement at a later stage in the new facilities' licensing process.

Emergency & Radiological Services Division Louisiana Department of Environmental Quality's participation in these emergency planning efforts is greatly appreciated. Your signature on page 3 of this letter also indicates that you concur with the emergency classification system, initiating conditions and emergency action levels and evacuation time estimates proposed in the Grand Gulf Unit 3 Emergency Plan. Please sign and return a copy of this letter at your earliest convenience.

Sincerely,

William R. Brian, for
Site Vice President, Grand Gulf Nuclear Station

The Emergency & Radiological Services Division Louisiana Department of Environmental Quality has reviewed the emergency plan supporting the Combined License Application for a new nuclear generating unit at the Grand Gulf Nuclear Station, and Emergency & Radiological Services Division Louisiana Department of Environmental Quality certifies its commitment that:

- the proposed emergency plans are practicable;
- Emergency & Radiological Services Division Louisiana Department of Environmental Quality is committed to participating in further development of the plans, including any required field demonstrations; and
- Emergency & Radiological Services Division Louisiana Department of Environmental Quality is committed to executing their responsibilities under the plans in the event of an emergency.

Furthermore, Emergency & Radiological Services Division Louisiana Department of Environmental Quality concurs with the proposed emergency classification system, initiating conditions, emergency action levels described in the Combined License Application Emergency Plan and Grand Gulf Nuclear Station Development of Evacuation Time Estimates prepared by KLD Associates, Inc. dated September, 2007.

It is my understanding that the specific nature of arrangements in support of emergency preparedness for operation of the proposed new nuclear unit will be clearly established in a properly executed and binding letter of agreement that will be included in the Grand Gulf Unit 3 Emergency Plan if and when Entergy proceeds with construction and operation of this nuclear facility.

Signature:

01/17/08

Mr. Jeffrey P. Meyers, Date
Administrator, Emergency & Radiological Services Division
Louisiana Department of Environmental Quality

Return to:
Thomas L. Williamson
Project Manager, GGNS COLA
Entergy Nuclear
1340 Echelon Parkway
Jackson, MS 39213

Entergy
P.O. Box 756
Port Gibson, MS 39150
Tel 601 437 6409

William R. Brian
Vice President - Operations
Grand Gulf Nuclear Station

November 28, 2007

Mr. Jeff Smith
Louisiana Governor's Office of Homeland
Security & Emergency Preparedness
7667 Independence Blvd.
Baton Rouge, LA 70806

Dear Mr. Smith,

As previously indicated in public announcements and meetings, Entergy, in cooperation with NuStart Energy Development Corporation (NuStart), is developing a Combined License (COL) application for submission to the U.S. Nuclear Regulatory Commission (NRC), consistent with the requirements of 10 CFR 52, for an additional unit at the Grand Gulf Nuclear Site near Port Gibson, Mississippi. The purpose of this initiative is to develop a COL application that will ultimately lead to NRC approval to construct and operate a new commercial nuclear generating unit at the site.

A key part of this COL application is the development of emergency plans which provide information sufficient to demonstrate compliance with pertinent regulatory requirements. These plans take credit, to the extent practical, for the site, federal, state, and local plans already in place for other nuclear generating units in Mississippi and Louisiana. With the cooperation of affected state, and local agencies, Entergy and NuStart have developed Part 5 of the COL application, the "Grand Gulf Unit 3 Combined License Application Emergency Plan," Revision C dated October 25, 2007. The emergency plan includes the emergency classification system required by 10 CFR 50. Entergy and NuStart have worked with the nuclear industry to develop a set of initiating conditions and emergency action levels consistent with this emergency classification system and appropriate to the proposed nuclear plant design.

In addition to the COL Emergency Plan, evacuation time estimates have been developed with input from various State and local government agencies in Mississippi and Louisiana. The evacuation time estimate report is included in the COL application.

Emergency planning provisions of 10 CFR 52 and the COL application process require that Entergy and NuStart "make good faith efforts to obtain certifications from the local and State governmental agencies with emergency planning responsibilities." At this time, we are

seeking certification from Louisiana Governor's Office of Homeland Security & Emergency Preparedness that:

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

The actual emergency planning arrangements would be finalized in a letter of agreement at a later stage in the new facilities' licensing process.

Louisiana Governor's Office of Homeland Security & Emergency Preparedness's participation in these emergency planning efforts is greatly appreciated. Your signature on page 3 of this letter also indicates that you concur with the emergency classification system, initiating conditions and emergency action levels and evacuation time estimates proposed in the Grand Gulf Unit 3 Emergency Plan. Please sign and return a copy of this letter at your earliest convenience.

Sincerely,

William R. Brian, for
Site Vice President, Grand Gulf Nuclear Station

The Louisiana Governor's Office of Homeland Security & Emergency Preparedness has reviewed the emergency plan supporting the Combined License Application for a new nuclear generating unit at the Grand Gulf Nuclear Station, and Louisiana Governor's Office of Homeland Security & Emergency Preparedness certifies its commitment that:

- the proposed emergency plans are practicable;
- Louisiana Governor's Office of Homeland Security & Emergency Preparedness is committed to participating in further development of the plans, including any required field demonstrations; and
- Louisiana Governor's Office of Homeland Security & Emergency Preparedness is committed to executing their responsibilities under the plans in the event of an emergency.

Furthermore, Louisiana Governor's Office of Homeland Security & Emergency Preparedness concurs with the proposed emergency classification system, initiating conditions, emergency action levels described in the Combined License Application Emergency Plan and Grand Gulf Nuclear Station Development of Evacuation Time Estimates prepared by KLD Associates, Inc. dated September, 2007.

It is my understanding that the specific nature of arrangements in support of emergency preparedness for operation of the proposed new nuclear unit will be clearly established in a properly executed and binding letter of agreement that will be included in the Grand Gulf Unit 3 Emergency Plan if and when Entergy proceeds with construction and operation of this nuclear facility.

Signature:

Fred Palmero, Dep Dir — 1/17/08

for Mr. Jeff Smith, Date
Acting Director, Louisiana Governor's Office of
Homeland Security & Emergency Preparedness

Return to:
Thomas L. Williamson
Project Manager, GGNS COLA
Entergy Nuclear
1340 Echelon Parkway
Jackson, MS 39213

Entergy
P.O. Box 756
Port Gibson, MS 39150
Tel 601 437 6409

William R. Brian
Vice President - Operations
Grand Gulf Nuclear Station

November 28, 2007

Mr. Mike Womack
Mississippi Emergency Management Agency
P.O. Box 5644
Pearl, MS 39208

Dear Mr. Womack,

As previously indicated in public announcements and meetings, Entergy, in cooperation with NuStart Energy Development Corporation (NuStart), is developing a Combined License (COL) application for submission to the U.S. Nuclear Regulatory Commission (NRC), consistent with the requirements of 10 CFR 52, for an additional unit at the Grand Gulf Nuclear Site near Port Gibson, Mississippi. The purpose of this initiative is to develop a COL application that will ultimately lead to NRC approval to construct and operate a new commercial nuclear generating unit at the site.

A key part of this COL application is the development of emergency plans which provide information sufficient to demonstrate compliance with pertinent regulatory requirements. These plans take credit, to the extent practical, for the site, federal, state, and local plans already in place for other nuclear generating units in Mississippi and Louisiana. With the cooperation of affected state, and local agencies, Entergy and NuStart have developed Part 5 of the COL application, the "Grand Gulf Unit 3 Combined License Application Emergency Plan," Revision C dated October 25, 2007. The emergency plan includes the emergency classification system required by 10 CFR 50. Entergy and NuStart have worked with the nuclear industry to develop a set of initiating conditions and emergency action levels consistent with this emergency classification system and appropriate to the proposed nuclear plant design.

