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Definitions

Annually – For periodic emergency planning requirements, annually is defined as twelve months with a maximum interval of 456 days.

Biennial – For periodic emergency planning requirements, biennial is defined as at least once every two years, with a maximum interval of 912 days. (Note that this does not apply to the scheduling of biennial exercises. An exercise can occur at any time during the second calendar year after the previous exercise.)

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

Derived Air Concentration (DAC) – As defined by 10 CFR 20.1003.

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

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

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

Emergency Action Levels (EALs) – A pre-determined, site-specific, observable threshold for a plant initiating condition that places the plant in a given emergency class. An EAL can be: an instrument reading; an equipment status indicator; a measurable parameter (on-site or off-site); a discrete observable event; results of analyses; entry into specific emergency operating procedures; or another phenomenon which, if it occurs, indicates entry into a particular emergency class. (Source: NEI 07-01, Section 3.1)

Emergency Coordinator – Designated on-site individual having the responsibility and authority for implementing the Lee Nuclear Station Emergency Plan.

Emergency Notification System – A dedicated telecommunications system that provides voice communications between the Nuclear Regulatory Commission and specified nuclear facility emergency response facilities.

Emergency Plan Implementing Procedures (EPIPs) – Emergency response procedures that implement the Emergency Plan.

Emergency Planning Zones (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. (Source: NUREG-0654, Rev. 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. (Source: NUREG-0654, Rev. 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. (Source: NUREG-0654, Rev. 1, Glossary)

Exclusion Area – As defined in 10 CFR 50.2.

Exercise – A test of the adequacy of timing and content of implementing procedures and methods; emergency equipment and communications networks; and the public notification system. An exercise permits the evaluation of training and response to ensure that emergency response organization personnel are familiar with their duties. (Source: 10 CFR 50 Appendix E.IV.F.2)

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

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

Local Counties – This term shall be used to denote the counties in the Plume Exposure Pathway (~10 mile) Emergency Planning Zone.

Monthly - For periodic emergency planning requirements, monthly is defined as once each month, with a maximum interval of 38 days.

Off-site – Beyond the Owner Controlled Area.

On-site – Within the Owner Controlled Area.

Operations Support Center (OSC) – An on-site assembly area separate from the Control Room and TSC where licensee operations support personnel report in an emergency.

Owner Controlled Area – The area, outside of the Protected Area but inside the site boundary, access to which can be limited by Duke Energy for any reason.

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

Protective Action Guides (PAGs) – The projected dose to individuals in the general population 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 – For periodic emergency planning requirements, quarterly is defined as once every three months, with a maximum interval of 112 days.

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

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 – For periodic emergency planning requirements, semi-annual is defined as once every 6 months, with a maximum interval of 228 days.

Site – The station proper and the exclusion area around the station.

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

Thyroid Committed Dose Equivalent (Thyroid CDE) – Means the dose equivalent to the thyroid that is 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

AC	Alternating Current
ALARA	As Low As Reasonably Achievable
C	Celsius
cc	Cubic Centimeter
CDE	Committed Dose Equivalent
CEDE	Committed Effective Dose Equivalent
CFR	Code of Federal Regulations
COL	Combined License
CR	Control Room
DAC	Derived Air Concentration
DC	Direct Current
DCD	Design Control Document
dB	Decibel
dpm	Disintegrations per minute
DHS	(U.S.) Department of Homeland Security
DOE	(U.S.) Department of Energy
DOT	(U.S.) Department of Transportation
EAL	Emergency Action Level
EDE	Effective Dose Equivalent
ENS	(NRC) Emergency Notification System
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EPA	(U.S.) Environmental Protection Agency
EPIP	Emergency Plan Implementing Procedure
EPZ	Emergency Planning Zone
ERDS	Emergency Response Data System
ERF	Emergency Response Facility
ERO	Emergency Response Organization
ETE	Evacuation Time Estimate
ETS	Emergency Telecommunications System
F	Fahrenheit

FEMA	Federal Emergency Management Agency
FRMAC	Federal Radiological Monitoring and Assessment Center
FSAR	Final Safety Analysis Report
ft	Feet
GE	General Emergency
gpm	Gallons per minute
HP	Health Physics
HPN	Health Physics Network (Communication System)
I	Iodine
IN	Information Notice (NRC)
INPO	Institute of Nuclear Power Operations
JIC	Joint Information Center
KI	Potassium Iodide
LAN	Local Area Network
LCO	Limiting Condition for Operation
LOCA	Loss of Coolant Accident
MCL	Management Counterpart Link
MERT	Medical Emergency Response Team
mph	Miles per hour
mrem	millirem
mR/hr	Millirem per hour
MSL	Mean Sea Level
MWe	Megawatt electric
MWt	Megawatt thermal
NCEM	North Carolina Division of Emergency Management
NEI	Nuclear Energy Institute
NOUE	Notification of Unusual Event
NRC	(U.S.) Nuclear Regulatory Commission
NWS	(U.S.) National Weather Service
OBE	Operating Basis Earthquake
ODCM	Off-site Dose Calculation Manual
OSC	Operations Support Center

PABX	Private Branch Exchange (Communications System)
PAG	Protective Action Guide
PAR	Protective Action Recommendation
PMC	Piedmont Medical Center
PMCL	Protective Measures Counterpart Link
psi, psia, psig	Pounds per square inch, psi absolute, psi gage
RAD, Rad, rad	Radiation or radiological, depending on context
RCS	Reactor Coolant System
REAC/TS	Radiation Emergency Assistance Center / Training Site
REM	Roentgen Equivalent Man
R/hr	Roentgen per hour
RMS	Radiation Monitoring System
RO	Reactor Operator
RPP	Radiation Protection Program
RSCL	Reactor Safety Counterpart Link
SCBA	Self-Contained Breathing Apparatus
SERT	State Emergency Response Team
SPDS	Safety Parameter Display System
SRO	Senior Reactor Operator
STA	Shift Technical Advisor
TEDE	Total Effective Dose Equivalent
Thyroid CDE	Thyroid Committed Dose Equivalent
TS, Tech Specs	Technical Specification(s)
TSC	Technical Support Center
µCi	Micro (µ) Curies
UHF	Ultra High Frequency
U.S.	United States
X/Q	Chi/Q; Dilution and dispersion factor, seconds per cubic meter

I. INTRODUCTION

This Emergency Plan describes the plans established by Duke Energy for responding to a radiological emergency at the William States Lee III Nuclear Station (Lee Nuclear Station). The Lee Nuclear Station Emergency Plan (the Plan) describes the organization, facilities, emergency response measures, and functional interfaces with off-site agencies which can be used to respond to a broad range of emergencies. This Emergency Plan describes the responsibilities and specific authorities which provide for effective control and coordination of the emergency response, both on-site and off-site. The on-shift plant organization is augmented by an expanded Emergency Response Organization (ERO), as required, to address situations with serious potential consequences.

The format for this Emergency Plan directly follows the format of NUREG-0654, Rev. 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, Rev. 1.

Types of emergencies are divided into four classifications which cover a broad spectrum of potential occurrences. The classifications range from a "Notification of Unusual Event," in which off-site officials are notified of an unusual condition, through "General Emergency," in which on-site and off-site evacuation may be required and a major state of emergency exists. This classification scheme is compatible with existing State and local plans.

An emergency response organization is established with specific duties and responsibilities defined, and points of contact between on-site and off-site supporting agencies are designated. Augmentation of the on-shift organization is required at "Alert" and higher levels and may occur at a Notification of Unusual Event (NOUE), and includes activation of both station and corporate emergency response personnel, as appropriate. Provisions for prompt notification of State, Local and Federal agencies are established and include information which may be required for off-site agency response.

Methods and procedures provide corrective and protective actions, including evaluation of the operability of the unaffected unit. The uses of protective equipment, protective action guides and exposure limits are also pre-specified. The facilities available for assessment and management of the emergency consist of on-site and off-site response facilities, communication systems, and portable or fixed equipment and systems for detection and measurement of those parameters causing or resulting from the emergency. Medical services are also available.

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

The Emergency Plan is reviewed on a periodic basis. Periodic drills and exercises involving communications, firefighting, radiological monitoring and radiation protection activities are routinely conducted. Joint exercises involving participation by State and local response agencies are held periodically and coordinated with other nuclear facilities within the affected States to test major elements of the Plan. Federal response agencies may also participate in these joint exercises. Critiques of each implementation of the Plan allow for critical reviews of technique,

methods, and shortcomings. Improvements are factored into the Plan and/or implementing procedures through controlled revisions.

A. PURPOSE

This Emergency Plan describes the pre-planned facilities, equipment, response organizations, assessment and protective actions, and cooperative agreements established by Duke Energy to provide for adequate protection of life and property in the event of a radiological emergency at the Lee Nuclear Station. 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; and
- Limiting the potential adverse impact of protective actions, such as evacuations or sheltering.

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

Emergency Plan Implementing Procedures (EPIPs) provide instructions for accomplishing the provisions established in the Plan. The procedures guide the classification of the emergency, provide for off-site notifications, and activation of the full response organization. They also provide techniques for estimating the consequences of off-site releases and making recommended Protective Action Recommendations (PARs).

B. SCOPE

This Emergency Plan applies to planning for and response to any radiological emergency condition at the Lee Nuclear Station. Section II.D of this Plan describes the emergency classification system. Appendix 1 identifies radiological emergency conditions, their initiating conditions, and Emergency Action Levels (EALs).

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

The Lee Nuclear Station is licensed under the requirements of 10 CFR Part 52, “Early Site Permits; Standard Design Certifications; and Combined Licenses For Nuclear Power Plants.” The regulations in 10 CFR Part 52 invoke the emergency planning requirements in 10 CFR Part 50, “Domestic Licensing Of Production And

Utilization Facilities." Consistent with the requirements of both 10 CFR Part 50 and 10 CFR Part 52, this Plan is based on the requirements of 10 CFR Part 50, Section 50.47, "Emergency Plans," and Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities." This plan is also based on the guidance provided in NUREG-0654/FEMA-REP-1, Rev. 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" (Reference III.A.1). NUREG-0654 has been endorsed as an acceptable means of meeting the emergency planning requirements of 10 CFR Part 50 through NRC Regulatory Guide 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors" (Reference III.A.2).

2. Emergency Planning Zones

NUREG-0654 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 ten miles, and the Ingestion Exposure Pathway EPZ, which has a radius of approximately fifty 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 Lee Nuclear Station. Figure I-1 provides an illustration of the Plume Exposure Pathway EPZ.

Ingestion Exposure Pathway EPZ

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

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

3. Site and Area Description

Lee Nuclear Station consists of two units, Units 1 and 2, each of which includes a Westinghouse AP1000 pressurized light water reactor. Each reactor unit is designed for a core power output of approximately 3400 MWt which results in a gross electrical output of at least 1000 MWe.

The Lee Nuclear Station location is described in Subsection 2.1.1.1 of the Lee Nuclear Station FSAR.

Figure I-1 - Plume Exposure Pathway Emergency Planning Zone

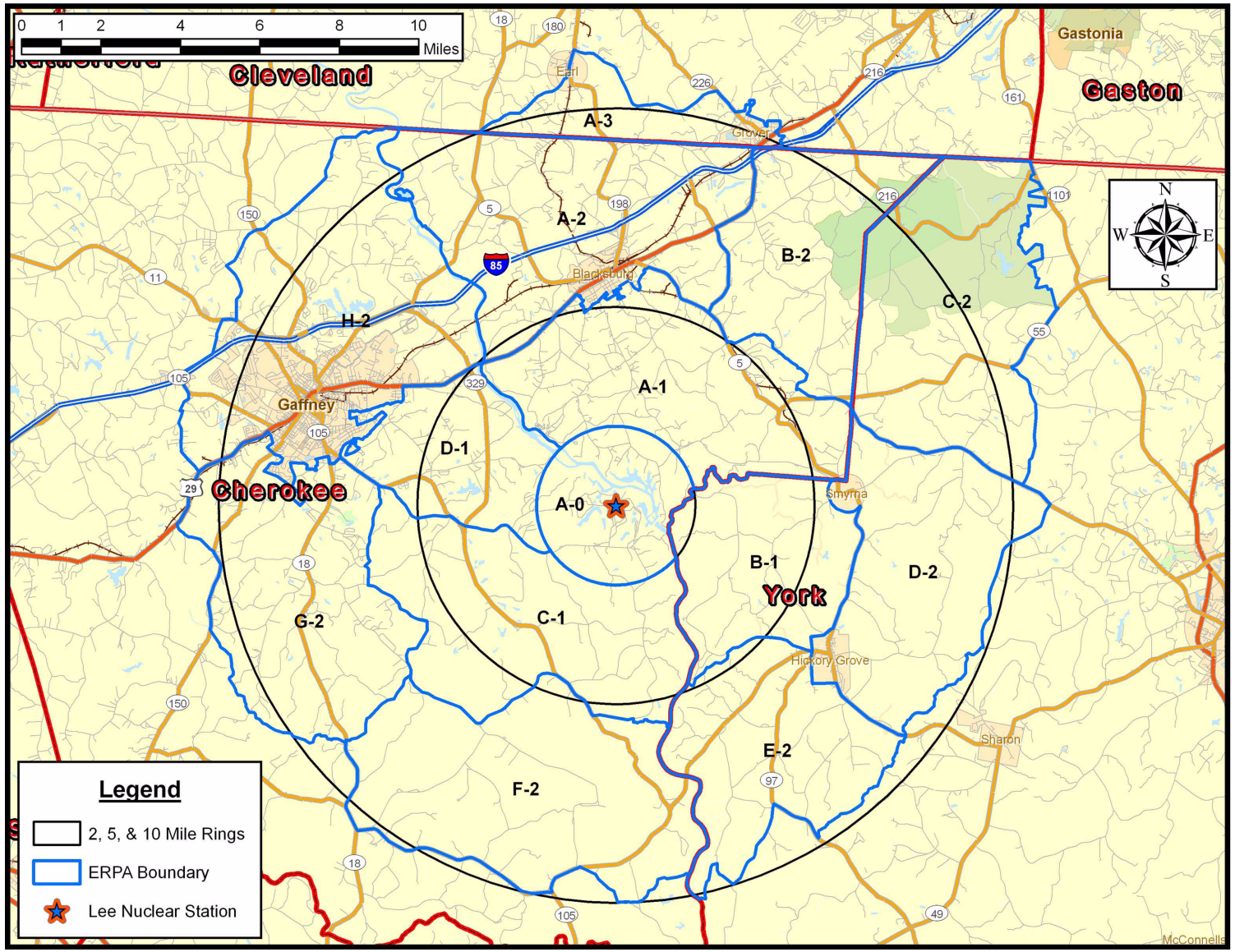
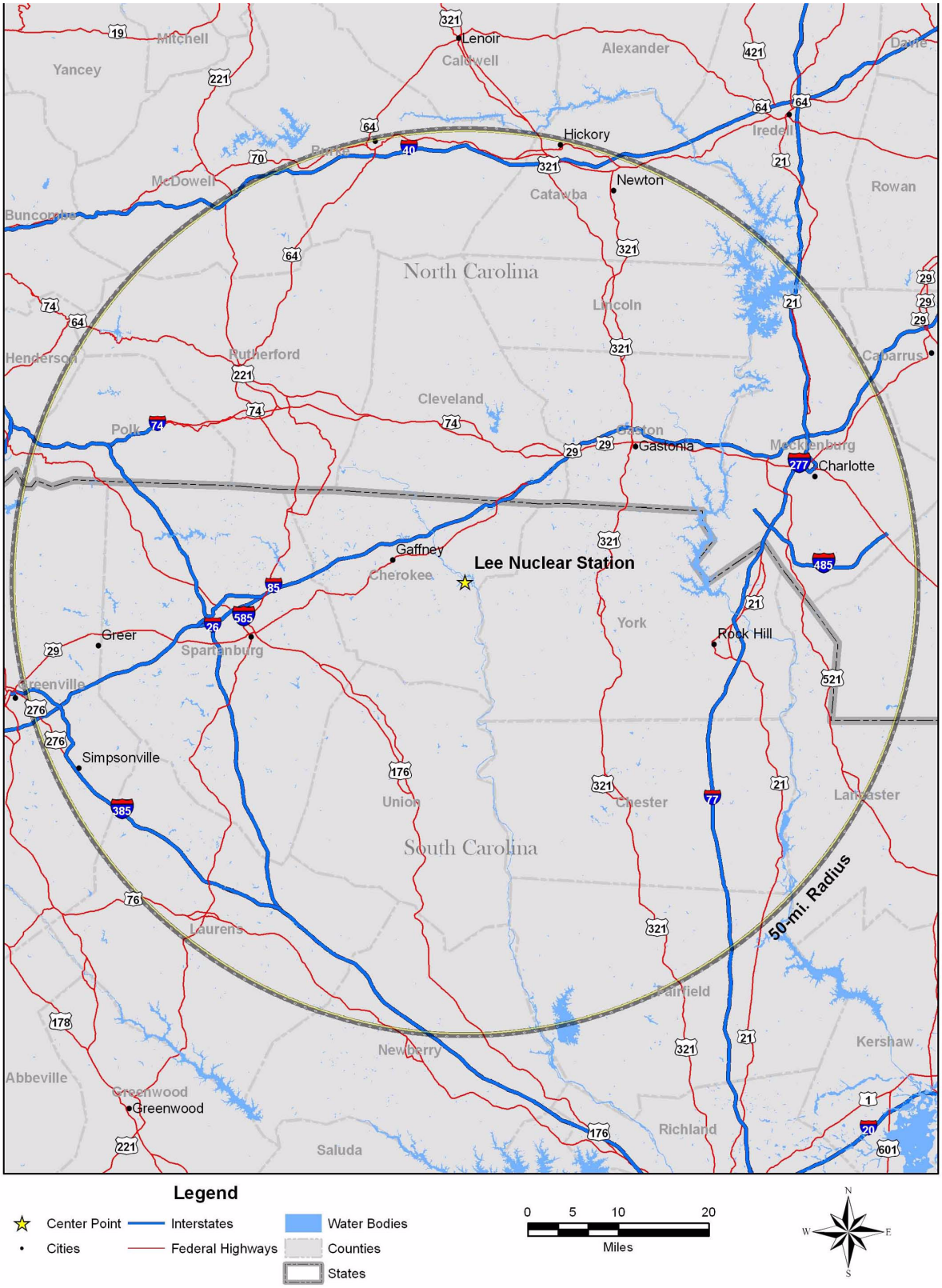


Figure I-2 - Ingestion Exposure Pathway Emergency Planning Zone



II. EMERGENCY PLAN

A. ASSIGNMENT OF RESPONSIBILITY (ORGANIZATION CONTROL)

1. Emergency Organization

a. Participating Organizations

The principal organizations participating in emergency response activities at the Lee Nuclear Station include:

- Duke Energy
- SC Emergency Management Division of the S.C. Adjutant General's Office[1]
- SC Department of Health and Environmental Control, Division of Waste Assessment and Emergency Response
- NC Department of Crime Control and Public Safety, Division of Emergency Management[1]
- NC Department of Environment and Natural Resources, Division of Environmental Health, Radiation Protection Section
- York County (SC) Government Agencies
- Cherokee County (SC) Government Agencies
- Cleveland County (NC) Government Agencies
- U.S. Nuclear Regulatory Commission (NRC)[2]
- U.S. Department of Energy (DOE)[2]
- U.S. Department of Homeland Security (DHS)/Federal Emergency Management Agency (FEMA) [2]

Appendix 7 of this Plan provides Certification Letters with participating agencies.

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

[1] This agency has the principal state responsibility for emergency response in their respective state.

[2] NRC, FEMA, and DOE coordinate the responses of other Federal agencies.

b. Concept of Operations

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

- Assess plant conditions
- Classify emergency conditions
- Notify off-site agencies of emergency conditions
- Provide technical expertise to responsible agencies
- Provide support for off-site assessment of radiological conditions
- Make protective action recommendations
- Mitigate the consequences of adverse plant conditions by monitoring and controlling plant parameters
- Terminate emergency conditions

Normal operations at the Lee Nuclear Station are conducted under the authority of the Operations Shift Manager and directed from the appropriate Control Room. In the event of an abnormal condition, the Operations Shift Manager directs the activities of the plant staff in performing initial assessment, corrective, and protective functions. Using approved emergency response procedures, including the Emergency Action Levels based on Appendix 1 of this Plan, the Operations Shift Manager determines if an emergency condition exists and, if so, the proper emergency classification. Based on the classification and plant conditions, the Operations Shift Manager:

- Assumes the role of the Emergency Coordinator.
- Makes or directs initial notifications to affected plant staff and North Carolina and South Carolina State authorities, Cherokee, York, and Cleveland Counties, and Federal authorities
- Determines if activation of the emergency response facilities (ERFs) is desirable or required[3, 4, 5]

[3] 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 is completed consistent with the requirements of this Plan.

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

The Control Room is the initial center for coordination of emergency response for all emergency conditions. For emergencies classified as Alert, Site Area Emergency and General Emergency, the Emergency Coordinator directs the activation of the Emergency Response Organization. The Emergency Coordinator 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 station personnel who have expertise in affected areas of plant operation to support the emergency response. This facility is equipped with communication equipment, computers, printers, off-site and on-site computer access, plant drawings, procedures and other materials and equipment to support its function. Personnel in the TSC assess the emergency condition and make 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 operational and 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, the Station Manager or other designated member of the station management staff relieves the Operations Shift Manager of Emergency Coordinator responsibilities and directs the activities of the on-site emergency response organization from the TSC.

The EOF assumes many of the functions of the TSC following turnover from the TSC. The EOF is staffed by corporate personnel or personnel from other Duke Energy Nuclear Stations, including the EOF Director, who directs the activities of this facility. The EOF Director is responsible for ensuring the EOF communicates emergency status to the States and counties, directs the efforts of the off-site monitoring teams, makes radiological assessments, recommending off-site protective measures to the States and counties, and arranging for dispatch of any special assistance or services requested by the station. Specific information relating to the staffing and reporting structure of the EOF organization is provided in EPIPs.

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 Coordinator, 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.

As noted previously in this section, the Emergency Coordinator is responsible for directing notifications to affected plant staff, which may include the unaffected

[5] 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.

unit's Control Room. This notification and subsequent communications will ensure that the unaffected unit staff is apprised of any actions they may be required to take.

Additionally, in the unlikely event that emergencies are declared simultaneously at both units during operations, the Emergency Coordinator function is designated from on-site shift management. The Emergency Coordinator discharges those duties described in this Emergency Plan and assures coordination of activities between the on-site ERFs.

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 EPIPs. Requirements for subsequent response actions by construction site personnel are stipulated in the construction site Health and Safety Plan or its supporting documents.

The State of South Carolina

The response provided by the State of South Carolina is described in the South Carolina Operational Radiological Emergency Response Plan. The principal State agency for mobilization of State resources to cope with an emergency is the Emergency Management Division under the office of the Adjutant General. This agency is supported by the Department of Health and Environmental Control, which provides radiological assessment and protection functions, and by other State agencies as described in the State Plan.

For an emergency at the Lee Nuclear Station, the State of South Carolina operates out of the State Emergency Operations Center in West Columbia, South Carolina.

The State of North Carolina

The response by the State of North Carolina is described in the North Carolina Emergency Operations Plan and the North Carolina Emergency Response Plan for Nuclear Power Facilities.

The Division of Emergency Management (NCEM) is the principal State agency for mobilization of State resources to respond to an emergency. Technical support for radiological assessment and protection functions is provided by the Division of Environmental Health, Radiation Protection Section.

NCEM mobilizes North Carolina State agencies for response as the State Emergency Response Team (SERT), as designated in the State Plan. When activated, the SERT is the primary emergency response authority for North Carolina. For an emergency at the Lee Nuclear Station, the SERT is activated at the State Emergency Operations Center in Raleigh, North Carolina.

County Governments

In an emergency situation at a nuclear station, county governments are immediately notified of the event. They have the primary responsibility for the protection of the citizens within the county boundaries consistent with the requirements of their respective Radiological Emergency Plans. The principal Duke Energy contact with county government is through the Emergency Management Director or designee. This contact is maintained by the TSC until relieved by EOF Off-Site Agency Communicators.

It is recognized that the county council, the chief executive of the county, and mayors of local communities have responsibilities in an emergency situation as well. The Government Agency Liaison on the staff of the Public Information Manager serves as the primary Duke Energy contact with these officials.

Local Agency Support Services

State, local and county agencies responsible for public health and safety work through the Emergency Management Agency's Emergency Operations Center in the affected counties. The EOF coordinates with the agencies necessary to support the emergency condition. Agencies and private sector organizations that have agreed to provide support, as necessary to the Lee Nuclear Station and surrounding areas are listed below.

Law Enforcement, Emergency Traffic Control, Related Police Matters

- Cherokee County (SC) Sheriff’s Department
- York County (SC) Sheriff's Department
- Cleveland County (NC) Sheriff’s Department
- Grover (NC) Police Department
- South Carolina Highway Patrol
- South Carolina Law Enforcement Division
- North Carolina Highway Patrol
- U.S. Department of the Interior Park Rangers
- Kings Mountain State Park Police
- Federal Bureau of Investigation
- South Carolina Department of Natural Resources

Early Warning or Evacuation of the Populace

- Cherokee County Emergency Management
- York County Emergency Management
- Cleveland County Emergency Management
- South Carolina Emergency Management Division
- North Carolina Division of Emergency Management

Radiological Emergency Monitoring Assistance

- DOE Radiological Assistance Team, Savannah River Operations Office (Aiken, SC)
- South Carolina Department of Health and Environmental Control, Division of Waste Assessment and Emergency Response (Columbia, SC)
- North Carolina Department of Environment and Natural Resources, Division of Environmental Health, Radiation Protection Section (Raleigh, NC)
- Federal Park Service Rangers

Hospitals, Medical Support

- Piedmont Medical Center
- Upstate Carolina Medical Center
- REAC/TS Facility

Ambulance Service

- Upstate Carolina Medical Center

Firefighting

- Draytonville-McKown Mountain-Wilkinsville Volunteer Fire Department

Public Health and Safety, Evaluation of the Radiological Situation

- Cherokee County Health Department
- York County Health Department
- Cleveland County Health Department

- South Carolina Department of Health and Environmental Control, Division of Waste Assessment and Emergency Response

- North Carolina Department of Environment and Natural Resources, Division of Environmental Health, Radiation Protection Section

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.

Lee Nuclear Station also maintains close contact with the NRC Operations Center and/or the NRC Region II offices in Atlanta, Georgia. This is an important function to provide accurate information and assessment of the emergency to the Federal Government. As a result of these communications, the NRC can best appraise their response to the emergency. In a like manner, the U.S. Department of Energy, Savannah River Site, is available to provide radiological assistance to the station.

Department of Energy

The Federal Radiological Monitoring and Assessment Center (FRMAC) Operations Plan (Reference III.A.3) provides for the coordinated management of Federal technical response activities related to a radiological emergency.

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

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

Nuclear Regulatory Commission

The response provided by the NRC is described in NUREG-0728, "NRC Incident Response Plan" (Reference III.A.4). The representative of the NRC who would provide input to the EOF 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 U.S. EPA may provide assistance in supporting environmental monitoring teams and mobile radioanalytical laboratories.

DHS/FEMA

DHS/FEMA bears responsibility for coordinating Federal agency response for non-technical aspects of the emergency, such as providing support for displaced members of the public. Such support would typically be requested by affected State and local agencies.

Appendix 7 of this Plan provides copies of the certification letters established between Duke Energy and the supporting Federal, State, and local government agencies and private sector organizations supporting this Emergency Plan. The responsibilities of many Federal agencies are established in the National Response Plan (Reference III.A.5) and 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.

c. Organizational Interrelationships

Figure II-1 illustrates the interrelationships between the affected organizations.

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

If required by the emergency classification, or if deemed appropriate by the Emergency Coordinator, emergency response personnel are notified and instructed to report to their emergency response locations[6]. The Operations Shift Manager is relieved as Emergency Coordinator when the Station Manager or his designated alternate 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.

The EOF is activated upon declaration of an Alert, Site Area Emergency or General Emergency. The EOF is staffed by corporate personnel, including the EOF Director, who directs the activities of this facility. The senior Duke Energy representative 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

[6] See Section II.A.1.a of this Plan regarding situations under which staffing of the emergency response facilities may be deferred.

protective measures to the State, and arranges through the company for dispatch of any special assistance or services requested by the station.

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

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

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

2. Functions, Responsibilities, and Legal Basis

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

Appendix 7 of this Plan provides copies of the certification letters established between Duke Energy and the State and local government agencies and private sector organizations committed to supporting further development and implementation of this Plan. Certification Letters in support of the Lee Nuclear Station Emergency Plan are re-negotiated once every three (3) years. These certification letters are included in Appendix 7 of this plan.