In addition to the COL Emergency Plan, evacuation time estimates have been developed with input from various State and local government agencies in Mississippi and Louisiana. The evacuation time estimate report is included in the COL application.

Emergency planning provisions of 10 CFR 52 and the COL application process require that Entergy and NuStart "make good faith efforts to obtain certifications from the local and State governmental agencies with emergency planning responsibilities." At this time, we are seeking certification from Mississippi Emergency Management Agency that:

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

The actual emergency planning arrangements would be finalized in a letter of agreement at a later stage in the new facilities' licensing process.

Mississippi Emergency Management Agency's participation in these emergency planning efforts is greatly appreciated. Your signature on page 3 of this letter also indicates that you concur with the emergency classification system, initiating conditions and emergency action levels and evacuation time estimates proposed in the Grand Gulf Unit 3 Emergency Plan. Please sign and return a copy of this letter at your earliest convenience.

Sincerely,

William R. Brian,
Site Vice President, Grand Gulf Nuclear Station

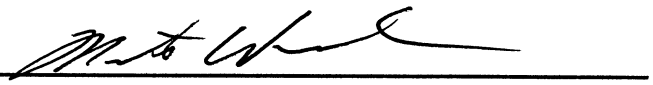
The Mississippi Emergency Management Agency has reviewed the emergency plan supporting the Combined License Application for a new nuclear generating unit at the Grand Gulf Nuclear Station, and Mississippi Emergency Management Agency certifies its commitment that:

- the proposed emergency plans are practicable;
- Mississippi Emergency Management Agency is committed to participating in further development of the plans, including any required field demonstrations; and
- Mississippi Emergency Management Agency is committed to executing their responsibilities under the plans in the event of an emergency.

Furthermore, Mississippi Emergency Management Agency concurs with the proposed emergency classification system, initiating conditions, emergency action levels described in the Combined License Application Emergency Plan and Grand Gulf Nuclear Station Development of Evacuation Time Estimates prepared by KLD Associates, Inc. dated September, 2007.

It is my understanding that the specific nature of arrangements in support of emergency preparedness for operation of the proposed new nuclear unit will be clearly established in a properly executed and binding letter of agreement that will be included in the Grand Gulf Unit 3 Emergency Plan if and when Entergy proceeds with construction and operation of this nuclear facility.

Signature:



20 Dec 07

Mr. Mike Womack, Date
Director, Mississippi Emergency Management Agency

Return to:
Thomas L. Williamson
Project Manager, GGNS COLA
Entergy Nuclear
1340 Echelon Parkway
Jackson, MS 39213

Entergy

Received
Entergy
P.O. Box 756
Port Gibson, MS 39150
Tel 601 437 6409

Radiological Health

Vice President - Operations
Grand Gulf Nuclear Station

November 28, 2007

Mr. B. J. Smith
Radiological Health Division Mississippi
Department of Health
3150 Lawson Street
Jackson, MS 39213

Dear Mr. Smith,

As previously indicated in public announcements and meetings, Entergy, in cooperation with NuStart Energy Development Corporation (NuStart), is developing a Combined License (COL) application for submission to the U.S. Nuclear Regulatory Commission (NRC), consistent with the requirements of 10 CFR 52, for an additional unit at the Grand Gulf Nuclear Site near Port Gibson, Mississippi. The purpose of this initiative is to develop a COL application that will ultimately lead to NRC approval to construct and operate a new commercial nuclear generating unit at the site.

A key part of this COL application is the development of emergency plans which provide information sufficient to demonstrate compliance with pertinent regulatory requirements. These plans take credit, to the extent practical, for the site, federal, state, and local plans already in place for other nuclear generating units in Mississippi and Louisiana. With the cooperation of affected state, and local agencies, Entergy and NuStart have developed Part 5 of the COL application, the "Grand Gulf Unit 3 Combined License Application Emergency Plan," Revision C dated October 25, 2007. The emergency plan includes the emergency classification system required by 10 CFR 50. Entergy and NuStart have worked with the nuclear industry to develop a set of initiating conditions and emergency action levels consistent with this emergency classification system and appropriate to the proposed nuclear plant design.

In addition to the COL Emergency Plan, evacuation time estimates have been developed with input from various State and local government agencies in Mississippi and Louisiana. The evacuation time estimate report is included in the COL application.

Emergency planning provisions of 10 CFR 52 and the COL application process require that Entergy and NuStart "make good faith efforts to obtain certifications from the local and State governmental agencies with emergency planning responsibilities." At this time, we are seeking certification from Radiological Health Division Mississippi Department of Health that:

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

The actual emergency planning arrangements would be finalized in a letter of agreement at a later stage in the new facilities' licensing process.

Radiological Health Division Mississippi Department of Health's participation in these emergency planning efforts is greatly appreciated. Your signature on page 3 of this letter also indicates that you concur with the emergency classification system, initiating conditions and emergency action levels and evacuation time estimates proposed in the Grand Gulf Unit 3 Emergency Plan. Please sign and return a copy of this letter at your earliest convenience.

Sincerely,

William R. Brian,
Site Vice President, Grand Gulf Nuclear Station

The Radiological Health Division Mississippi Department of Health has reviewed the emergency plan supporting the Combined License Application for a new nuclear generating unit at the Grand Gulf Nuclear Station, and Radiological Health Division Mississippi Department of Health certifies its commitment that:

- the proposed emergency plans are practicable;
- Radiological Health Division Mississippi Department of Health is committed to participating in further development of the plans, including any required field demonstrations; and
- Radiological Health Division Mississippi Department of Health is committed to executing their responsibilities under the plans in the event of an emergency.

Furthermore, Radiological Health Division Mississippi Department of Health concurs with the proposed emergency classification system, initiating conditions, emergency action levels described in the Combined License Application Emergency Plan and Grand Gulf Nuclear Station Development of Evacuation Time Estimates prepared by KLD Associates, Inc. dated September, 2007.

It is my understanding that the specific nature of arrangements in support of emergency preparedness for operation of the proposed new nuclear unit will be clearly established in a properly executed and binding letter of agreement that will be included in the Grand Gulf Unit 3 Emergency Plan if and when Entergy proceeds with construction and operation of this nuclear facility.

Signature: B. J. Smith 12-3-07

Mr. B. J. Smith, Date
Acting Director, Radiological Health Division
Mississippi Department of Health

Return to:
Thomas L. Williamson
Project Manager, GGNS COLA
Entergy Nuclear
1340 Echelon Parkway
Jackson, MS 39213

Entergy
P.O. Box 756
Port Gibson, MS 39150
Tel 601 437 6409

William R. Brian
Vice President - Operations
Grand Gulf Nuclear Station

November 28, 2007

Mr. William "Rick" Foster
Tensas Parish Office of Homeland Security
& Emergency Preparedness
205 Hancock Street
St. Joseph, LA, 71366

Dear Mr. Foster,

As previously indicated in public announcements and meetings, Entergy, in cooperation with NuStart Energy Development Corporation (NuStart), is developing a Combined License (COL) application for submission to the U.S. Nuclear Regulatory Commission (NRC), consistent with the requirements of 10 CFR 52, for an additional unit at the Grand Gulf Nuclear Site near Port Gibson, Mississippi. The purpose of this initiative is to develop a COL application that will ultimately lead to NRC approval to construct and operate a new commercial nuclear generating unit at the site.

A key part of this COL application is the development of emergency plans which provide information sufficient to demonstrate compliance with pertinent regulatory requirements. These plans take credit, to the extent practical, for the site, federal, state, and local plans already in place for other nuclear generating units in Mississippi and Louisiana. With the cooperation of affected state, and local agencies, Entergy and NuStart have developed Part 5 of the COL application, the "Grand Gulf Unit 3 Combined License Application Emergency Plan," Revision C dated October 25, 2007. The emergency plan includes the emergency classification system required by 10 CFR 50. Entergy and NuStart have worked with the nuclear industry to develop a set of initiating conditions and emergency action levels consistent with this emergency classification system and appropriate to the proposed nuclear plant design.

In addition to the COL Emergency Plan, evacuation time estimates have been developed with input from various State and local government agencies in Mississippi and Louisiana. The evacuation time estimate report is included in the COL application.

Emergency planning provisions of 10 CFR 52 and the COL application process require that Entergy and NuStart "make good faith efforts to obtain certifications from the local and State governmental agencies with emergency planning responsibilities." At this time, we are seeking certification from Tensas Parish Office of Homeland Security & Emergency Preparedness that:

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

The actual emergency planning arrangements would be finalized in a letter of agreement at a later stage in the new facilities' licensing process.

Tensas Parish Office of Homeland Security & Emergency Preparedness's participation in these emergency planning efforts is greatly appreciated. Your signature on page 3 of this letter also indicates that you concur with the emergency classification system, initiating conditions and emergency action levels and evacuation time estimates proposed in the Grand Gulf Unit 3 Emergency Plan. Please sign and return a copy of this letter at your earliest convenience.

Sincerely,

William R. Brian, for
Site Vice President, Grand Gulf Nuclear Station

The Tensas Parish Office of Homeland Security & Emergency Preparedness has reviewed the emergency plan supporting the Combined License Application for a new nuclear generating unit at the Grand Gulf Nuclear Station, and Tensas Parish Office of Homeland Security & Emergency Preparedness certifies its commitment that:

- the proposed emergency plans are practicable;
- Tensas Parish Office of Homeland Security & Emergency Preparedness is committed to participating in further development of the plans, including any required field demonstrations; and
- Tensas Parish Office of Homeland Security & Emergency Preparedness is committed to executing their responsibilities under the plans in the event of an emergency.

Furthermore, Tensas Parish Office of Homeland Security & Emergency Preparedness concurs with the proposed emergency classification system, initiating conditions, emergency action levels described in the Combined License Application Emergency Plan and Grand Gulf Nuclear Station Development of Evacuation Time Estimates prepared by KLD Associates, Inc. dated September, 2007.

It is my understanding that the specific nature of arrangements in support of emergency preparedness for operation of the proposed new nuclear unit will be clearly established in a properly executed and binding letter of agreement that will be included in the Grand Gulf Unit 3 Emergency Plan if and when Entergy proceeds with construction and operation of this nuclear facility.

Signature:

William "Rick" Foster 12/11/07

Mr. William "Rick" Foster, Date
Director, Tensas Parish Office of Homeland Security &
Emergency Preparedness

Return to:
Thomas L. Williamson
Project Manager, GGNS COLA
Entergy Nuclear
1340 Echelon Parkway
Jackson, MS 39213

Appendix 8 – Cross-Reference to Regulations, Guidance, and State and Local Plans

Note: To a limited extent, certain details of the state and local plans may not yet reflect the addition of GGNS Unit 3. Such details will be developed at a later date consistent with the commitments outlined in the certification letters provided in Appendix 7 of this plan.

Table A8-1 – Cross-Reference to Regulatory Requirements

Requirement	Corresponding GGNS Unit 3 Emergency Plan Provision
10 CFR 50.47(b)(1)	II.A, II.B, II.C
10 CFR 50.47(b)(2)	II.A, II.B, II.C, II.E, II.F
10 CFR 50.47(b)(3)	II.A, II.B, II.C, II.H
10 CFR 50.47(b)(4)	II.D, App. 1
10 CFR 50.47(b)(5)	II.E, I.F, II.J
10 CFR 50.47(b)(6)	II.E, I.F, II.J
10 CFR 50.47(b)(7)	II.G
10 CFR 50.47(b)(8)	II.H
10 CFR 50.47(b)(9)	I.H, II.I
10 CFR 50.47(b)(10)	II.J, II.K
10 CFR 50.47(b)(11)	II.J, II.K
10 CFR 50.47(b)(12)	II.L
10 CFR 50.47(b)(13)	II.M
10 CFR 50.47(b)(14)	II.N
10 CFR 50.47(b)(15)	II.O
10 CFR 50.47(b)(16)	II.P
10 CFR 50.72(a)(3)	II.E.1
10 CFR 50.72(a)(4)	II.F.I.g
10 CFR 50.72(c)(3)	II.E.4
10 CFR 50 App E.IV	GGNS Unit 3 Emergency Plan, including App. 4 and Evacuation Time Estimate
10 CFR 50 App E.IV.A	II.A, II.B, II.C, II.E, II.F, II.J, II.K, II.L
10 CFR 50 App E.IV.B	II.D, II.H, II.I, App. 1
10 CFR 50 App E.IV.C	II.A, II.D, II.E. II.F, App. 1
10 CFR 50 App E.IV.D	II.A, II.E, II.F, II.G, App. 3
10 CFR 50 App E.IV.E	II.B, II.F, II.H, II.I, II.L, II.N, App. 2, App. 6
10 CFR 50 App E.IV.F	II.N, II.O
10 CFR 50 App E.IV.G	II.P
10 CFR 50 App E.IV.H	II.M

Table A8-2 – Cross-Reference to NUREG-0654 and State and Local Plans

NUREG-0654 Eval. Criterion	GGNS Unit 3 EPlan	State of Mississippi	State of Louisiana	Claiborne County, MS	Tensas Parish, LA
A.1.a	Plan § II.A.1.a	Plan § IV	Plan § IV, VI & VII	Plan § IV.A - F	Att. 2 Enc. I § D
A.1.b	Plan § II.A.1.b	Plan § V, Annex C § II.A-C	Plan § IV & VI	Plan § IV.A - F, Plan § V.A	Att. 2 Enc. I § C - E
A.1.c	Plan § II.A.1.c	Annex A App. 1	Plan § V Fig. 1	Plan App. 2	Att. 2 Enc. I Fig. D-1
A.1.d	Plan § II.A.1.d	Plan § VI.A	Plan § V	Plan § VI.A	Att. 2 Enc. I § C - D
A.1.e	Plan § II.A.1.e	Plan § VI.C & D, Annex A App. 5, Annex B § II.B & C	Ch. 3 § III.A.4	Plan § VI.C, Annex A App. 1 § II - III, Annex A App. 3, Annex G § II.C	Att. 2 Enc. I § E, Att. 2 Enc. I § F.1 & F.2
A.2.a		Plan § IV	Plan § VI	Plan § VI.A, App. 3, Annex A App. 3	Att. 2 App. A Tab A
A.2.b		Plan § VI.A	Plan § I.B	App. 1 § A.3	Att. 2 § 1.A, Att. 2 Enc. I § B
A.3	Plan § II.A.3	Annex M	Ch. 14	Annex M App. 1 - 6 inc. Tabs	Att. 2 Enc. I § B, Att. 2 Enc. I App. I-1
A.4	Plan § II.A.4	Annex A, Annex A App. 2 & 5	Plan § V.B, Plan § VI.A.3	App. 3, App. 6, Annex A App. 1, Annex C App. 5	Att. 2 Enc. I § D
B.1	Plan § II.B.1				
B.2	Plan § II.B.2				
B.3	Plan § II.B.3				
B.4	Plan § II.B.4				
B.5	Plan § II.B.5				
B.6	Plan § II.B.6				
B.7	Plan § II.B.7				
B.7.a	Plan § II.B.7.a				