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

4. Continuous Operations

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

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

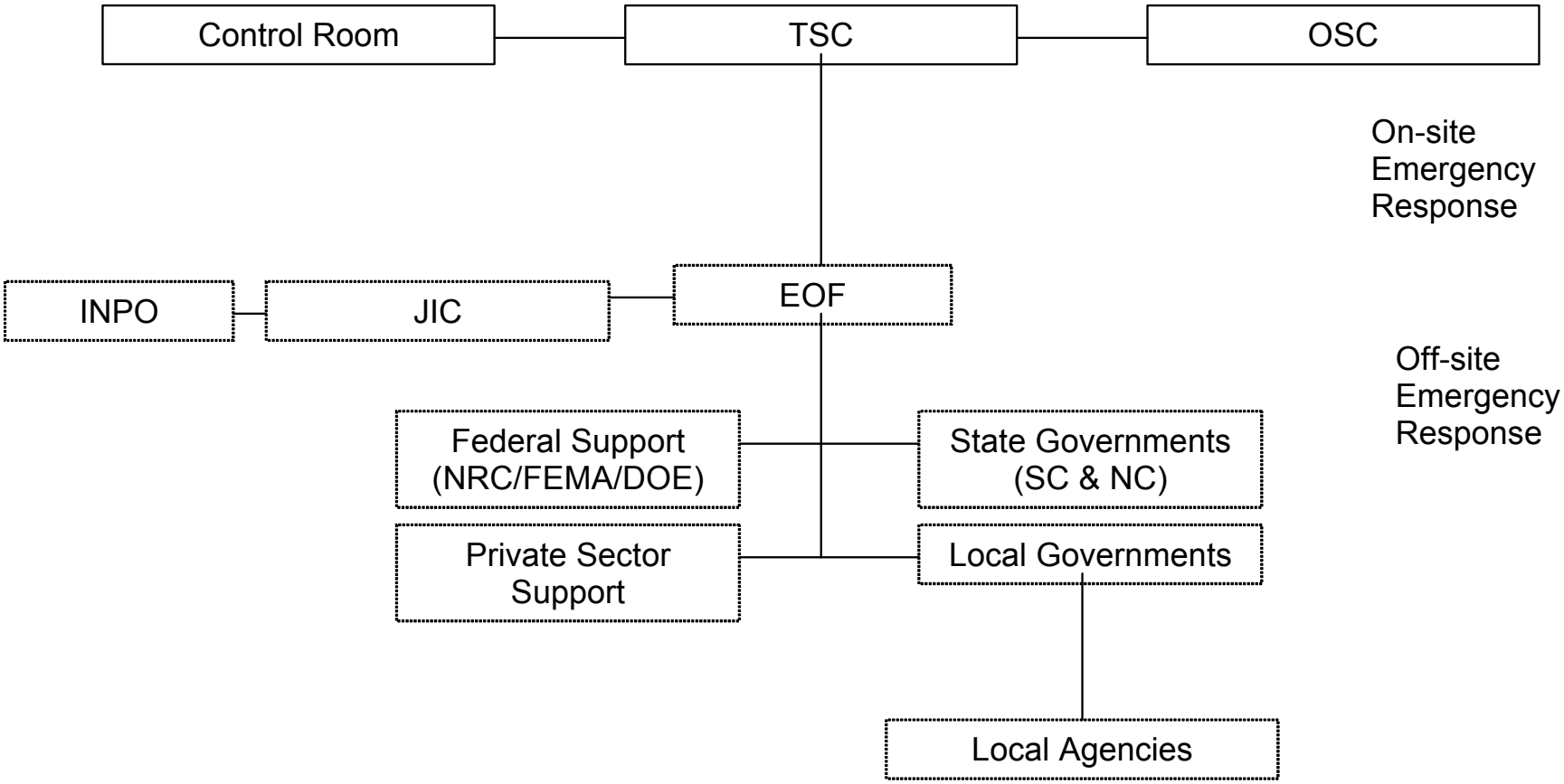
Table II-1 - Responsibility for Emergency Response Functions

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

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

Figure II-1 - Emergency Response Organization Interrelationships

(Alert, Site Area Emergency, General Emergency)



B. ON-SITE EMERGENCY ORGANIZATION

1. On-site Emergency Organization

Figure II-2 illustrates the on-site ERO. EPIPs provide details regarding ERO position functions.

The minimum staff required to conduct routine and immediate emergency operations is maintained at the station consistent with Appendix E of 10 CFR 50. Staffing is described in Section 13.1 of the Lee Nuclear Station FSAR. 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 Coordinator

The Operations 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 Coordinator until relieved by a qualified member of the management staff consistent with Section II.B.3 of this Plan or until termination of the emergency condition, whichever comes first.

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

3. Emergency Coordinator Line of Succession

If the Operations Shift Manager is rendered unable to fulfill the duties and responsibilities of the Emergency Coordinator position (such as due to personal illness or injury) the Unit Supervisor present on shift (a position that also is staffed at all times) assumes the Emergency Coordinator position until relieved by a qualified member of the management staff as outlined below.

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

4. Emergency Coordinator Responsibilities

The Emergency Coordinator has the responsibility and authority to initiate emergency actions necessary to protect the life, health, and safety of the plant staff. Any required evacuations of individuals (including members of the public) from the plant's Exclusion Area are conducted cooperatively with State and local agencies. The responsibilities of the Emergency Coordinator include:

- Classifying the emergency
- Authorizing notification to the NRC, State and local agencies of the emergency status
- Recommending protective measures to State and local authorities
- Authorizing emergency exposure limits (can be delegated to Radiation Protection Managers)
- Activating emergency personnel and facilities
- Reducing power or shutting down the reactor
- Committing company funds
- Acquiring emergency equipment or supplies
- Ordering Lee Nuclear Station evacuation
- Restricting access to the Lee Nuclear Station
- Notifying company management
- Implementing work schedules
- Directing on-site emergency activities

The first three items above may not be delegated. Upon activation of the EOF, the EOF Director is responsible for assuming these non-delegable responsibilities from the Emergency Coordinator.

The Emergency Coordinator has the authority to request assistance from any organization which the Emergency Coordinator deems necessary to mitigate the conditions causing the emergency. In addition, the Emergency Coordinator may request off-site assistance in firefighting, rescue services, law enforcement, and medical support prior to activation of the on-site emergency organization (see Figure II-1). Certification letters for the participating agencies and support services are provided in Appendix 7 of this Emergency Plan.

5. Plant Emergency Response Staff

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

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 EPIPs. These assignments shall cover the emergency functions in Table II-2. The minimum on-shift staffing and goals for providing additional 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 EPIPs.

Should the Emergency Coordinator determine that additional emergency response personnel are needed or the emergency classification is upgraded to Alert or higher, the Emergency Coordinator shall initiate activation of the EOF and JIC emergency response organizations and notification of additional on-site personnel, as necessary. The goal for activation of the full on-site emergency response organization is 75 minutes following the decision to activate.

The responsibilities of the emergency response personnel assigned on shift and those who make up the supplemental crews meet the staffing functions identified in Table II-2 of this Plan.

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

6. Interfaces Between Functional Areas

Figure II-1 illustrates the interfaces among functional areas of Lee Nuclear Station emergency response activity, Duke Energy corporate support, and the affected State and local government response organizations.

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

Upon declaration of an Alert, Site Area Emergency, or General Emergency, the (on-site) Emergency Coordinator directs the activation and notification of the on-site and off-site ERFs. Duke Energy management, technical, and administrative personnel staff the EOF and other facilities and provide support for the plant staff as shown in Table II-2.

The EOF organization is described in EPIPs. The Corporate Communications organization is described in the Joint Information Center (JIC) Activation

Procedure. Refer to Section II.G of this Plan for a discussion of the public information function. The EOF is staffed using 75 minutes as a goal for the minimum staff to be in place and operational.

In addition to the minimum required staff, other personnel report to the EOF to supplement the minimum staff. This staffing occurs gradually; the time required would range from a few minutes to a few hours depending on the proximity of the personnel to the EOF.

The organization identified in this section is capable of continuous (24 hours per day) operations for a protracted period. The individual responsible for assuring continuity of resources is the EOF Director.

The EOF and JIC staff focuses on performing management, technical and administrative activities as needed to support the plant staff and to relieve the plant staff of external coordination responsibilities. This includes 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/re-entry 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

The EOF Director has the ultimate responsibility for directing the corporate emergency response. Corporate support is coordinated between the Emergency Coordinator (TSC) and the EOF Director at the EOF. The EOF Director and his staff serve as the point of contact between Lee Nuclear Station personnel, the corporate emergency response staff (i.e. EOF and JIC), and governmental authorities.

8. Support from Contractor and Private Organizations

The principal organizations in the private sector that are part of the overall response organization are:

- Draytonville-McKown Mountain-Wilkinsville Volunteer Fire Department
- Upstate Carolina Medical Center
- Piedmont Medical Center (Rock Hill, SC)

Support is obtained from the responsible architect/engineering firm, reactor supplier, and other consultants and vendors, consistent with their expertise and facility needs, to respond to the emergency and recovery operations. Assistance from experienced personnel with expertise in facility design, engineering and construction is obtained as needed to aid in solving critical technical problems. This support is normally solicited by the EOF Director or his representative.

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

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

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

9. Local Emergency Response Support

Duke Energy has established and maintains agreements for local emergency response support services, including firefighting, rescue squad, medical and hospital services. Appendix 7 of this Plan provides certification letters for organizations providing the required services.

Figure II-2 - Emergency Response Organization – Site Only

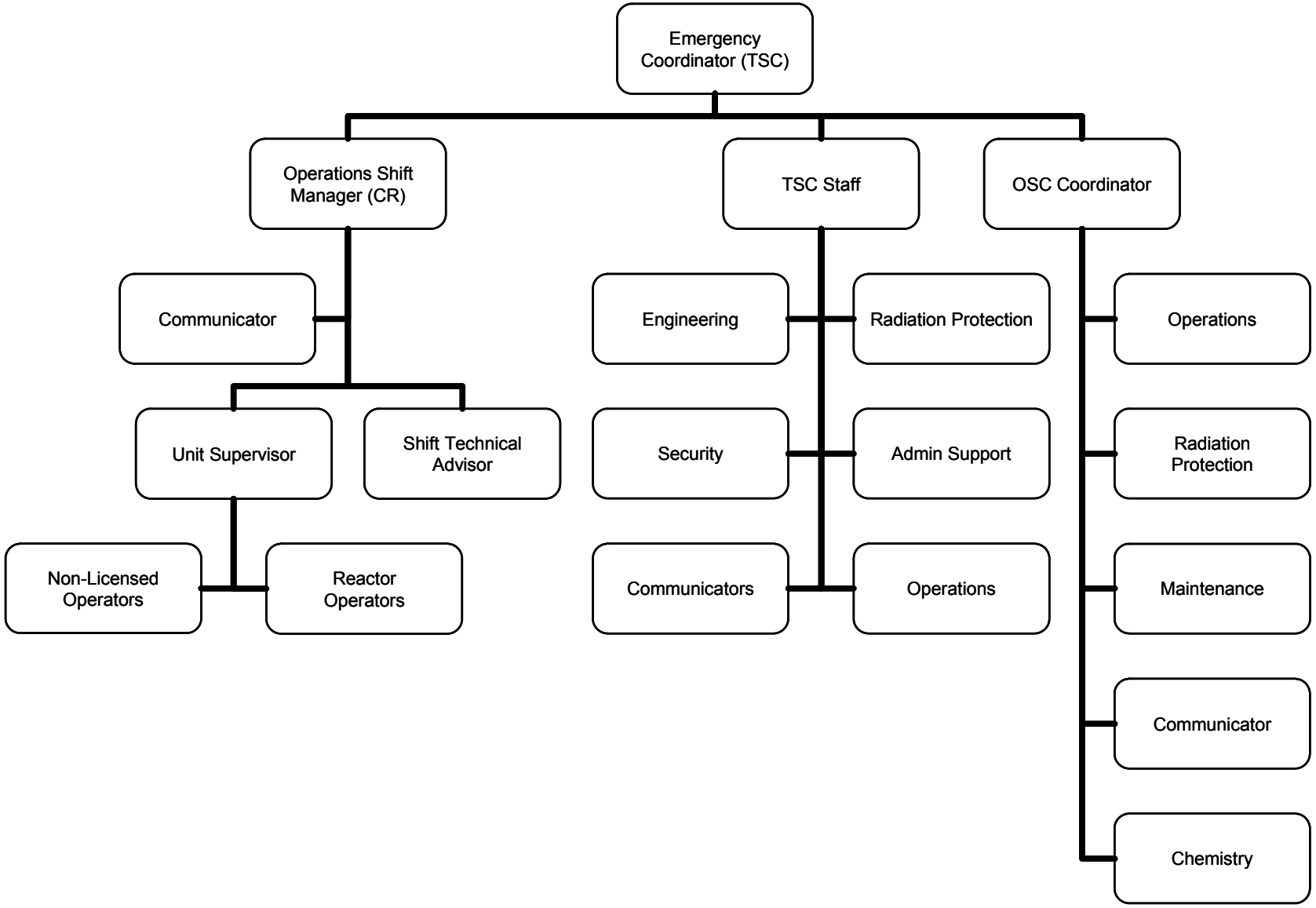


Figure II-3 - Off-Site Emergency Response Organization

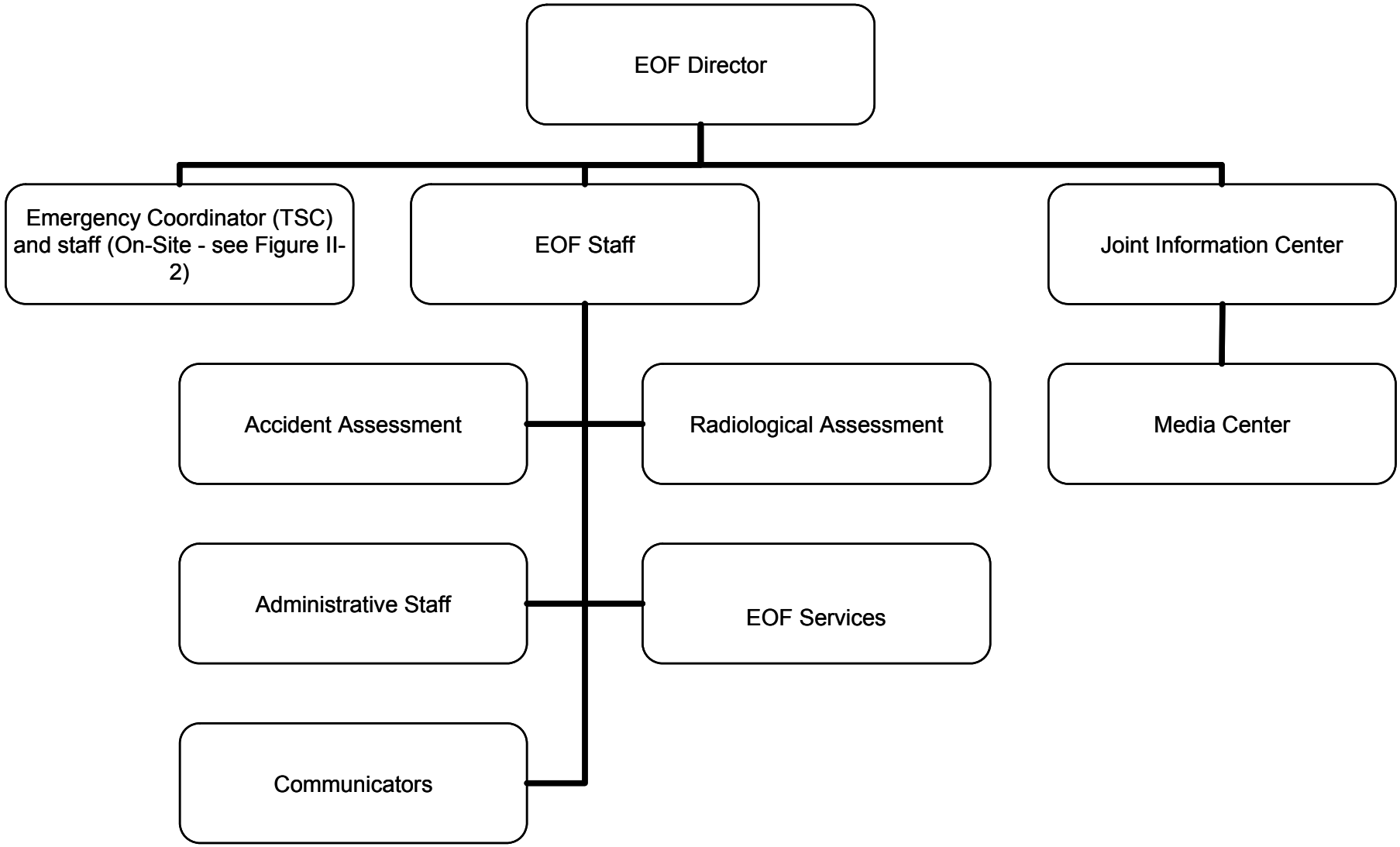


Table II-2 - Plant Staff Emergency Functions

(Sheet 1 of 2)