NUREG-0654 Eval. Criterion	GGNS Unit 3 EPlan	State of Mississippi	State of Louisiana	Claiborne County, MS	Tensas Parish, LA
B.7.b	Plan § II.B.7.b				
B.7.c	Plan § II.B.7.c				
B.7.d	Plan § II.B.7.d				
B.8	Plan § II.B.8				
B.9	Plan § II.B.9				
C.1.a	Plan § II.C.1.a	Plan § IV.A.C, § VI.A, App. 6, Annex D § II.E.2.b	Plan § V.B		
C.1.b	Plan § II.C.1.b	Plan § VI.B.4, App. 6, Annex D § II.E	Plan § VII.A		
C.1.c	Plan § II.C.1.c	App. 6	Plan § VII	App. 7 § A - B	Att. 2 § II.I
C.2.a		Annex D § II.B.3.b	Plan § IV	MEMA Basic Plan	Att. 2 Enc. I § E.3
C.2.b	Plan § II.C.2.b				
C.3	Plan § II.C.3	Annex D § II.B.3.d	Plan § VII.B, Ch. 6 Tab 3		
C.4.	Plan § II.C.4, App. 7	App. 6, Annex D § II.E	Plan § VII, Ch. 14	Plan § IV.C, Annex M App. 2 – 5	Att. 2 Enc. I § D, Att. 2 Enc. I App. I-1
D.1	Plan § II.D.1, App. 1				
D.2	Plan § II.D.2, App. 1				
D.3		Plan § V.C & E	Ch. 1	Plan § V.C, Annex A App. 1 § I	Att. 2 § IV Ch. 1 & Ch. 1 Tab A
D.4		Annex C App. 5 & 6	Ch. 6 § III.B	Annex A App. 1	Att. 2 § IV.A, Att. 2 Enc. I § E, Att. 2 Enc. I App. I-2
E.1	Plan § II.E.1	Plan § V.E, Annex B App. 3, Annex C § II.C	Ch. 2	Plan § V.E, Annex A App. 1 § II & III, Annex B App. 2 § III.E	Att. 2 App. A Tab A

NUREG-0654 Eval. Criterion	GGNS Unit 3 EPlan	State of Mississippi	State of Louisiana	Claiborne County, MS	Tensas Parish, LA
E.2	Plan § II.E.2	Plan § VI.D, Annex C App. 5 & 6	Plan § VI.A.5	Plan § V.E, Annex A App. 1	Att. 2 Enc. I § E, Att.2 Enc. I § F.6, Att. 2 Enc. I App. I-2
E.3	Plan § II.E.3				
E.4	Plan § II.E.4				
E.4.a	Plan § II.E.4.a				
E.4.b	Plan § II.E.4.b				
E.4.c	Plan § II.E.4.c				
E.4.d	Plan § II.E.4.d				
E.4.e	Plan § II.E.4.e				
E.4.f	Plan § II.E.4.f				
E.4.g	Plan § II.E.4.g				
E.4.h	Plan § II.E.4.h				
E.4.i	Plan § II.E.4.i				
E.4.j	Plan § II.E.4.j				
E.4.k	Plan § II.E.4.k				
E.4.l	Plan § II.E.4.l				
E.4.m	Plan § II.E.4.m				
E.4.n	Plan § II.E.4.n				
E.5		Plan § VI.D & I, Annex C § II.A & C, Annex J § II.B	Ch. 4, Ch. 5 § IV.B	Plan § VI.H, Annex B § II.B	Att. 2 § IV Ch. 1 Tab A, Att. 2 § IV Ch. 2 & 4 & 5
E.6	Plan § II.E.6	Annex C § II.A, Annex J § II.B.2	Ch. 4	Plan § VI.B.4, Plan § VI.H, Annex C App. 2 § E, Annex C App. 5, Annex J § B.1	Att. 2 Enc. I § A.D.1.c, Att. 2 Enc. I § E.5

NUREG-0654 Eval. Criterion	GGNS Unit 3 EPlan	State of Mississippi	State of Louisiana	Claiborne County, MS	Tensas Parish, LA
E.7	Plan § II.E.7	Annex J § III.C	Att. 2 Ch. 2 Tab A	Annex C App. 2 § G, Annex J § III.A & B, Annex J § III.1.f	Att. 2 § IV Ch. 2 Tab A
F.1.a	Plan § II.F.1.a	Annex A App. 5, Annex C § II.A & C	Ch. 3 § III.A	Plan § VI.C, Annex A App. 3, Annex B § I, Annex B App. 2 Tab A, Annex B App. 3, Annex C App. 5	Att. 2 Enc. I § F.1 & F.2
F.1.b	Plan § II.F.1.b	Plan § VI.C, Annex B, Annex C	Ch. 3 § III.A & B	Annex A App. 1 § II & III, Annex A App. 2, Annex B App. 1 & 3 & 4, Annex C App. 2 & 5	Att. 2 Enc. I § F.2, Att. 2 Enc. I Fig. F-1
F.1.c	Plan § II.F.1.c	Annex B, Annex D	Ch. 3 § III.B.3	Plan § IV.E	Att. 2 § II.G, Att. 2 § II.I, Att. 2 App. A Tab A
F.1.d	Plan § II.F.1.d	Plan § VI.C, Annex B	Ch. 3 § III.A	Plan § IV § F, Plan § VI.C, Annex A App. 2, Annex B § II.B, Annex B App. 1 & 4, Annex G § II.C, Annex G App. 6 Tab A	Att. 2 Enc. I § F.1 & F.2
F.1.e	Plan § II.F.1.e	Annex C App. 4 & 6	Ch. 3 § III.A	Annex A App. 1 § II, Annex C App. 1 Tab B, Annex C App. 5	Att. 2 Enc I § E, Att. 2 Enc I § F.2 - F.6
F.1.f	Plan § II.F.1.f				
F.2	Plan § II.F.2	Annex B § II.B & C, Annex B App. 1 & 2	Ch. 3 § III.D	Annex B App. 1, Annex C App. 5	Att. 2 Enc. I § F.4, Att. 2 Enc. I Fig. F-1
F.3	Plan § II.F.3	Annex C § II.D	Ch. 13 § IV.A	Annex B, Annex C, Annex C App. 2	Att. 2 Enc. I § F.8

NUREG-0654 Eval. Criterion	GGNS Unit 3 EPlan	State of Mississippi	State of Louisiana	Claiborne County, MS	Tensas Parish, LA
G.1	Plan § II.G.1	Annex J § III.A.3	Ch. 5 § IV.A	Annex J § III.A	Att. 2 § IV Ch. 1 Tab A, Att. 2 Enc. I § D.1.c
G.2	Plan § II.G.2	Annex J § III.A.3	Ch. 5 § IV.A	Annex J § III.A.3	Att. 2 § IV Ch. 1 Tab A, Att. 2 Enc. I § D.1.c
G.3.a	Plan § II.G.3.a	Plan § VI.B.5, Plan § VI.I, Annex J § III.B.2	Ch. 5 § IV.B	Plan § VI.B.4, Plan § VI.H, Annex J § III.B	Att. 2 § IV Ch. 1 Tab A, Att. 2 Enc. I § D.1.c
G.3.b	Plan § II.G.3.b				
G.4.a	Plan § II.G.4.a	Plan § VI.I	Ch. 5 § IV.B	Annex A App. 1 § IV.B	Att. 2 § IV Ch. 1 Tab A, Att. 2 Enc. I § D.1.c
G.4.b	Plan § II.G.4.b	Plan § VI.I, Annex J § III.C	Ch. 5 § IV.B	Annex A App. 1 § IV.B	Att. 2 § IV Ch. 1 Tab A, Att. 2 Enc. I § D.1.c
G.4.c	Plan § II.G.4.c	Annex J § III.C, Annex J App. 1	Ch. 5 § IV.B.4	Annex A App. 1 § IV.B, Annex J	Att. 2 Enc. I § D.1.c
G.5	Plan § II.G.5	Annex J § III.A.4	Ch. 5 § IV.A.7	Annex J § III.A.4	Att. 2 § IV Ch. 1 Tab A, Att. 2 Enc. I § D.1.c
H.1	Plan § II.H.1				
H.2	Plan § II.H.2				
H.3		Plan § IV.A.2.c, Annex A § II.A	Plan § IV.F & G	Plan § IV.A.2.d, Annex A § II.A	Att. 2 Enc. I § C
H.4	Plan § II.H.4	Plan § VI.B.2, Annex A App. 3, Annex A App. 5 § I	Plan § IV.F	Annex A § II.B, Annex A App. 1 § I	Att. 2 Enc. I § E
H.5	Plan § II.H.5				

NUREG-0654 Eval. Criterion	GGNS Unit 3 EPlan	State of Mississippi	State of Louisiana	Claiborne County, MS	Tensas Parish, LA
H.5.a	Plan § II.H.5.a				
H.5.b	Plan § II.H.5.b				
H.5.c	Plan § II.H.5.c				
H.5.d	Plan § II.H.5.d				
H.6.a	Plan § II.H.6.a				
H.6.b	Plan § II.H.6.b				
H.6.c	Plan § II.H.6.c				
H.7	Plan § II.H.7, App. 6	Annex G App. 7	Plan § IV.G, Ch. 6 § III.A, Ch. 6 Tabs 3 & 4	Annex G App. 8	Att. 2 § II.E, Att. 2 Enc. I § C
H.8	Plan § II.H.8, App. 2				
H.9	Plan § II.H.9, App. 2				
H.10	Plan § II.H.10, App. 6	Annex D § II.C.2	Ch. 6 Tab 3 ¶ G	Plan § IV.A.2.I, App. 2 § G, Annex G § III.A.4, Annex G App. 8 Tab A & B	Att. 2 § IV Ch. 5.5, Att. 2 Enc. I § D.1.c
H.11	Plan § II.H.11, App. 6	Annex D App. 3, Annex G App. 7	Ch. 6 Tab 3 Table 1	Annex G App. 8 Tab 8	Att. 2 Tab F-1
H.12	Plan § II.H.12	Annex D § II.B.e, Annex D App. 2	Ch. 6 Tab 3 ¶ A	Annex G § II.C	State Plan / Ch. 6 Tab 3 A & E
I.1	Plan § II.I.1				
I.2	Plan § II.I.2				
I.3.a	Plan § II.I.3.a				
I.3.b	Plan § II.I.3.b				
I.4	Plan § II.I.4				
I.5	Plan § II.I.5				
I.6	Plan § II.I.6				

NUREG-0654 Eval. Criterion	GGNS Unit 3 EPlan	State of Mississippi	State of Louisiana	Claiborne County, MS	Tensas Parish, LA
I.7	Plan § II.I.7, App. 6	Annex D § II.B.3	Ch. 6 Tab 3	Annex G § III.A, Annex G App. 8 Tab A	State Plan / Ch. 6 Tab 3 & 5
I.8	Plan § II.I.8	Plan § IV.A.3, Annex D	Ch. 6 Tab 3	Annex D § II.3	Att. 2 § IV Ch. 3.2
I.9	Plan § II.I.9	Plan § VI.E & G, Annex D	Ch. 6 Tab 3 ¶ F		
I.10	Plan § II.I.10, App. 2	Plan § VI.F, Annex D	Ch. 7, Ch. 8		
I.11		Annex D § II.B & E	Ch. 6 Tab 3 ¶ H		
J.1.a	Plan § II.J.1.a				
J.1.b	Plan § II.J.1.b				
J.1.c	Plan § II.J.1.c				
J.1.d	Plan § II.J.1.d				
J.2	Plan § II.J.2	Annex F § II.J, App. 5 § II.A.2.i	Ch. 7 § III.E	Refer to GGNS Plan	Att. 2 Enc. I § G.3
J.3	Plan § II.J.3				
J.4	Plan § II.J.4				
J.5	Plan § II.J.5				
J.6.a	Plan § II.J.6.a				
J.6.b	Plan § II.J.6.b				
J.6.c	Plan § II.J.6.c				
J.7	Plan § II.J.7, App. 2				
J.8	Plan § II.J.8, App. 4				
J.9		Plan § V.D, Annex E, Annex G § II.C	Ch. 7 § IV, Ch. 8 § IV, Ch. 8 Tabs 2 & 3	Plan § V.D, Plan § VI.E, Annex E App. 1 – 4	Att. 2 Enc. I § G

NUREG-0654 Eval. Criterion	GGNS Unit 3 EPlan	State of Mississippi	State of Louisiana	Claiborne County, MS	Tensas Parish, LA
J.10.a	Plan § II.J.10.a	Annex O	Att. 2 App. B, Att. 2 App. D Tab C, Att. 2 App. E Tab C	Annex O App. 1	Att. 2 App. B, Att. 2 App. D Tab C, Att. 2 App. E Tab C, Att. 2 Enc. I Fig. G-1 & G-1a
J.10.b	Plan § II.J.10.b	Annex F App. 3, Annex O § II.B	Att. 2 App. B, Att. 2 App. C Tab A	Annex O App. 1	Att. 2 App. B, Att. 2 App. C Tab A
J.10.c	Plan § II.J.10.c, App. 3	Annex C § II	Ch. 4	Annex E § II.B, Annex E App. 1, Annex F App. 8	Att. 2 Enc. I § E.5, Att. 2 Enc. I § F.7
J.10.d		Annex F App. 5 Tab C	Ch. 7 § III.E.4, Ch. 7 § IV.A.5, Ch. 7 § IV.B.3	Annex F App. 8	Att. 2 Enc. I § G.3, Att. 2 Enc. I § H
J.10.e		Annex G App. 5 Tab A	Ch. 7 § IV.A.5, Ch. 7 § IV.B.2 & 3, Ch. 9 § V.B.2	Annex G § II.E, Annex G App. 3 Tab A	Att. 2 § IV Ch. 5
J.10.f		Annex G § II.F, Annex G App. 5	Ch. 9	Annex G § II.E, Annex G App. 2, Annex G App. 3 Tab A & B & C, Annex G App. 5	State Plan / Ch. 9 Tab 1
J.10.g		Annex E § II.B.2-4, Annex F § II	Ch. 7 § III.E	Plan § IV.A.4 & 5 & 7 & 11 & 12, Plan § IV.B & C, App. 1 & 3, Annex F § II.F - H, Annex F App. 5, Annex N (State) 8	Att. 2 Enc. I § G.3
J.10.h		Annex F § II.D, Annex F App. 5	Att. 2 Enc. I Figs. G-1 & G-1a	Annex F App. 7, Annex N (Local)	Att. 2 Enc. I Fig. G-1a
J.10.i		Annex F App. 4	Att. 2 App. D Tab A	Annex F App. 5 - 6, Annex F App. 6 Tab A & B	Att. 2 App. D Tab A