Major Functional Area	Major Tasks	Position, Title, or Expertise	On Shift Min	Targeted Capability for Additions
				75 minutes
Plant Operations and Assessment of Operational Aspects		Operations Shift Manager (SRO)	1	
		Unit Supervisor (SRO)	1[1,2]	
		Control Room Operator (RO)	2[1,2]	
		Non-Licensed Operator	2[1,2]	
Emergency Direction and Control (Emergency Coordinator)	Direction and Control of On-Site Emergency Activities	Operations Shift Manager	1	1
Notification and Communication	Notify licensee, State, local, and Federal personnel and maintain communication	Communicator	1[3]	3
Radiological Accident Assessment and Support of Operational Accident Assessment	EOF Director	Senior Manager		1
	Dose Assessment	Senior RP		1
	Off-site surveys	Field Monitoring Team[4]		4
	On-site (outside plant) surveys			2
	In-plant surveys		1	2
	Chemistry/Radiochemistry	Chemistry Technician		1
Plant System Engineering, Repair and Corrective Actions	Technical Support	Shift Technical Advisor[5]	1	
		Core/Thermal Hydraulics		1
		Electrical		1
		Mechanical		1
	Repair and Corrective Actions	Mechanical Maintenance		1
		Instrument and Electrical Maintenance		1
		Radwaste Operator		1

(Sheet 2 of 2)

Major Functional Area	Major Tasks	Position, Title, or Expertise	On Shift Min	Targeted Capability for Additions
				75 minutes
Protective Actions (In-Plant)	Radiation Protection a. Access Control b. HP Coverage for repair, corrective actions, search and rescue, first aid, and firefighting c. Personnel monitoring d. Dosimetry	RP Technicians	2[3]	4
Firefighting	Firefighting	Fire Brigade Members	Per FSAR 9.5.1	Local Support
Rescue Operations and First Aid			2[3]	Local Support
Site Access Control and Personnel Accountability	Security, firefighting, communications, personnel accountability	Security Personnel	Staffing levels for the on-shift, initial additions and supplemental additions are provided in the Security Plan.	

1. The On-Shift staffing is cited as individuals per unit, with the exception of the Shift Technical Advisor, RP Technician, and Chemistry Technician, who are responsible for both units consistent with FSAR 13.1. With the unit in cold shutdown condition, the minimum shift crew is as defined in 10 CFR 50.54(m)(2)(i) and the Technical Specifications.
2. For each unaffected unit in operation, maintain at least one Unit Supervisor, one Control Room Operator, and one Non-Licensed Operator.
3. This coverage is initially provided by personnel assigned other functions and is assumed by the additional personnel when they arrive on-site.
4. Field Monitoring Team consists of one (1) RP Technician and one (1) vehicle driver. Target capability is two teams of two individuals per team.
5. One Shift Technical Advisor (STA) is assigned per shift during plant operation in modes other than cold shutdown or refueling. A shift manager or another SRO on shift, who meets the qualifications for the combined Senior Reactor Operator/Shift Technical Advisor (SRO/STA) position, as specified for option 1 of Generic Letter 86-04, the commission's policy statement on engineering expertise on shift, may also serve as the STA. If this option is used for a shift, then the separate STA position may be eliminated for that shift.

C. EMERGENCY RESPONSE SUPPORT AND RESOURCES

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 EOF Director or Radiological Assessment Manager may request FRMAC assistance directly or through the NRC (Federal Coordinating Agency).

b. Federal radiological monitoring assistance may be provided by DOE-Savannah River 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).

c. Duke Energy estimates that a FRMAC Advance Party would arrive at the Lee Nuclear Station within 3 to 4 hours following the order to deploy, based on driving time. This response time may be shortened by use of aircraft.

d. Duke Energy expects that NRC assistance from NRC's offices in Atlanta, GA, will arrive in the Lee Nuclear Station vicinity within 7-8 hours following notification; the team may reduce this time by use of aircraft.

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

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

2. Off-site Organization Representation in the EOF

a. 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. Designated work areas have been provided in the EOF for Plume Exposure Pathway EPZ State/county Emergency Management Liaisons and State Radiation Protection Liaisons.

3. Radiological Laboratories

Radiological laboratories available to support emergency response efforts include the SC Department of Health and Environmental Control, Bureau of Radiological Health; NC Department of Environment and Natural Resources, Radiation Protection Section and the DOE Radiological Assistance Team. In addition, the station has vehicles that can be set up for mobile monitoring and assessment purposes. Fixed facilities are available for gross counting and spectral analysis in the station counting laboratory and at the Duke Energy Applied Sciences Center. Other facilities within the Duke System at McGuire, Oconee, and Catawba

Nuclear Stations are available to provide further analysis support within a short period of time (1-4 hours). The above radiological laboratories are available on a 24 hours per day basis and could provide their services and equipment on demand.

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

4. Other Supporting Organizations

Duke Energy has made arrangements to obtain additional emergency response support from the INPO Fixed Nuclear Facility Voluntary Assistance Agreement signatories and the REAC/TS. 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

Duke Energy implements 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. For Lee Nuclear Station, 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 III.A.6) as it applies to AP1000 facilities and postulated accidents identified in the FSAR.

The spectrum of emergencies peculiar to nuclear power stations range from accidents with minor implications on health and safety to the postulation of major occurrences resulting in the release of significant quantities of radioactive material. Examples of minor accidents include unplanned or uncontrolled releases of small amounts of radioactive material in excess of allowable limits as well as equipment malfunctions.

Major occurrences, though not expected to take place, have been postulated for planning and design purposes because their consequences could include the potential for release of significant amounts of radioactive material. The range of conditions in NEI 07-01 and the Lee Nuclear Station FSAR have been considered in the classification system of this Plan.

The classification system is not intended to include minor deviations during normal operation. Furthermore, it may be discovered that an event or condition, which met the classification criteria, had existed, but that the basis for the emergency class no longer exists at the time of discovery. For example, the event may have rapidly concluded or been discovered during a post-event review. As discussed in NUREG-1022, "Event Reporting Guidelines: 10 CFR 50.72 and 50.73" (Revision 2) (Reference III.A.7), actual declaration of an emergency class is not necessary in these circumstances, although notification to the NRC and affected State and local agencies is warranted.

1. Classification System

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

- 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 Lee Nuclear Station personnel or damage to Lee Nuclear Station 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 site personnel or equipment that could lead to the likely failure of or; 2) that prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary.

- 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 or hostile action that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA PAG exposure levels off-site for more than the immediate site area.

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

The Emergency Coordinator, EOF Director, or Emergency Planning Manager/ designee will close out the emergency class by providing a verbal summary to the affected off-site authorities, followed by a Licensee Event Report or written summary.

2. Emergency Action Levels

Duke Energy adopts the methodology provided in NEI 07-01. Because this document has not yet been endorsed by the NRC, EALs contained in this Plan are subject to further review and modification based on the version of NEI 07-01 ultimately endorsed in a future revision to NRC Regulatory Guide 1.101, or other accepted guidance, modified consistent with the improvements to facility design and operation as reflected in the AP1000 Design Control Document (DCD) (Reference III.A.8). 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

An integral part of this Emergency Plan is to provide for the consistent and timely emergency classifications. Each employee within the Protected Area is required to be familiar with the provisions of the Emergency Plan. Any employee, upon becoming aware of an emergency condition, shall immediately notify the Operations Shift Manager on duty unless it is apparent notification has already taken place. This notification and the information available to the Operations Shift Manager in the Control Room enable a timely classification of the emergency and subsequent actions.

Responsibility for off-site radiological emergency response rests primarily with local government officials. 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. Procedures for authentication of an emergency are maintained in State and local Emergency Response Plans. When notification is received, the State and local Emergency Response Plans are implemented and the State agency providing direction and control initiates action to assess and evaluate the radiological situation in order to provide guidance and assistance to local governments. After the initial immediate actions, subsequent protective actions recommendations are made based on the Duke Energy's evaluation of the radiological situation and the plant conditions. State and Federal agencies provide assistance as required.

In the event of an emergency, Lee Nuclear Station communicates with the affected counties, who have the capability of activating their Emergency Operations Centers. Lee Nuclear Station relies upon these counties to provide assistance in the event of an evacuation from the Lee Nuclear Station or for any services the counties are capable of providing to mitigate the results of the emergency.

Duke Energy 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. Section II.E.6 of this Plan discusses prompt notification to members of the public within the plume exposure pathway EPZ.

1. Notification of State and Local Authorities

Duke Energy maintains systems and procedures as needed 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. The Emergency Coordinator initiates notification of affected State and local authorities within 15 minutes of the emergency declaration, including escalation or de-escalation of any emergency condition. The affected State and local organizations include:

- Cherokee County Warning Point
- York County Warning Point
- Cleveland County Warning Point

- South Carolina Warning Point
- North Carolina Emergency Operations Center Radiological Warning Point

Section II.F.1 of this Plan provides a description of the primary and back-up notification systems. Message content and verification methods are established in implementing procedures and agreements between the affected organizations.

Duke Energy maintains systems and procedures needed to provide prompt notification of the NRC Operations Center following the declaration of any emergency condition. The NRC is notified as soon as is practical following the notification of State and local authorities and within one hour of the emergency declaration, including escalation or de-escalation of any emergency declaration. The primary notification system 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 Emergency Coordinator directs the notification and mobilization of the Lee Nuclear Station and corporate emergency response organization following the declaration of an Alert or higher level emergency. Although Duke Energy 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 ERO may be mobilized at the Notification of Unusual Event level at the discretion of the Emergency Coordinator.

The plant is provided with a Telephone/Page System as described in Subsection 9.5.2.2. of the AP1000 DCD. This system includes a siren tone generator and public address system speakers and is activated from the Control Room.

ERO personnel are notified of emergency conditions in accordance with the provisions of EPIPs. ERO personnel are notified by pagers using an Alpha-Numeric message upon the initial emergency declaration. Redundant notification is provided by the public address system and/or an automated telephone system which allows timely alerting of Emergency Response Organization personnel.

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 the messages has been established in conjunction with the State and local governments and includes the class of emergency, whether a release is in progress, and potentially affected areas and populations and any recommended protective measures. Additional information is provided as it becomes available.

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:

a. Incident location and name and contact information of caller

b. Incident date and time

c. Emergency classification;

d. Information regarding any actual or potential radioactive releases, including medium (i.e., airborne, waterborne) and duration

e. Estimates of total and relative quantities and concentrations of noble gases, iodines, and particulates

f. Other available and pertinent information regarding the release

g. Meteorological conditions, including wind speed and direction, stability class, and precipitation

h. Projected doses at the Lee Nuclear Station site boundary

i. Projected doses at 2, 5, and 10 miles from the site

j. (reserved)

k. Emergency response actions underway

l. Protective Action Recommendations

m. Requests for any on-site support by off-site organizations (e.g., firefighting or medical transportation support); and

n. Prognosis for changes in event classification or other conditions based on current assessments of plant conditions.

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 primary method of alerting the public is by sounding the Alert and Notification System. The Alert and Notification System includes an outdoor warning system, measures for notifying special facilities, and notification of the public. The system is designed to meet the acceptance criteria of Section B of Appendix 3, NUREG-0654, FEMA-REP-1, Rev. 1. As a back-up, State and Local plans maintain the alert mechanism via systems such as emergency vehicles, automated dialing systems, and PA Systems to also alert the public to monitor commercial broadcasts for emergency information. Each county controls the activation of the sirens within its boundaries.

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

7. Written Messages to the Public

Written pre-planned messages intended for transmittal to the public via radio and television stations are consistent with the classification scheme. Messages are released to the media by the State Director of Emergency Management or Local Director of Emergency Management or their designees. The messages give instruction with regard to specific actions to be taken by the occupants of the affected area. As appropriate, the messages provide information on the nature of the emergency and recommended protective actions, including sheltering, evacuation, and the use of potassium iodide, as appropriate. Duke Energy 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

The Lee Nuclear Station communications systems are designed to provide redundant means to communicate with all essential areas of the station during normal operation and under accident conditions. Communication systems vital to operation and safety are designed so that failure of one component would not impair the reliability of the total communications system. This is accomplished within the station by using diverse systems. The EPIPs and the State and local county emergency response plans define the responsibilities of designated personnel for use of the communication systems.

Duke Energy maintains systems and procedures that provide for prompt communications between its ERFs and between the Lee Nuclear Station and off-site ERFs. Dedicated communicators are available to maintain a continuous channel of communications with the NRC as requested and to provide regular updates to State and local officials approximately every 60 minutes, when conditions change, or as otherwise agreed.

Duke Energy maintains systems to facilitate communications both within the station and off-site. The communications systems consist of the following subsystems:

- Wireless telephone system
- Telephone/page system
- Private automatic branch exchange (PABX) system
- Emergency off-site communications
- Security communication system

Subsection 9.5.2 of the AP1000 DCD and the corresponding subsection of the FSAR provide details regarding the communications systems.