NUREG-0654 Eval. Criterion	GGNS Unit 3 EPlan	State of Mississippi	State of Louisiana	Claiborne County, MS	Tensas Parish, LA
J.10.j		Annex G App. 6	Ch. 7 § IV.A.3	Annex F § II.H.4, Annex F § App. 5 § II.A - B, Annex F App. 5 § III A - B	Att. 2 Enc. I § D.1.d, Att. 2 Enc. I § D.2.c, Att. 2 Enc. I § G.1 & G.3
J.10.k		Annex F App. 6	Ch. 7 § III.E.3	Annex F § II.H.4	Att. 2 Enc. I § G.3, Att. 2 Enc. I § D.1.i
J.10.l		Annex F App. 4	Ch. 7, Att. 2 App. D Tab A	Annex E § II.A & B, Annex E App. 1 - 4	Att. 2 Enc. I § IV Ch. 5.2
J.10.m	Plan § II.J.10.m	Annex E App. 1-4	Ch. 7 § IV		
J.11		Annex I § II.A-B	Ch. 8 Tab 3		
J.12		Annex F App. 5, Annex G § II.A.2, Annex G App. 3	Ch. 9 § IV.B	Annex F App. 7 § II.A - C, Annex N (Local)	Att. 2 Enc. I § D.1.g, Att. 2 Enc. I § D.2.a, Att. 2 Enc. I § D.3, Att. 2 Enc. I § G.3, Att. 2 Enc. I § H.1
K.1.a	Plan § II.K.1.a				
K.1.b	Plan § II.K.1.b				
K.1.c	Plan § II.K.1.c				
K.1.d	Plan § II.K.1.d				
K.1.e	Plan § II.K.1.e				
K.1.f	Plan § II.K.1.f				
K.1.g	Plan § II.K.1.g				
K.2	Plan § II.K.2				
K.3.a	Plan § II.K.3.a	Annex G § II.C, Annex G App. 4	Ch. 9 § III.A, Ch. 9 § V.B.1.a	Annex H § II.B.2	Att. 2 § IV Ch. 3.1, Att. 2 Enc. I § G
K.3.b	Plan § II.K.3.b	Annex G § II.C.2, Annex G App. 1	Ch. 9 § V.B, Att. 2 Ch. 4 Tab A.5	Annex G App. 1 & 2 & 5	Att. 2 § IV Ch. 5 (Emergency Worker) .3

NUREG-0654 Eval. Criterion	GGNS Unit 3 EPlan	State of Mississippi	State of Louisiana	Claiborne County, MS	Tensas Parish, LA
K.4		Annex G § II.E	Ch. 9 § V.D	Annex G § II.D	State / Ch. 9 § V.B & V.D
K.5.a	Plan § II.K.5.a	Annex G § II.C.2.b, Annex G App. 4	Ch. 9 § IV.B.3	Annex E App. 1	Att. 2 § IV Ch. 5.B
K.5.b	Plan § II.K.5.b	Annex G App. 4 § III	Ch. 9 § V.C	Annex E App. 6 § III	Att. 2 § IV Ch. 5 (Emergency Worker) .6
K.6.a	Plan § II.K.6.a				
K.6.b	Plan § II.K.6.b				
K.6.c	Plan § II.K.6.c				
K.7	Plan § II.K.7				
L.1	Plan § II.L.1	Annex F App. 10	Ch. 10 § IV.B, Ch. 10 Tab 2	Annex F App. 10 § II	Att. 2 Enc. I § H.2
L.2	Plan § II.L.2				
L.3		Annex F App. 10 § II.B.2	Ch. 10 § IV.B, Ch. 10 Tab 1		
L.4	Plan § II.L.4	Annex F App. 10 § II.B.1	Ch. 10 Tab 1	Annex F App. 10 § II.B	Att. 2 Enc. I § D.1.h, Att. 2 Enc. I § H.2
M.1	Plan § II.M.1	Annex H § II.B, Annex H App. 1	Ch. 11	Annex H § II	Att. 2 § IV Ch. 6
M.2	Plan § II.M.2				
M.3	Plan § II.M.3	Annex H § II.A.4	Ch. 11 § III.E		
M.4	Plan § II.M.4	Annex H § II.B.2, Annex H App. 1	Ch. 11 § III.H		
N.1.a	Plan § II.N.1.a	Plan § VIII, Annex L § II.A	Ch. 11 § III	Plan § VIII.A, Annex L § II.A	Att. 2 § IV Ch. 7 (a)
N.1.b	Plan § II.N.1.b	Annex L § II.A.1.b	Ch. 11 § III	Plan § VIII.C, Annex L § II.B	Att. 2 § IV Ch. 7 (b)

NUREG-0654 Eval. Criterion	GGNS Unit 3 EPlan	State of Mississippi	State of Louisiana	Claiborne County, MS	Tensas Parish, LA
N.2.a	Plan § II.N.2.a	Annex L § II.A.2.b(1)	Ch. 13 § IV.A	Plan § VIII.B.2, Annex C App. 2, Annex L § II.A.2.b(1)	Att. 2 § IV Ch. 7
N.2.b	Plan § II.N.2.b				
N.2.c	Plan § II.N.2.c			Annex L § II.A.2.b(3)	Att. 2 § IV Ch. 7
N.2.d	Plan § II.N.2.d	Annex L § II.A.2.b(2) & (4)	Ch. 13 § IV.B	Annex L § II.A.2.b(2)	Att. 2 § IV Ch. 7
N.2.e(1)	Plan § II.N.2.e.1	Annex L § II.A.2.b(3)	Ch. 13 § IV.C		
N.2.e(2)	Plan § II.N.2.e.2				
N.3.a	Plan § II.N.3.a	Annex L § II.D.2, Annex L App. 2	Ch. 13 § V.A	Annex L App. 1 - 2	Att. 2 § IV Ch. 7
N.3.b	Plan § II.N.3.b	Annex L § II.D.5	Ch. 13 § V.B	Plan § VIII.C, Annex L	Att. 2 § IV Ch. 7
N.3.c	Plan § II.N.3.c	Annex L § II.D.2.f & g	Ch. 13 § V.C	Annex L App. 2	Att. 2 § IV Ch. 7
N.3.d	Plan § II.N.3.d	Annex L § II.C	Ch. 13 § V.D	Annex L	Att. 2 § IV Ch. 7
N.3.e	Plan § II.N.3.e	Annex L App. 4	Ch. 13 § V.E	Annex L	Att. 2 § IV Ch. 7
N.3.f	Plan § II.N.3.f	Annex L § II.D.6 & 7, Annex L App. 4, Annex L App. 5 § III	Ch. 13 § V.F	Annex L	Att. 2 § IV Ch. 7
N.4	Plan § II.N.4	Annex L § II.A.1.b, Annex L § II.D.8.d & e	Ch. 13 § III.E	Annex L	Att. 2 § IV Ch. 7
N.5	Plan § II.N.5	Annex L § II.D.8.d & e	Ch. 13 § III.F	Annex L	Att. 2 § IV Ch. 7
O.1	Plan § II.O.1	Plan § VII	Ch. 12	Plan § VII.A, Annex K § II.B.2(b)	Att. 2 § IV Ch. 8
O.1.a	Plan § II.O.1.a				
O.1.b		Annex K § II.B	Ch. 12 § III.A	Plan § VII.B - D, Annex K § II.B	Att. 2 § IV Ch. 8
O.2	Plan § II.O.2				