1. Description of Communication Links

Duke Energy maintains reliable communications links both within the plant and between the plant and external emergency response organizations.

a. Duke Energy maintains capabilities for 24 hours per day emergency notification to the State and county emergency response network. All State/county Warning Points are manned 24 hours per day.

b. The communications links consist of the following:

- Selective signaling telephone system to the county and State warning points/EOCs and EOF. The Selective Signaling operates on the Duke Network system tied to short lines leased from the local telephone company. This circuit allows intercommunication among the EOF, TSC, Control Room, counties, and States.

- Private telephone capability to the county and State warning points/ EOCs.
- Satellite telephone capability.
- Dedicated radio networks to the county and State warning points/ EOCs

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

- Emergency Notification System (ENS): Provide for initial notifications, as well as ongoing information about plant systems, status and parameters, are provided to the NRC. ENS lines are located in the Control Room, TSC and EOF.
- Health Physics Network (HPN): Provide 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 conduct of 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): Allows transmittal of reactor parametric data and meteorological data from the Lee Nuclear Station 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.

d. Duke Energy provides capability for communications between Control Room or TSC and the EOF, county and State EOCs by the selective signaling telephone capability. The State radio links described above and commercial telephone lines are the backups. A separate radio system provides for communications between the Control Room, TSC and/or EOF

to the radiological monitoring teams in the field. Satellite phone capability is also available in the TSC and EOF and via a portable unit.

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

f. Communications between Control Room/TSC/EOF to the NRC Operations Center is via the Emergency Telecommunications System (ETS) phone or private telephone. Communications from the Control Room/TSC/EOF to the regional office is via the normal private telephone capability. Communications between the TSC/EOF and off-site monitoring teams is via the radio system described in Section II.F.1.b.

g. Duke Energy will activate the ERDS within one hour of the declaration of an Alert or higher emergency classification.

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

2. Communication with Fixed and Mobile Medical Support Facilities

Duke Energy maintains communications systems that allow for communications between Lee Nuclear Station and fixed and mobile medical support facilities. The communications systems include both commercial telephone communications with fixed facilities and radio communications to the ambulance through the supporting dispatching center.

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

3. Communication System Reliability

A failure of one communication system will not affect the operation of other communications systems at the Lee Nuclear Station. The communications systems at the Lee Nuclear Station have diverse power supplies. Because the on-site communication systems are normally in use, or periodically tested, equipment failure will not go unnoticed. The multiplicity of on-site communications networks reduces the potential impact of the loss of any single system. Equipment for these systems is located in different areas of the Lee Nuclear Station thus ensuring that an accident in one area of the Lee Nuclear Station would not incapacitate all communication systems. Failure of normal power supplies will not deprive Lee Nuclear Station of off-site communication capability because, in most cases, backup power is provided. Dedicated telephone lines are checked according to specified schedules.

Sections II.H.10, II.N.2, and II.F.3 of this plan and subsection 9.5.2 of the DCD provide additional information regarding communications systems.

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

G. PUBLIC EDUCATION AND INFORMATION

Duke Energy maintains a coordinated program to educate members of the public regarding emergency notification methods and actions.

1. Public Information Program

Duke Energy coordinates with affected State and local authorities to disseminate pertinent emergency response information to members of the public in the Plume Exposure Pathway EPZ on an annual basis. Distribution methods may include providing informational publications, such as brochures or calendars, via mailings to individual households in the Plume Exposure Pathway EPZ. The distributed information includes:

a. Educational information on radiation

b. Point of contact for additional information

c. Information regarding notification methods, immediate actions and protective measures, such as information addressing evacuation routes, relocation sites, sheltering and radio-protective drugs

d. Information addressing special needs of the handicapped

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

2. Distribution and Maintenance of Public Information

Written information applicable to permanent residences is provided in a form that is likely to be maintained in the residence (e.g. 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 and publications provided to hotels, motels, and campgrounds. 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. Public information during a drill or emergency is coordinated and disseminated through the on-site media center or the Joint Information Center (JIC) located in the Energy Center at 526 South Church Street, Charlotte, NC. During the initial stages of an emergency situation, response to media questions relative to plant status is provided at the on-site media center. A Charlotte media center, also located in the Energy

Center, is activated as needed. The news release will indicate the location of the primary media center. The news manager and public spokesperson are the primary contacts for the news media.

b. To provide ready access to current information on plant status, a media center is promptly established. An on-site media center will provide space for a limited number of media. A larger media center, located in the Energy Center at 526 South Church Street, Charlotte, NC (near the EOF) can be activated as needed to support additional media.

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

4. Information Exchange

a. A public spokesperson who has access to all required information will provide plant status and company information during scheduled news conferences and media briefings. Designated public spokespersons are the Chief Nuclear Officer and his direct reports and their designees.

b. Licensee communications liaisons coordinate with designated members of the State and local emergency response organizations on a periodic basis.

c. Rumor control is accomplished through ongoing contact between the designated spokespersons and by the activities of a licensee liaison in the JIC, who monitors communications, identifies rumors, and makes appropriate contacts to obtain and disseminate accurate information through the representatives in the JIC. Duke Energy Customer inquiries are handled by Customer Contact Centers. Employees are updated via the company intranet/portal. Elected officials and regulatory agencies are updated through Duke Energy Corporate Communications and Governmental Affairs departments. Industry groups assist in disseminating information to other industry groups.

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

5. News Media Training

Annually, Duke Energy provides to affected media organizations information regarding 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 facilities required in the implementation of the Emergency Plan consist of the:

- Control Rooms
- Operations Support Centers (OSCs)
- Technical Support Center (TSC)
- Emergency Operations Facility (EOF)

These facilities were designed to meet the intent of the guidance in NUREG-0696 (Reference 9) and the clarification in NUREG-0737, Supplement 1 (Reference III.A.10), as applicable.

1. On-Site Emergency Response Facilities

Control Rooms

The Control Room of the affected unit(s) shall be the initial location for command and control of the emergency response effort. All 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 shall be limited to those individuals responsible for carrying out assigned emergency response tasks plus other technical advisors, as necessary.

Technical Support Center

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 events. 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, Duke Energy management, outside authorities (including the NRC), and the public.

A single TSC, serving both units, is located in the basement of the Maintenance Support Building and is of sufficient size to support the assigned staff. The TSC location differs from that provided in the AP1000 DCD, but includes all functional and design requirements for the TSC specified in the DCD. Display capability in the TSC includes a workstation that, at a minimum, is capable of displaying the parameters that are required of a Safety Parameter Display System (SPDS). The SPDS function is described in Subsection 18.8.2 of the DCD. The TSC is

environmentally controlled to provide room air temperature, humidity and cleanliness appropriate for personnel and equipment. The room is provided with radiological protection and monitoring equipment necessary to maintain radiation exposure to any person working in the TSC less than 0.05 Sv (5 rem) total effective dose equivalent (TEDE) as defined in 10 CFR 50.2 for the duration of the accident. The level of protection is similar to the Control Room. However, in the event that all off-site and on-site AC power is unavailable, the TSC could be evacuated and the TSC management function transferred to a location unaffected by the radiation release.

The TSC is provided with reliable voice and data communication with the Control Room and EOF and reliable voice communications with the OSC, NRC Operations Centers and State and local operations centers.

Appendix 10 of this Plan provides descriptive information for the TSC.

Operations Support Centers

The OSC (one for each unit) provides a centralized area and the necessary supporting resources for the assembly of designated operations support personnel during emergency conditions. The OSC provides the resources for communicating with the affected unit(s) Control Room and the TSC. 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 designated 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 OSCs are not designed to remain habitable under all projected emergency conditions; however, implementing procedures make provisions for relocating the OSCs as needed, based on ongoing assessments of plant conditions and facility habitability. The Emergency Coordinator directs relocation of the OSC, if required.

The OSCs are located in the space designated for the TSC in each unit's Annex Building.

2. Off-site Emergency Response Facilities

Emergency Operations Facility

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

The Emergency Operations Facility (EOF) is utilized for coordination of off-site activities such as communications with local, State and Federal agencies, and coordination of corporate and other outside support. Anticipated occupants are the EOF organization and appropriate State and Federal agency representatives.

The EOF has redundant two-way communications with the Technical Support Center and appropriate off-site support agencies. (See Section II.F) The EOF is located in the Charlotte General Office in the Energy Center at 526 South Church Street, Charlotte, NC.

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

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

Duke Energy 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 Coordinator.

- Alert, Site Area Emergency and General Emergency – Staffing of the TSC, OSC, and EOF is required.

Following declaration of an emergency condition, the ERFs are staffed and activated in accordance with Emergency Plan Implementing Procedures (EPIPs). Emergency response personnel are notified of emergency conditions requiring staffing of the ERFs as described in Section II.E.2 of this plan. Following notification, emergency response personnel report to the assigned ERF and undertake activities necessary to make the ERFs fully functional. The individual in charge of each ERF may declare the ERF activated following an assessment of pertinent conditions, including staffing levels, habitability, operability of installed systems, sufficiency of supplies and equipment, and communications interfaces.

If facility conditions, such as radiological or security conditions, exist that may present a hazard to emergency response personnel, the Emergency Coordinator may initiate alternate plans, including directing responders to alternate locations, pending establishment of more favorable conditions.

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

5. On-site Monitoring Systems

Duke Energy 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 AP1000 DCD and the corresponding subsection of the FSAR provide a description of the seismic monitoring system.

b. Sections 11.5 and 12.3 of the AP1000 DCD and the corresponding subsections of the FSAR provide a description of the installed radiological monitoring systems. In addition to the installed systems, Duke Energy 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 AP1000 DCD and the corresponding section of the FSAR provide a description of the plant process monitoring systems.

d. Subsection 9.5.1 of the AP1000 DCD and the corresponding subsection of the FSAR provide a description of the plant fire monitoring system.

Appendix 1 of this plan describes the bases for the selection of the designated instruments as indicators of emergency conditions.

6. Access to Data from Monitoring Systems

a. Section II.H.8 of this plan provides a discussion of Duke Energy's on-site meteorological data collection system. Back-up seismic data is available from the U.S. Geological Survey. Flooding data is available from NOAA's Hydro-Meteorological Reports. These data are shared with affected local, State, and Federal authorities via the communications links discussed in Section II.F of this Plan.

b. The Lee Nuclear Station Off-site Dose Calculation Manual (ODCM) describes the Lee Nuclear Station off-site monitoring systems. In addition to the monitoring systems, equipment, and radiological laboratory facilities provided at the plant, Duke Energy 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.

c. Environmental Radiological Monitoring equipment includes multiple radioiodine and particulate monitors and thermoluminescent dosimeters or other dose integrating devices. The dosimeters are posted and collected in accordance with Table 1 of Revision 1 of the Branch Technical Position included with Generic Letter 79-65, "Environmental Monitoring for Direct

Radiation" (Reference III.A.11). The Lee Nuclear Station ODCM provides locations of posted dosimeters and air samplers.

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

7. Off-site Radiological Monitoring Equipment

Duke Energy 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

Duke Energy acquires meteorological data from an on-site meteorological tower, instrumented at the 10m and 60m levels for winds and ambient temperatures. Atmospheric stability can be determined from the vertical temperature difference between the 60m-10m level temperatures (i.e. delta-T). Dewpoint temperature is measured at the 10m level and precipitation is measured at the ground. The meteorological monitoring program and climatology for Lee Nuclear Station are described in FSAR 2.3. All measured data from Lee Nuclear Station's on-site meteorological tower is available to the plant and ERF display systems.

The parameters monitored by the Lee Nuclear Station meteorological towers include the following:

- Wind speed (mph) at 10m and 60m heights
- Wind direction (degrees from North) at 10m and 60m heights
- Temperature (°C) at 10m and 60m heights
- Dewpoint (°C)
- Precipitation (inches)

Meteorological data can also be obtained from the Catawba Nuclear Station and the National Weather Service in Greer, SC.

9. Operations Support Center

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

10. Emergency Equipment and Supplies

Duke Energy performs inspection, inventory, and appropriate operational tests of dedicated emergency equipment and instruments at least once each calendar quarter and after each use. Implementing procedures establish requirements for performing inventories and operational tests. Duke Energy maintains sufficient reserves of equipment and instruments to replace items that are removed from the emergency kits for calibration or repair.

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

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

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

11. Emergency Kits

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

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

12. Receipt of Field Monitoring Data

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

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

I. ACCIDENT ASSESSMENT

1. Parameters Indicative of Emergency Conditions

Duke Energy identifies plant system and effluent parameter values that are indicative of off-normal conditions. Appendix 1 of this plan includes the various indications that correspond to the emergency initiating conditions based on the methodology provided in NEI 07-01, Rev. 0. Appendix 1 also specifies the instruments used to indicate emergency conditions.

2. Plant Monitoring Systems

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

Subsection 9.3.3 of the AP1000 DCD and the corresponding subsection of the Lee Nuclear Station FSAR describe provisions for obtaining samples under accident conditions.

Section 11.5 of the AP1000 DCD and the corresponding section of the Lee Nuclear Station FSAR describe the Lee Nuclear Station radiation monitoring systems.

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

Dose assessment 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 Lee Nuclear Station. 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

Plant 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.

7. Field Monitoring Capability

Duke Energy provides Emergency Response field teams composed of one radiation protection technician qualified in accordance with the emergency preparedness training requirements established in Section II.O of this Plan and one vehicle driver.

Appendix 6 of this Plan provides a list of the types of instrumentation that is available for performance of field monitoring in the Plume Exposure Pathway EPZ. In addition to the required instrumentation, Duke Energy 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. Implementing procedures provide guidance for field monitoring teams' performance of monitoring activities. Field monitoring teams act under the direction of Radiation Protection personnel in the TSC prior to activation of the EOF and, following activation of the EOF, under the direction of Radiological Assessment 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

Duke Energy 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. Duke Energy 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

Duke Energy equips field teams with portable air samplers, appropriate sample media, and analysis equipment capable of detecting radioiodine concentrations at

or below 10^{-7} microcuries per milliliter under field conditions, taking into consideration potential interference from noble gas activity and background radiation. Appendix 6 of this Plan provides information regarding emergency supplies, equipment, and instruments.

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

10. Relating Measured Parameters to Dose Rates

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

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

11. Tracking of Plume Using Federal and State Resources

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

1. On-Site Notification

Lee Nuclear Station establishes and maintains methods to inform personnel within the Lee Nuclear Station site boundary of an emergency condition requiring individual action. Duke Energy informs individuals located within the Protected Area primarily via use of the plant public address system and audible warning systems. In high noise areas or other areas where these systems may not be audible, other measures may be used.

Lee Nuclear Station informs individuals located outside of the Protected Area via audible warnings provided by warning systems and the activities of the Security Force and, if needed, local law enforcement personnel. Lee Nuclear Station 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.

Duke Energy maintains the ability to notify all 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

The Operations Shift Manager/Emergency Coordinator or designee uses EPIPs, information available from meteorological tower instrument readouts and current radiological data for determining the evacuation route. Provisions for evacuation of on-site individuals include evacuation by private automobile. The designated relocation site will have decontamination and contamination control capability and equipment in the event it is needed. Evacuation by automobile is expected to require 15 to 30 minutes. High traffic density is not considered in estimating evacuation times due to the relatively untraveled area selected for the relocation site.

Affected individuals evacuate the Lee Nuclear Station via personal vehicles. If any individual on-site does not have access to a personal vehicle, the Security Force will make arrangements for transportation with another evacuating individual. Duke Energy directs evacuees to the designated relocation site.

Duke Energy 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 Lee Nuclear Station evacuation be inadvisable due to adverse conditions (e.g., weather-related, radiological, or traffic density conditions), Duke Energy will direct affected individuals to a safe on-site area (as determined by the Emergency Coordinator or his designee) for accountability and, if necessary, contamination monitoring and decontamination.

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

3. Personnel Monitoring and Decontamination

Duke Energy has established the relocation sites to provide a location for personnel monitoring. The Emergency Coordinator directs contamination monitoring of personnel, vehicles, and personal property arriving at the relocation site when there is a likelihood that individuals and their property may have become contaminated before or during the Lee Nuclear Station evacuation.

4. Non-Essential Personnel Evacuation and Decontamination

In the event of a Site Area Emergency or General Emergency, Lee Nuclear Station 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 the assembly areas to facilitate contamination monitoring.

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

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

5. Personnel Accountability

Lee Nuclear Station has the capability to account for all individuals within the Protected Area and to identify any missing individuals within 30 minutes following initiation of accountability measures. Following this initial determination of individuals on-site, Lee Nuclear Station has the capability to continuously account for all individuals within the Protected Area. Lee Nuclear Station maintains these capabilities consistent with the requirements of the Lee Nuclear Station Security Plan.

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 Emergency Coordinator 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 Emergency Coordinator, personnel assembly, accountability, and evacuation may result in undue hazards to site personnel, the Emergency Coordinator may direct other protective measures, including:

- Evacuation of personnel from areas and buildings perceived as high-value targets
- 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

6. Protective Measures

Lee Nuclear Station distributes protective equipment and supplies to personnel remaining or arriving on-site during the emergency as needed to control radiological exposures or contamination. Protective measures to be utilized are as follows:

a. Respiratory Protection and Engineering Controls:

- Protective measures are utilized to minimize the ingestion and/or inhalation of radionuclides and to maintain internal exposure below the limits specified in 10 CFR 20, Appendix B.
- Engineering (ventilation) controls are utilized in the TSC and Control Room to control concentrations of radioactive material in air. Otherwise, when not practical to apply process or other engineering controls to limit intakes of radioactive material in air, one or more of the following protective measures is utilized:
  - Control of access
  - Limitation of exposure times
  - Use of individual respiratory protection equipment.
- Self-contained breathing apparatus (SCBA) are used in areas that are deficient in oxygen or when fighting fires. Respiratory protective equipment is issued by Radiation Protection or Safety and Health Services. SCBAs are available with other firefighting equipment for use by the station fire brigade.

b. Use of Protective Clothing:

Protective clothing is issued when contamination levels exceed 1000 dpm/ 100 cm^2 beta-gamma and 20 dpm/100 cm^2 alpha of smearable contamination. Protective clothing items are provided for emergency use consistent with Appendix 6 of this plan. Special firefighting protective clothing and equipment is available in designated station supply storage areas for use by fire brigade personnel.

c. Individual Thyroid Protection:

Protective measures are utilized to minimize the ingestion and/or inhalation of radioactive iodine. However, if an unplanned incident involves the accidental or potential ingestion or inhalation of radioactive iodine, Potassium Iodide (KI) tablets are available for distribution in accordance with Lee Nuclear Station procedures.

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

7. Protective Action Recommendations and Bases

The EOF Director or the Emergency Coordinator (if the EOF is not yet activated) is responsible for recommending off-site protective actions to the affected States and counties. The State and local governments are responsible for notification of the public and implementation of the appropriate protective measures. Protective Action Recommendations (PARs) are required to be made to the affected States and counties within 15 minutes of declaring a General Emergency. Specific protective action recommendations tied to plant and meteorological conditions are provided in an implementing procedure. This guidance is based on Supplement 3 (Criteria for Protective Action Recommendations for Severe Accidents) to NUREG-0654.

Public PARs are based on plant conditions, estimated off-site doses, or some combination of both. 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.

The initial PAR for any event classified as a General Emergency is to evacuate in all directions out to two miles and evacuation of the downwind sector and one sector on either side of the downwind sector out to five miles. This PAR may vary depending upon meteorological conditions. Sheltering may be appropriate when a release is short term and controlled. Sheltering may be appropriate when known conditions make evacuation dangerous, e.g., severe weather or overriding threat to public safety. Follow-up protective action recommendations that the station may make to the State and counties are based on current meteorological data such as wind direction, wind speed and stability class, and dose projections. Also, recommendations are made for use of potassium iodide by the public consistent with approved strategies.

In addition to the plant condition-based PARs, Duke Energy provides Protective Action Recommendations based on off-site dose projections. The Radiological Assessment Manager is responsible for making dose projections on a periodic basis. These calculations use plant procedures to calculate projected dose to the population-at-risk for either potential or actual release conditions. For conditions in which a release has not occurred, but fuel damage has taken place and radiation levels in the containment atmosphere are significant, a scoping analysis is performed to determine what recommendations would be made if containment

integrity were lost at that time. A Total Effective Dose Equivalent (TEDE) and Committed Dose Equivalent (CDE) thyroid are calculated at various distances from the plant (site boundary, 2 miles, 5 miles, 10 miles and beyond, if needed). These dose projections are compared to Protective Action Guides shown in Table II-3, which are derived from EPA 400-R-92-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents" (Reference III.A.12). Based on these comparisons, protective action recommendations are developed by the Radiological Assessment Manager. If these recommendations involve sheltering or evacuation of the public around the plant, the Radiological Assessment Manager informs the EOF Director of the situation and recommendations for protective actions.

Table II-3 - Protective Action Guides

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

If dose projections show that PAGs are exceeded at 10 miles, the dose assessment code and in-field measurements, when available, are used to calculate doses at various distances downwind to determine how far from the Lee Nuclear Station PAG levels are exceeded. The Radiological Assessment Manager forwards the results to the EOF Director who communicates this information to the off-site authorities.

8. Evacuation Time Estimates

Duke Energy has conducted an Evacuation Time Estimate (ETE) (Reference III.A.13). The ETE is consistent with the guidance provided in Appendix 4 of NUREG-0654 and NUREG/CR-6863, “Development of Evacuation Time Estimate Studies for Nuclear Power Plants” (Reference III.A.14). The ETE did not reveal the existence of any significant impediments to the development of emergency plans.

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

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, and locations of shelter

areas and relocation sites. Implementing procedures provide locations of pre-selected radiological sampling and monitoring points.

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

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

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

c. Warnings to the public within the 10-mile EPZ are the responsibility of State and local officials The primary method of warning the public is by the use of the Alert and 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 (Reference III.A.15). 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.

11. Ingestion Pathway 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 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

Emergency exposures may be authorized consistent with the provisions of this plan and EPA Emergency Worker and Life Saving Activity Protective Action Guides. Guidelines for emergency exposure limits, including life saving actions, are specified in Table II-4. These guidelines are consistent with EPA Emergency Worker and Life Saving Activity Protective Action Guides.

1. On-Site Exposure Guidelines and Authorizations

Lee Nuclear Station 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-4 of this Plan.

The Emergency Coordinator, 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 20. If exposures in excess of the numerical values of the occupational dose limits provided in 10 CFR 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 worker." Efforts are made to maintain personnel doses ALARA.

In the absence of the extenuating circumstances identified in Table II-4, the Lee Nuclear Station applies the normal radiation dose limits as established in 10 CFR 20 to each of the following activities:

a. Removal of injured persons

b. Undertaking corrective actions

c. Performing assessment actions

d. Providing first aid

e. Performing personnel decontamination

f. Providing ambulance service

g. Providing medical treatment services

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

Table II-4 - 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.

** Includes skin and extremities.

2. Radiation Protection Program

Chapter 12 of the Lee Nuclear Station FSAR describes the radiation protection program (RPP) consistent with the requirements of 10 CFR 20. Section II.K.1 of this plan describes the provisions made for implementation of emergency exposure guidelines.

3. Dosimetry and Dose Assessment

Lee Nuclear Station provides and distributes self-reading and cumulative type dosimeters to all personnel involved in emergency on-site response regardless of their affiliation. Dose records are maintained and checked throughout the emergency.

a. Lee Nuclear Station maintains a personnel radiation dosimetry program that includes the capability to determine both external and internal doses consistent with the requirements of 10 CFR 20. The external dosimetry program includes provisions and requirements for use of both permanent record and self-reading dosimeters (e.g., pocket or electronic dosimeters). Dosimeter ranges are sufficient to measure both planned routine and foreseeable accident doses. Implementing procedures associated with this Plan establish requirements for distributing dosimeters to emergency responders, including those individuals responding to the Lee Nuclear Station from off-site locations. Internal doses are typically estimated through the use of whole body counting and/or in-vitro sampling and analysis routines. Implementing procedures associated with this Plan or

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.

b. Implementing procedures also establish guidance for wearers to periodically read their self-reading dosimeters to maintain compliance with emergency exposure guidelines. Duke Energy 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. Lee Nuclear Station 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.

b. Lee Nuclear Station implements procedures for decontamination of on-site emergency personnel wounds, supplies, instruments and equipment, and for waste disposal. Lee Nuclear Station 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 Lee Nuclear Station access control from off-site locations. Following a Lee Nuclear Station evacuation, law enforcement agencies control access to the owner-controlled area consistent with the requirements of the supporting State and local plans. The Lee Nuclear Station Security Force controls entry to the Protected Area by individuals, including emergency responders, who must enter the Lee Nuclear Station 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, Duke Energy

Nuclear Supply Chain personnel will make arrangements for transport of non-contaminated off-site supplies to the Lee Nuclear Station.

c. Lee Nuclear Station 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 Lee Nuclear Station Personnel

Lee Nuclear Station makes provisions for protective clothing, contamination monitoring, and decontamination, including decontamination of radioiodine contamination on the skin, at the relocation site. Appendix 6 of this Plan provides a description of the emergency equipment and supplies to be provided.

L. MEDICAL AND PUBLIC HEALTH SUPPORT

1. Hospital and Medical Support

Duke Energy has established an agreement with Piedmont Medical Center (PMC) in Rock Hill, SC, under which the PMC will provide medical services for injured personnel from Lee Nuclear Station. Radiation monitoring equipment, dosimeters, and protective clothing are available at PMC.

PMC maintains the capability to evaluate the radiation exposure and/or uptake of accident victims and to handle contaminated victims. These capabilities are established and maintained through training courses supported by Duke Energy consistent with Section II.O of this Plan, periodic drills and exercises consistent with Section II.N of this Plan, and materiel support provided consistent with agreements to be developed between Duke Energy and the medical support providers.

In the event that a contaminated injured person is transported from the Lee Nuclear Station to an off-site medical facility, Duke Energy Radiation Protection personnel may accompany the victim to support the radiological aspects of the medical treatment and post-treatment efforts.

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

Lee Nuclear Station maintains a trained Medical Emergency Response Team (MERT) at the Lee Nuclear Station to provide 24 hours per day first aid support. First Aid stations located at the Lee Nuclear Station provide the normal complement of first aid supplies and equipment necessary to treat those injuries not involving hospitalization or professional medical services. As a minimum, the MERT personnel are Department of Transportation (DOT) First Responder trained. In addition, the following medical facilities and services are available:

- Upstate Carolina Medical Center (ambulance services; see Section II.L.4 of this Plan)
- Draytonville-McKown Mountain- Wilkinsville Volunteer Fire Department (initial medical response services; see Section II.L.4 of this Plan)
- PMC facilities

Duke Energy provides for MERT 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

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

4. Medical Emergency Transportation

Initial off-site support for a medical emergency is provided by the Draytonville-McKown Mountain- Wilkinsville Volunteer Fire Department. Upstate Carolina Medical Center provides an ambulance (either highway vehicle or air transport, as appropriate) to transport non-contaminated injured personnel. PMC provides ambulance services for transport of contaminated personnel to PMC. Contaminated injured personnel are suitably clothed or prepared to prevent the spread of contamination in the transporting vehicle. Communication can be maintained with PMC from the station. The station can also communicate with the ambulance. Response team members have received training concerning transportation of contaminated injured individuals. The approximate time to transport a patient to PMC is 60 minutes. The estimated time for local rescue squads to arrive at the station is 30 minutes.

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

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

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

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

2. Recovery Organization

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, Duke Energy establishes a recovery organization consistent with the existing conditions and continuing organizational needs. Duke Energy does not expect a recovery organization to be necessary following a Notification of Unusual Event or Alert.

The primary positions in the Recovery Organization are described below:

EOF Director - Overall management of recovery activities. Coordination with Federal, State, and local governments.

Work Control Manager - Coordination and scheduling of recovery activities, particularly on-site activities. Functions much like the outage manager during normal outages.

Radiological Assessment Manager - Coordinates radiological and environmental assessment with Federal and State agencies. Coordinates radwaste management and decontamination activities.

Engineering Support Manager - Coordinates the engineering and maintenance support for the recovery effort.

Public Information Manager - Manages communications of recovery activities. Informs the news media, employees, etc. (See Section II.G for Public Information management).

EOF Services Manager - Coordinates activities such as purchasing, finance, insurance, human resources, transportation, etc.

The Emergency Coordinator acts as site liaison with the Recovery Organization. Other Lee Nuclear Station management and supervisory personnel interface with recovery operations as necessary and as warranted.

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

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 are evaluated and, if deemed appropriate, the Recovery Organization will recommend relaxation of the protective measures.

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

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

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 receive the same review and approval process accorded other station procedures.

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

3. Changes in Organizational Structure

The recovery process is implemented when the Lee Nuclear Station 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 EOF Director notifies the NRC Operations Center, the State EOC, 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 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. The Radiological Assessment Manager or his designee will work with SC and NC officials to periodically update estimates of total population exposure.

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

N. EXERCISES AND DRILLS

Duke Energy 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

Duke Energy conducts emergency exercises in accordance with NRC and FEMA requirements (e.g., 10 CFR 50.47(b)(14), 10 CFR 50 Appendix E.IV.F, and 44 CFR 350.9).

a. Exercise Scenarios and Participation

Duke Energy conducts exercises on a periodic basis, including biennial exercise required under Appendix E of 10 CFR 50. Exercises shall test the:

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

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

Exercise scenarios shall be varied in a manner that tests all major elements of the plans and preparedness organizations within a six year period.