NUREG-0654 Eval. Criterion	GGNS Unit 3 EPlan	State of Mississippi	State of Louisiana	Claiborne County, MS	Tensas Parish, LA
O.3	Plan § II.O.3				
O.4.a	Plan § II.O.4.a	Annex K App. 2 § I	Ch. 12 § III.A.4.a	Plan § VII.B - C, Annex K § II.B.1(a)	Att. 2 § IV Ch. 8
O.4.b	Plan § II.O.4.b	Annex K § II.D	Ch. 12 § III.A.4.b	*	Att. 2 § IV Ch. 8
O.4.c	Plan § II.O.4.c	Annex D § II.D, Annex K App. 1	Ch. 12 § III.A.4.c	*	Att. 2 § IV Ch. 8
O.4.d	Plan § II.O.4.d	Annex K App. 1	Ch. 12 § III.A.4.d	Plan § VII.B - C, Annex K App. 2 § II	Att. 2 § IV Ch. 8
O.4.e	Plan § II.O.4.e				
O.4.f	Plan § II.O.4.f	Annex K App. 1	Ch. 12 § III.A.4.e	Plan § VII.B - C, Annex K App. 2 § II	Att. 2 § IV Ch. 8
O.4.g	Plan § II.O.4.g		Ch. 12 § III.A.4.f	Plan § VII.B - C, Annex K App. 2 § II	Att. 2 § IV Ch. 8
O.4.h	Plan § II.O.4.h	Annex K App. 1	Ch. 12 § III.A.4.g	Plan § VII.B - C, Annex K App. 2 § II	Att. 2 § IV Ch. 8
O.4.i	Plan § II.O.4.i				
O.4.j	Plan § II.O.4.j	Annex K App. 1	Ch. 12 § III.A.4.h	Plan § VII.B - C, Annex K App. 2 § II	Att. 2 § IV Ch. 8
O.5	Plan § II.O.5	Plan § VII, Annex K § II.B	Ch. 12 § III	Plan § VII.D	Att. 2 § IV Ch. 8
P.1	Plan § II.P.1	Plan § VIII, Annex K § II.B	Ch. 12 § IV	Annex K § II.B.1(a)	Att. 2 § IV Ch. 8
P.2	Plan § II.P.2	Plan § IX	Plan § V.B	Plan § IV.A.2, Annex K § II.B.1(a)	Att. 2 Enc. I § D.1.a
P.3	Plan § II.P.3	Plan § IV.A.2, Plan § VI.A	Plan § VI.A	Plan § IV.A.2	Att. 2 Enc. I § D.1.c
P.4	Plan § II.P.4	Plan § IX	Plan § VIII.B	Plan § IX	Att. 2 Enc. I § D.1.c

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P.5	Plan § II.P.5	Plan pages iii & iv, Plan § IX	Plan § VIII.C	Distribution List	Att. 2 § III.B
P.6	Plan § II.P.6	Annex N § IV	Plan § VIII Tab 2	Annex N	Att. 2 App. G
P.7	Plan § II.P.7, App. 5	Annex N	Plan § VIII Tab 1	Annex N	Att. 2 Enc. I App. 1-2
P.8	Plan § II.P.8, App. 8	Plan pages v - xii	Plan pages iv - xi	Table of Contents, NUREG-0654 Cross Ref. Index	Att. 2 pp. iv - v
P.9	Plan § II.P.9				
P.10	Plan § II.P.10	Annex N § IV.B	Plan § VIII.D.5	Annex A App. 1 § IV.B.4	Att. 2 Enc. I § D.1.c

* - Indicates that this criterion is not addressed in the local plan and, consistent with Footnote 2 of Section II.O of NUREG-0654, the local government may look to the licensee and the federal government for assistance in this training.

Table A8-3 – Cross-Reference of Evacuation Time Estimate to NUREG-0654/FEMA-REP-1 Appendix 4

NUREG-0654/FEMA-REP-1 Appendix 4 Guidance	Corresponding ETE Section
I. INTRODUCTION	
This section of the report should make the reader aware of the general location of the nuclear power plant and plume exposure pathway emergency planning zone, and generally discuss how the analysis was done.	Section 1
A. Site location and emergency planning zone A vicinity map showing the plant location shall be provided along with a detailed map of the plume exposure pathway emergency planning zone (EPZ). The map shall be legible and identify transportation networks, topographical features and political boundaries. (See planning element J.10.a)	Section 1, Figures 1-1, 3-1 and 6-1.
B. General Assumptions All assumptions used in the analysis shall be provided. The assumptions shall include such things as automobile occupancy factors, method of determining roadway capacities, and method of estimating populations.	Section 2
C. Methodology A description of the method of analyzing the evacuation times shall be provided. If computer models are used, a general description of the algorithm shall be provided along with a source for obtaining further information or documentation.	Section 2, Appendices B,C and D
II. DEMAND ESTIMATION	
The objective of this section is to provide an estimate of the number of people to be evacuated. Three potential population segments shall be considered: permanent residents, transients, and persons in special facilities.	Section 3, Section 8, Appendix E
Permanent residents include all people having a residence in the area, but not in institutions.	Section 3, Table, 3-1, Figures 3-2, 3-3
Transients shall include tourists, employees not residing in the area, or other groups that may visit the area.	Section 3, Non-EPZ resident employees and transients treated separately. Figures 3-4, 3-5, 3-6, and 3-7.
Special facility residents include those confined to institutions such as hospitals and nursing homes.	Section 8, Appendix E
The school population shall be evaluated in the special facility segment. Care should be taken to avoid double counting.	Section 8, Appendix E

NUREG-0654/FEMA-REP-1 Appendix 4 Guidance	Corresponding ETE Section
A. Permanent Residents The number of permanent residents shall be estimated using the U. S. Census data or other reliable data, adjusted as necessary, for growth. (See planning element J.10.b.).	Section 3, Tables 3-1 and 3-2
This population data shall then be translated into two subgroups: 1) those using autos and those without autos.	With autos – Section 3 Transit Dependent – Section 8
The number of vehicles used by permanent residents is estimated using an appropriate auto occupancy factor. A range of two to three persons per vehicle would probably be reasonable in most cases.	Telephone survey of EPZ Residents – Appendix F
An alternative approach is to calculate the number of vehicles based on the number of households that own vehicles assuming one vehicle per household is used in evacuation. Regardless of the approach used, special attention must be given to those households not having automobiles. The public transport—dependent population must, therefore, be considered as a special case.	Households with autos – Section 3, Transit Dependent Households – Section 8
B. Transient Populations Estimates of transient populations shall be developed using local data such as peak tourist volumes and employment data for large factories.	Section 3, Appendix E
Automobile occupancy factors would vary for different transient groups. Tourists might have automobile occupancy factors in the range of three to four while a factory would probably have a factor of less than 1.5 persons per vehicle.	Section 2, Section 3, Appendix E
This population segment along with the permanent population subgroup using automobiles constitutes the general population group for which an evacuation time estimate shall be made.	Section 6, Table 6-4 summarizes vehicles evacuating
C. Special Facility Population An estimate for this special population group shall usually be done on an institution-by-institution basis.	Section 8, Appendix E
The means of transportation are also highly individualized and shall be described.	Section 8
Schools shall be included in this segment.	Section 8
D. Emergency Planning Zone and Sub-areas The sub-areas for which evacuation time estimates are required must encompass the entire area within the plume exposure EPZ.	Section 6, Appendix L
Additionally, evacuation time estimates are also required for simultaneous evacuation of the entire plume exposure pathway.	Section 7, Appendix J

NUREG-0654/FEMA-REP-1 Appendix 4 Guidance	Corresponding ETE Section
The areas to be considered are as follows: Radius — Area about 2 miles — four 90 degree sectors about 5 miles — four 90 degree sectors about 10 miles (EPZ) — four 90 degree sectors about 10 miles (EPZ) — entire EPZ	3 sector approach suggested in NUREG/CR-6863 was used. Table 6-1, Appendix H.
When making estimates for the outer sectors, assume that the inner adjacent sectors are being evacuated simultaneously.	Section 2, Figure 2-1
The boundaries of the sub-areas shall be based upon the same factors as the EPZ, namely demography, topography, land characteristics, access routes, and local jurisdictions. To the extent practical, the sector boundaries shall not divide densely populated areas.	Figure 6-1, Appendix L
Where meteorological conditions such as dominant wind directions, warrant special consideration, an additional sub—area may need to be defined and a separate estimate made for this case.	3 sector approach suggested in NUREG/CR-6863 was used. Table 6-1, Appendix L
The EPZ and its sub—areas shall be identified by mapping on United States Geological Survey (USGS) 7-1/2-minute series quadrant maps when available.	Highly detailed Geographical Information Systems (GIS) maps provided. Figures 3-1 and 6-1; Appendix H.
Special facilities shall also be noted on these maps, to the extent that their locations can be geographically specified.	Appendix E – location of facility given by compass direction and distance from the plant
Populations shall be provided by evacuation areas as specified in planning element J.10.b.	Table 3-1 – permanent resident population by ERPA
For the purpose of determining evacuation times it may also be useful to summarize population data by sector and distance from the plant. Figure 1 is an example of such a summary.	Figures 3-2, 3-4, and 3-6 – population rose for residents, transients and employees, respectively
Separate totals shall be provided for the three population segments. Figure 2 shows the population totals translated into the number of vehicles estimated to be used in evacuation.	Figures 3-3, 3-5, and 3-7 – vehicle rose for residents, transients, and employees, respectively