At least once every six years, the specific exercise date should be unannounced. At least once every six years, an exercise should be initiated during off-hours (between 6 pm and 4 am on a weekday or during a weekend). Requirements for unannounced and off-hours exercises may be satisfied concurrently.

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

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

2. Drills

Duke Energy maintains adequate emergency response capabilities between biennial exercises by conducting drills, including at least one drill involving a combination of some of the principal functional areas of on-site emergency response capabilities, including activities such as: management and coordination of emergency response; accident assessment; protective action decision-making; and plant system repair and corrective actions. Upon request, Duke Energy

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. Duke Energy 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. Duke Energy may include one or more drills as portions of an exercise.

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

The drill program includes the following:

a. Communications Drills

Duke Energy tests communications with State and local governments within the Plume Exposure Pathway EPZ, as identified in Section II.A of this Plan, monthly.

Duke Energy tests communications with Federal emergency response organizations and States within the Ingestion Pathway EPZ, as identified in Section II.A of this Plan, quarterly.

Duke Energy tests communications between the facility, State and local EOCs, and field assessment teams annually.

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

b. Fire Drills

Duke Energy conducts fire drills as discussed in Section 9.5.1 of the FSAR.

c. Medical Emergency Drills

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

Medical Emergency drills include:

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

d. Radiological Monitoring Drills

Duke Energy conducts radiological monitoring drills, involving both on-site and off-site radiological monitoring activities, annually. Radiological monitoring drills include:

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

Duke Energy may coordinate radiological monitoring drills with those drills conducted by State and local government entities or may conduct these drills independently.

e. Radiation Protection Drills

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

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

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

3. Conduct of Drills and Exercises

The Emergency Planning Group is responsible for the overall development and direction of the exercise. An Exercise Director and a key group of controllers develops the exercise scenario, exercise messages, and simulated data for the station and off-site areas. The Exercise Director develops an exercise plan for each exercise. This plan includes:

a. Objectives of the exercise and evaluation criteria

b. The date, time, place, and participating organizations

c. The simulated events

d. The exercise scenario, including a time schedule of real and simulated events

e. A narrative summary of the event including such things as emergency classification at various times in the simulated accident, off-site assistance, some detail on plant conditions

f. A description of the arrangements for official observers.

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 Manager or his designee and determined to be sufficient for observing and evaluating the planned activities against the established criteria. For example, a qualified instructor/evaluator may be an individual who has been trained to fill the emergency response position to be observed or may be a supervisor or instructor for the position. Specific areas to be observed by the evaluators are defined in the form of pre-printed critique sheets.

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

5. Drill and Exercise Critiques

Duke Energy conducts a critique as soon as practicable following each exercise. Participants include selected Duke Energy, NRC, State, local, and other participants and observers/evaluators. Evaluators shall complete critique sheets documenting their observations. Critique sheets shall be submitted in accordance with the schedule established for the exercise.

Duke Energy 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.

Duke Energy tracks identified corrective actions to completion using the facility's corrective action program. The exercise scenario package and Post-Exercise Critique are filed by Records Management.

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

Duke Energy implements a training program that provides for initial training and periodic retraining for all 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.

a. Off-site Emergency Response Training

Duke Energy 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.

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

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

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

b. Mutual Aid Agreements

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.

2. On-site Emergency Response Training

The emergency response training program includes Duke Energy 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 demonstrate 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

Duke Energy provides first aid training to MERT members in accordance with approved procedures.

4. Emergency Response Training and Qualification

Duke Energy conducts a program for instructing and qualifying all 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 perform the assigned emergency response function. The instructor/evaluator immediately corrects any erroneous action noted during these practical drills and, if appropriate, demonstrates proper performance consistent with approved procedures and accepted standards.

Duke Energy 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, and the scope of the associated training programs, includes:

a. Emergency Coordinator – Emergency condition assessment and classification, notification systems and procedures, organizational interfaces, Lee Nuclear Station evacuation, radiation exposure controls, off-site support, and recovery.

b. Accident assessment personnel - Emergency condition assessment and classification, notification systems and procedures, organizational interfaces.

c. Radiological monitoring and analysis personnel – Dose assessment, emergency exposure evaluation, protective measures, protective actions, contamination control and decontamination, monitoring systems and procedures.

d. Police, Security and firefighting personnel - Notification of Station personnel, facility activation, personnel accountability and evacuation, and access control. (Note: Off-site police and firefighting personnel will receive training consistent with Section II.O.1.a of this Plan.)

e. Damage control/repair/corrective action teams - Damage control organization, communication systems, and planning and coordination of damage control tasks.

f. First aid/rescue personnel - Emergency organizational interfaces, firefighting, search and rescue procedures, and communications systems.

g. Local support services/emergency service personnel – Training consistent with Section II.O.1.a of this Plan.

h. Medical support personnel - Training consistent with Section II.O.1.a of this Plan.

i. Corporate office support personnel - Emergency condition assessment and classification, notification systems and procedures, organizational interfaces.

j. Emergency communicators - Notifications and reports to off-site authorities and communication systems as appropriate for individual position assignments.

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

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

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

5. Retraining

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

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

P. RESPONSIBILITY FOR THE PLANNING EFFORT

Duke Energy 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. Duke Energy also implements a program to provide appropriate training to personnel responsible for the emergency planning effort.

1. Training

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

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

2. Responsibility for Radiological Emergency Response Planning

The Lee Nuclear Station Site Vice President holds the overall authority and responsibility for ensuring that an adequate level of emergency preparedness is maintained. Responsibility for the planning effort is delegated to the Emergency Planning Manager.

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

3. Emergency Planning Manager

Duke Energy establishes an Emergency Planning Manager position. The incumbent is responsible for developing and updating the Lee Nuclear Station Emergency Plan and coordination of this Plan with other response organizations. The Duke Energy corporate staff may augment these on-site efforts as needed to provide 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

This Emergency Plan shall be reviewed, updated as needed, and certified to be current on an annual basis. Any changes identified by drills and exercises are incorporated into the Emergency Plan.

On an annual basis, the Emergency Planning Manager reviews with each affected State and local organization Lee Nuclear Station procedures for emergency classification.

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

5. Distribution of Revised Plans

Upon completion of the annual review, the Emergency Planning Manager or his designee incorporates any necessary changes. Changed pages are marked and dated to highlight the changes.

Following approval of the updated plan by the Lee Nuclear Station Site Vice President, the Lee Nuclear Station document control organization distributes the updated plan to organizations/individuals with responsibility for implementing the Plan.

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.

- South Carolina Operational Radiological Emergency Response Plan, Appendix 2 South Carolina Emergency Operation Plan
- North Carolina Emergency Operations Plan
- North Carolina Radiological Emergency Response Plan for Nuclear Power Facilities
- Cherokee County, SC, Emergency Operations Plan
- York County, SC, Emergency Operations Plan
- Emergency Response Plan, Water Reactors Division, Westinghouse Electric Corporation
- NRC Region II Incident Response Plan
- Interagency Radiological Assistance Plan - Region 3 - U.S. Department of Energy
- INPO Emergency Response Plan

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 EPIPs that support this Plan.

Certain emergency plan features recommended by NUREG-0654 (e.g., Evaluation Criterion I.3, which addresses methods and techniques for determining source terms and the magnitude of releases) are procedural in nature and have been appropriately placed in Lee Nuclear Station procedures, including EPIPs. 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 Issue Summary 2005-02, “Clarifying the Process for Making Emergency Plan Changes” (Reference III.A.16).

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, Rev. 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, Rev. 1.

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

9. Emergency Plan Audits

Duke Energy’s Nuclear Performance 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 Implementing Procedures and practices
- The emergency preparedness training program
- Readiness testing (e.g., drills and exercises)
- ERFs, equipment, and supplies
- Interfaces with State and local government agencies
- Required records and documentation

Duke Energy’s Nuclear Performance Assessment organization applies appropriate management controls to all audit findings consistent with the facility’s corrective action program.

Duke Energy establishes and maintains the frequency of the periodic audits based on an assessment of performance as compared to performance indicators; however, all elements of the emergency preparedness program must be reviewed at least once every 24 months. In addition, Duke Energy 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.

Duke Energy's Nuclear Performance Assessment organization documents audit results and improvement recommendations and reports these results to the Lee Nuclear Station facility and Duke Energy management. Duke Energy makes those portions of the audits that address the adequacy of interfaces with State and local governments available to the affected governments.

Records Management shall file and maintain the following records for five years:

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

10. Emergency Telephone Numbers

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

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

III. REFERENCES AND APPENDICES

A. CITED REFERENCES

1. U.S. Nuclear Regulatory Commission, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,” NUREG-0654/FEMA-REP-1, Rev. 1, October 1980.

2. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.101, “Emergency Planning and Preparedness for Nuclear Power Reactors,” 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, Rev. 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, Rev. 0, January 2007.

7. U.S. Nuclear Regulatory Commission, “Event Reporting Guidelines: 10 CFR 50.72 and 50.73,” NUREG-1022, Rev. 2, October 2000.

8. Westinghouse Electric Company, LLC, “AP1000 Design Control Document,” APP-GW-GL-700, Revision 16, May 26, 2007.

9. U.S. Nuclear Regulatory Commission, “Functional Criteria for Emergency Response Facilities,” NUREG-0696, February 1981.

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8. NRC RIS 00-011 – NRC Emergency Telecommunications System, including Supplement 1

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10. NRC IN 93-53 – Effect of Hurricane Andrew on Turkey Point Nuclear Generating Station and Lessons Learned

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35. FEMA-REP-10 – Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants

36. FEMA-REP-11 – Guide to Preparing Emergency Public Information Materials

C. APPENDICES

Appendix 1 – Emergency Action Levels
Appendix 2 – Radiological Assessment and Monitoring
Appendix 3 – Public Alert and Notification System Description
Appendix 4 – Evacuation Time Estimate
Appendix 5 – Implementing Procedures
Appendix 6 – Emergency Equipment and Supplies
Appendix 7 – Certification Letters
Appendix 8 – Cross-References to Regulations, Guidance, and State and Local Plans
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Appendix 10 – Technical Support Center Decription

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 Limiting Conditions for Operation (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 appendix 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 Westinghouse. In many cases this data is necessary to determine EAL thresholds. Appropriately, this appendix 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
ADS	Automatic Depressurization System
AP1000	Advanced Passive 1000 Mw PWR (Westinghouse)
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
CSFST	Critical Safety Function Status Tree
DAS	Diverse Actuation System
dc	Direct Current
DG	Diesel Generator
EAL	Emergency Action Level
EFS	Communication System
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
ESBWR	Economic Simplified Boiling Water Reactor (General Electric)
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

ACRONYMS

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
PCS	Primary Containment System
PIP	Plant Investment Protection
PLS	Plant Control System
PMS	Plant Monitoring and 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
RNS	Normal Residual Heat Removal 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
SG	Steam Generator
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
TVS	Closed Circuit Television System (AP1000)

1.0 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 Westinghouse. 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.

2.0 Changes

Reserved.

3.0 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 appendix.

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) 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 Coordinator/EOF 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 Coordinator/EOF 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 both ambiguity and 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 Coordinator/EOF 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 Coordinator/EOF 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.

Power Operations (1):	Reactor Power greater than 5%, Keff greater than or equal to 0.99
Startup (2):	Reactor Power less than or equal to 5%, Keff greater than or equal to 0.99
Hot Standby (3):	RCS greater than 420 °F, Keff less than 0.99
Safe Shutdown (4):	RCS less than or equal to 420°F, but greater than 200°F , Keff less than 0.99
Cold Shutdown (5):	RCS less than or equal to 200 °F, Keff less than 0.99
Refueling (6):	One or more vessel head closure bolts less than fully tensioned
Defueled (None)	All reactor fuel removed from reactor pressure vessel.

4.0 Human Factors Considerations

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

5.0 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 site-specific procedurally-defined action taken to secure primary containment.

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.

FAULTED: In a steam generator, the existence of secondary side leakage that results in an uncontrolled drop in steam generator pressure or the steam generator being completely depressurized.

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.

FORECAST: Prediction of weather conditions based on correlated meteorological observations provided by the National Weather Service or applicant meteorologist.

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: 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.

RUPTURED: In a steam generator, existence of primary-to-secondary leakage of a magnitude sufficient to require or cause a reactor trip and automatic depressurization.

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: An UNPLANNED event involving one or more of the following: (1) automatic turbine runback greater than 25% thermal reactor power; (2) electrical load rejection greater than 25% full electrical load; (3) Reactor Trip; (4) Safety Injection Actuation; or (5) thermal power oscillations greater than10%.

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) 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-1 - 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 Coordinator/EOF 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 Vent	VFS-RICA-103	[TBD]
Turbine Island Vent	TDS-JE-RE001	[TBD]
Gaseous Radwaste Discharge	WGS-RICA-017	[TBD]
Liquid Radwaste discharge	WLS-RIA-229	[TBD]
Wastewater Discharge	WWS-JE-RE021	[TBD]

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

Steam Generator Blowdown	BDS-RE-010	[TBD]
	BDS-RE-011	[TBD]
Main Steam Line	SGS-RIA-026, RIA-027	[TBD]
Service Water Blowdown	SWS-RIA-008	[TBD]
Containment Air Filtration Exhaust	VFS-MA-02A, MA-02B	[TBD]

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

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

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 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 Coordinator/EOF 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 Coordinator/EOF 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:

   Spent Fuel Pool Low-Low Alarm 22.75 ft. on SFS-LICA-19A/B/C
   AND
   Visual observation that fuel is not uncovered.

   AND

   b. VALID rise in area radiation reading indicated by:

Fuel Handling Area Exhaust Radiation Monitor	VAS-RE 001
Containment High Range	PXS-RICA-160, 161, 162, 163
Refueling Bridge Portable Monitor	[site-specific TBD]

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.

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.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

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 Coordinator/EOF 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 Vent	VFS-RICA-103	[TBD]
Turbine Island Vent	TDS-JE-RE001	[TBD]
Gaseous Radwaste Discharge	WGS-RICA-017	[TBD]
Liquid Radwaste discharge	WLS-RIA-229	[TBD]
Wastewater Discharge	WWS-JE-RE021	[TBD]

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

Steam Generator Blowdown	BDS-RE-011	[TBD]
	BDS-RE-010	[TBD]
Main Steam Line	SGS-RIA-026, RIA-027	[TBD]
Service Water Blowdown	SWS-RIA-008	[TBD]
Containment Air Filtration Exhaust	VFS-MA-02A, MA-02B	[TBD]

3. Confirmed sample analyses for gaseous or liquid releases indicates concentrations or release rates, greater than 200 times [site-specific ODCM value] for 15 minutes or longer.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

Basis:

The Emergency Coordinator/EOF 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.