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III. TRAFFIC CAPACITY	
This section of the report shall show the facilities to be used in evacuation. It shall include their location, types, and capacities.	Section 4, Appendix K
A complete review shall be made of the road network. Analyses shall be made of travel times and potential locations for serious congestion in potential corridors. (The analyses may be simplified In extreme rural areas.)	Section 1.3. Detailed road survey conducted.
The entire road network shall be used but local routes shall be carefully selected and analyzed to minimize their impact on the major routes should queuing or cross traffic conflicts occur. Care shall be taken to avoid depending only on high-capacity interstate and similar type routes because of limitations of on-ramp capacities.	Figure 1-2.
Alternatively, special traffic management plans may be developed to effectively utilize available capacity. Evacuation shall be based on general radial dispersion.	Section 9, Appendix G
A. Evacuation Roadway Network A map showing only those roads used as primary evacuation routes shall be provided. Figure 3 is an example. The map need not show local access streets necessary to get to the evacuation routes.	Section 10
Each segment of the network shall be numbered in some manner for reference.	Appendix K
The sector and quadrant boundaries shall also be indicated. (See planning elements J.10.a and b.).	Appendix H
B. Roadway Segment Characteristics A table such as example Table 1 shall be provided indicating all the evacuation route segments and their characteristics, including capacity. The characteristics of a segment shall be given for the narrowest section or bottleneck if the roadway is not uniform in the number of lanes throughout the segment.	Appendix K
IV. ANALYSIS OF EVACUATION TIMES	
As indicated previously, evacuation time is composed of several components. Each of these components shall be estimated in order to determine the total evacuation time. A. Reporting Format Table 2 shows the desired format for presenting the data and results for each type of evacuation. Each of the evacuation time components is presented along with the total evacuation time.	Section 7, Appendix J. Results provided in tabular and graphical format

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Two conditions -- normal and adverse--are considered in the analyses. Adverse conditions would depend on the characteristics of a specific site and could include flooding, snow, ice, fog or rain. The adverse weather frequency used in this analysis shall be identified and shall be severe enough to define the sensitivity of the analysis to the selected events. These conditions will affect both travel times and capacity. More than one adverse condition may need to be considered. That is, a northern site with a high summer tourist population should consider rain, flooding, or fog as the adverse condition as well as snow with winter population estimates.	Good weather, rain, and ice (where applicable) considered. See Section 2.
The text accompanying the table shall clearly indicate the critical assumptions which underlie the time estimates; e.g., day versus night, workday versus weekend, peak transient versus off—peak transient, and evacuation on adjacent sectors versus nonevacuation.	Figure 2-1 – voluntary and shadow evacuation considered. Sections 2.2 and 2.3 list all assumptions. Table 6-3 details evacuation percentages by Scenario.
The relative significance of alternative assumptions shall be addressed, especially with regard to time dependent traffic loading of the segments of the evacuation roadway network. Some modification of the reporting format may be appropriate, depending on local circumstances.	Appendix I presents several sensitivity studies.

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B. Methodology The method for computing total evacuation time shall be specified. Two approaches are acceptable. The simplest approach is to assume that events are sequential. That is to say, for example, that no one begins to move until all persons are warned and prepared to leave before anyone starts moving. The time is estimated by simply adding the maximum time for each component. This approach tends to overestimate the evacuation time. The second approach, which is more complex and will be discussed further, is to combine the distribution functions for the various evacuation time components. This second approach may result in reduced time estimates due to more realistic assumptions. The added complexity of analysis, therefore, may be warranted at sites with long evacuation times. When distribution functions are used, estimates are made of the likelihood that each stage in an evacuation sequence will be accomplished within a given period of time. These conditional probabilities depend upon completion of the preceding stage. For example, formulation of family units or other evacuation groups does not commence until notification is received. Some of these distribution functions must be based on the judgment of the estimators. Computation of the joint distribution functions of evacuation times are made. Typically, the joint distribution assumes the form of an S—shape curve as shown in Figure 4. The evacuation time function is fairly smooth for large homogeneous population segments such as the general public. Special facilities, such as hospitals and industrial centers, produce less smooth functions, or discontinuous ones. The assessment of evacuation time may be easily updated should further analyses be conducted, assumptions changed, or new plans developed. When distributions are used, distribution functions for notification of the various categories of the evacuee population shall be developed. The distribution functions for the action stages after notification predict what fraction of the population will complete a particular action within a given span of time. There are separate distributions for auto—owning households, school population, and transit dependent populations. These distribution functions can be constructed in a variety of ways, depending greatly on the kinds of data available for the actual site being studied. The previously developed conditional distributions are combined to develop the time distributions for the various population segments departing their home or other facility from which they are being evacuated. For example, for the auto—owning population segment1 these vehicles are then loaded onto the roadway network in order to compute travel times and delays.	Section 5 and Appendix F – trip generation curves are based on the results of a telephone survey of EPZ residents. Figures 5-2 and 5-3 show the S-curves used, while Table 5-8 details the trip generation rates.

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Regardless of the means by which the time and amount of traffic to be loaded on the network is determined (i.e., sequentially or using distribution functions), it is necessary to calculate the on—road travel and delay times. In this step, traffic from each sector is assigned to available evacuation routes, and, if assigned volumes exceed capacity, delay times must be calculated using a queuing analysis. Traffic queue (backup) locations and estimated delay times should be indicated on the area map.	Section 7 – Congestion diagrams provided. Section 4 details how the model (PC-DYNEV) handles delay calculations.
An estimate of the time required to evacuate that segment of the non— car—owning population dependent upon public transport shall be made, in a similar manner to that used for the auto-owning population. This estimate shall include consideration of any special services which might be initiated to serve this population subgroup. Such services might include fixed-route departures from designated assembly points. Estimates for special facilities shall be made with consideration for the means of mobilization of equipment and manpower to aid in evacuation and the needs for designated employees or staff to delay their evacuation in order to shut down industrial facilities.	Section 8.4 details evacuation for transit-dependent population. Figure 8-2 provides proposed bus routes. Table 8-7 provides ETE for transit dependents for good and adverse weather.
Each special facility shall be treated on an Individual basis. Weather conditions and time of day conditions shall be considered. Consideration shall be given to the impact of peak populations including behavioral aspects. All of the results shall be reported in the format previously indicated. This format summarizes the maximum time for each component and for each sector. The components may or may not be directly additive based on the methodology used and stated in the report. Where distribution functions are used the percentage of the population as a function of time should be reported (See Figure 4 for an example format).	Schools and Medical Facilities are handled on an individual basis. See Section 8.
V. OTHER REQUIREMENTS	
The time required for confirmation of evacuation shall be estimated. Candidate methods include visual confirmation by aircraft or ground vehicles and telephone confirmation.	Section 12
Specific recommendations for actions that could be taken to significantly improve evacuation time shall be given. Where significant costs may be involved, preliminary estimates of the cost of implementing these recommendations shall be given.	Section 9 and Appendix G provide a detailed traffic management plan which has been reviewed with state and local law enforcement officials
A review of the draft submittal by the principal organizations (State and local) involved in emergency response for the site shall be solicited and comments resulting from such review included with the submittal.	This is not included in the text of the report; however, we have documentation of the comments received and the corrective actions taken