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 Coordinator/EOF 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 Coordinator/EOF 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

Fuel Handling Area Exhaust Radiation Monitor	VAS-RE-001
Containment High Range	PXS-RICA-160, 161, 162, 163
Refueling Bridge Portable Monitor	[site-specific TBD]

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

Spent Fuel Pool Low-Low Alarm 22.75 ft. SFS-LICA-19A/B/C

AND

Visual observation that fuel is uncovered

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.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

Escalation, if appropriate, would occur via IC AS1 or AG1 or Emergency Coordinator/EOF 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 Area Monitor	RMS-JE-RE010
Technical Support Center Area Monitor	[TBD]
Central Alarm Station	[TBD]

Basis:

The cause and/or magnitude of the increase in radiation levels is not a concern of this IC. The Emergency Coordinator/EOF 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 Coordinator/EOF 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 Vent (Mid Range Gas)	VFS-RIA-104A	[Setpoint TBD]
Plant Vent (High Range Gas)	VFS-RIA-104B	[Setpoint TBD]
Gaseous Radwaste discharge	WGS-RICA-017	[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 Coordinator/EOF 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 Coordinator/EOF 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 Vent (Mid Range Gas)	VFS-RIA-104A	[Setpoint TBD]
Plant Vent (High Range Gas)	VFS-RIA-104B	[Setpoint TBD]
Gaseous Radwaste discharge	WGS-RICA-017	[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 Coordinator/EOF 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.

5.6 Cold Shutdown/refueling System Malfunction EALS

Table A1-A-1 - 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*	
			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*

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

GENERAL EMERGENCY **SITE AREA EMERGENCY** **ALERT**

NOUE

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

CU8 Inadvertent Criticality.
Op Modes:, Cold Shutdown, Refueling

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

1. UNPLANNED RCS level drop below the top of the RPV flange either visually or as indicated by RCS Hot Leg level at 9.7% and lowering as indicated on RCS-LT-160A or -160B for 15 minutes or longer.

2. RCS level cannot be monitored with a loss of RCS inventory as indicated by:

   - Visual observations inside containment

   - Unexplained rise in Containment sump level on WLS-LICR-034, WLS-LICR-035, OR WLS-LICR-036.

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 Coordinator/EOF 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 Busses ECS-ES-1 and ECS-ES-2 busses 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 Coordinator/EOF 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 Coordinator/EOF 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 RCS-TI-135A or -135B

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:

   - EFS
   - TVS
   - In-Plant/Party Line System
   - Radio Communications System (On-site)

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

   - Emergency Preparedness Telephone System
   - Emergency Preparedness Paging System
   - 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.

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

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

EFS and TVS are comprised of the following:

- Wireless Telephone System
- Telephone-Page System
- Sound Powered System
- Security Communication System
- Closed Circuit Television System

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 Coordinator/EOF 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 Required UPS System Power based on [voltage indications TBD] for ALL of the following ac instrumentation and control busses:

   - Division A 24-Hour Bus IDSA-EA-1
   - Division B 24-Hour Bus IDSB-EA-1
   - Division B 72-Hour Bus IDSB-EA-3
   - Division C 24-Hour Bus IDSC-EA-1
   - Division C 72-Hour Bus IDSC-EA-3
   - Division D 24-Hour Bus IDSD-EA-1

   AND

   b. Failure to restore power to at least one required 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

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

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 sustained positive startup rate.

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 Coordinator/EOF 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 Coordinator/EOF 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. Pressurizer level at 12% and lowering on RCS-LT-200

   OR

   b. RCS Hot Leg level is at 9.7% and lowering as indicated on RCS-LT-160A OR -160B

2. RCS level cannot be monitored for 30 minutes or longer with a loss of RCS/RPV inventory as indicated by unexplained rise in Containment sump level on WLS-LICR-034, WLS-LICR-035, OR WLS-LICR-036.

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 RCS Pressurizer level and Hot Leg level setpoints were chosen to indicate that actions must be taken to prevent reaching a level that would cause a loss of RNS cooling. The inability to restore and maintain level after reaching this setpoint would therefore be indicative of a failure of the RCS barrier. The pressurizer level setpoint is 12%, which is the pressurizer level low-2 setpoint. This provides CMT actuation for Core Heat Removal. The hot leg level setpoint is 9.7%, which is the hot leg level low-2 setpoint. This activates ADS 4 and IRWST injection for Core Heat Removal.

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

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

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 Coordinator/EOF 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 greater than 200ºF as indicated on RCS-TI-135A OR -135B for greater than the specified duration on table.

Table: RCS Reheat Duration Thresholds		
RCS	**Containment Closure**	**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. (This does not apply in Solid Plant conditions.)

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.

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

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 Coordinator/EOF 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 Coordinator/EOF 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 Coordinator/EOF 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 CONTAINMENT CLOSURE NOT established:

   RPV level less than Lo-2 (3 inches above the inside surface of the bottom of the Hot Leg) on RCS LT-160A or -160B

   OR

2. With CONTAINMENT CLOSURE established

   RCS LT-160A or LT-160B Offscale low

   OR

3. RPV level cannot be monitored for 60 minutes or longer with a loss of RPV inventory as indicated by:

   - Containment radiation monitor reading GREATER THAN [TBD] rad/hr on PXS-JE-RE-160, -161, -162, OR -163
   - Unexplained containment sump level rise on WLS-LICR-034, WLS-LICR-035, OR WLS-LICR-036
   - Erratic Source Range Monitor Indication

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.

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

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 Coordinator/EOF 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:

   - CONTAINMENT CLOSURE not established
   - Explosive mixture inside containment
   - Pressure above [TBD] psig value

   AND

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

   - RCS LT-160A or LT-160B Offscale low.

     OR

   - CANNOT be monitored with indication of core uncovery by ANY of the following:
   - PXS-JE-RE160, -161, -162, -163 radiation monitor reading greater than [TBD] (Hi2 setpoint).
   - Core Exit Thermocouple temperature equal to or greater than [700°F] on [TBD].
   - Erratic Source Range Monitor Indication
   - Unexplained containment sump level rise on WLS-LICR-034, WLS-LICR-035, OR WLS-LICR-036

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

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.

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.

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*

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 Coordinator/EOF 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.
   - 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.

FISSION PRODUCT BARRIER DEGRADATION

Table A1-F-2 - EAL Fission Product Barrier Reference 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. Critical Safety Function Status		**1. Critical Safety Function Status**		**1. Critical Safety Function Status**	
Core-Cooling Red Entry Conditions Met	Core Cooling-Orange Entry Conditions Met OR Heat Sink-Red Entry Conditions Met	Not Applicable	RCS Integrity-Red Entry Conditions Met OR Heat Sink-Red Entry Conditions Met	Not Applicable	Containment-Red Entry Conditions Met
OR		**OR**		**OR**	
2. Primary Coolant Activity Level		**2. RCS Leak Rate**		**2. Containment Pressure**	
Dose Equivalent [300 µCi/gm I-131 OR 280 µCi/gm Xe-133] as indicated on [Instrument TBD]	Not Applicable	RCS leak rate greater than available makeup capacity as indicated by RCS subcooling less than 30 degrees on [TBD]	RCS leak rate greater than 135 gpm on [TBD] with Letdown isolated	A containment pressure rise followed by a rapid unexplained drop in containment pressure. **OR** Containment pressure or sump level response not consistent with LOCA or MSL break conditions	59 psig and rising on PCS-PI-012, PCS-PI-013 or PCS-PI-014 **OR** 4% H_2 on VLS-AE001, 002 or 003 **OR** Containment Pressure Hi/Hi Alarm on PCS-P005, PCS-006 or PCS-007 AND PCS does NOT actuate.
OR		**OR**		**OR**	

FISSION PRODUCT BARRIER DEGRADATION

Table A1-F-2 - EAL Fission Product Barrier Reference 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. Core Exit Thermocouple Readings		**3. Not Applicable**		**3. Core Exit Themocouple Reading**	
Greater than 1200°F	Greater than 700°F	Not applicable	Not applicable	Not applicable	Core exit thermocouples in excess of 1200 °F AND Restoration procedures not effective within 15 minutes AND Stage 4 ADS actuated.
OR		**OR**		**OR**	
4. Reactor Vessel Water Level		**4. SG Tube Rupture**		**4. SG Secondary Side Release with P-to-S Leakage**	
Not Applicable	RCS Hot Leg Level LESS than [9.7%] on RCS-LT-160A or RCS-LT-160B. **OR** Inventory CSF – Yellow Entry Conditions met	Ruptured S/G results in a CMT/PRHR Actuation	Not Applicable	RUPTURED S/G is also FAULTED outside of containment **OR** Primary-to-Secondary leakrate greater than 10 gpm with UNISOLABLE steam release from affected S/G to the environment	Not applicable
OR		**OR**		**OR**	

FISSION PRODUCT BARRIER DEGRADATION

Table A1-F-2 - EAL Fission Product Barrier Reference 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**
5. Not Applicable		**5. Not Applicable**		**5. CNMT Isolation Failure or Bypass**	
Not Applicable	Not Applicable	Not Applicable	Not Applicable	Failure of all valves in any one line to close AND direct downstream pathway to the environment exists after CTMT isolation signal	Not Applicable
OR		**OR**		**OR**	
6. Containment Radiation Monitoring		**6. Containment Radiation Monitoring**		**6. Containment Radiation Monitoring**	
Containment radiation monitor reading greater than [TBD] rad/hr on PXS-JE-RE-160, -161, -162, OR -163	Not Applicable	Containment radiation monitor reading greater than 2 rad/hr on PXS-JE-RE-160, -161, -162, OR -163	Not Applicable	Not Applicable	Containment radiation monitor reading GREATER THAN [TBD] rad/hr on PXS-JE-RE-160, -161, -162, OR -163
OR		**OR**		**OR**	
7 Other Indications		**7. Other Indications**		**7. Other Indications**	
Not applicable	Not applicable	Not as applicable	Not as applicable	Not as applicable	Not as applicable
OR		**OR**		**OR**	
8. Emergency Coordinator/EOF Director Judgment		**8. Emergency Coordinator/EOF Director Judgment**		**8. Emergency Coordinator/EOF Director Judgment**	
Any condition in the judgment of the Emergency Coordinator/EOF Director that indicates Loss or Potential Loss of the Fuel Clad Barrier		Any condition in the judgment of the Emergency Coordinator/EOF Director that indicate Loss or Potential Loss of the RCS Barrier		Any condition in the judgment of the Emergency Coordinator/EOF Directorthat indicates Loss or Potential Loss of the Containment barrier	

FISSION PRODUCT BARRIER DEGRADATION

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 or 7 or 8)

1. Critical Safety Function Status

These Thresholds serve as precursors to a loss of fuel clad. Core cooling orange path indicates subcooling has been lost and that some clad damage may occur. Core cooling red path indicated significant superheating and core uncovery and is considered to indicate a loss of the fuel clad. Heat Sink Red when heat sink is required indicates the steam generator heat sink function is under extreme challenge and provides the potential for loss of the fuel clad. Meeting the entry conditions satisfies these thresholds.

2. Primary Coolant Activity Level

This is a site specific value corresponding to 300 μCi/gm I-131 equivalent or 280 μCi/gm Xe-133. This amount of radioactivity indicates significant clad damage and the fuel barrier is considered lost.

There is no equivalent Potential Loss for this item.

3. Core Exit Thermocouple Readings

The core exit thermocouples (CETs) provide an adequate measure of core temperatures to estimate temperatures at which potential cladding damage and core over temperature may be occurring. CETs with readings greater than 700 °F indicate the onset of inadequate core cooling. Continued operation in this state can lead to a core damage sequence if Emergency Operating Procedures are not effective in restoring core cooling.

CETs with readings above 1200 °F indicate significant clad heating and the loss of the fuel clad barrier. Core exit thermocouples are included in addition to the Critical Safety Functions to include conditions when the status trees may not be in use.

4. Reactor Vessel Water Level

There is no Loss Threshold corresponding to this item.

The potential loss corresponds to a level 3 inches above the bottom of the Hot Leg. This is defined by the CSFSTs as an Inventory Yellow path. Meeting the entry conditions satisfies this threshold.

The value for the Potential Loss Threshold corresponds to the 3 inches above the bottom of the Hot Leg. This Potential Loss Threshold is defined by the Inventory Yellow path.

5. Not Applicable

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6. Containment Radiation Monitoring

The reading of 100 rad/hr on PXS-JE-RE160, RE161, RE162 or RE163 is a value which indicates the release of reactor coolant, with elevated activity indicative of fuel damage, into the containment. Use of a confirmed radiation monitoring reading can lead to an earlier Alert classification. A reactivity excursion or mechanical damage may cause fuel damage that is first detected by radiation monitors.

Reactor coolant concentrations of this magnitude are several times larger than the maximum concentrations (including iodine spiking) allowed within Technical Specifications and are therefore indicative of fuel damage.

There is no Potential Loss Threshold associated with this item.

7. Other Indications

Not Applicable

8. Emergency Coordinator/EOF Director Judgment

The Emergency Coordinator/EOF Director can declare an Alert based on the judgment that conditions exist which indicate the Loss or Potential Loss of the Fuel Cladding barrier. This can take any other factors into consideration including the inability to monitor the barrier.

RCS BARRIER THRESHOLDS: (1 or 2 or 3 or 4 or 5 or 6 or 7 or 8)

1. Critical Safety Function Status

There is no Loss Threshold associated with this item.

These Thresholds serve as precursors to a loss of fuel clad. Heat Sink Red when heat sink is required indicates the steam generator heat sink function is under extreme challenge and provides the potential for loss of the fuel clad. An Integrity Red path indicates an extreme challenge to the safety function and a potential loss of the RCS barrier. Meeting the entry conditions satisfies these thresholds.

2. RCS Leak Rate

The Loss Threshold addresses conditions where leakage from the RCS is greater than available inventory control capacity such that a loss of subcooling has occurred. The loss of subcooling is the fundamental indication that the inventory control systems are inadequate in maintaining RCS pressure and inventory against the mass loss through the leak.

The potential loss is based on the inability to maintain normal liquid inventory within the reactor coolant system by the Chemical and Volume Control System (CVS). Where leakage is greater than available inventory control a loss of subcooling can occur. Isolating letdown is a standard abnormal operating procedure action and may prevent unnecessary classifications when a non-

FISSION PRODUCT BARRIER DEGRADATION

RCS leakage path such as a CVS leak exists. The intent of this condition is met if attempts to isolate Letdown are NOT successful.

3. Not Applicable

4. Steam Generator Tube Rupture (SGTR)

A SGTR is based on the inability to maintain normal liquid inventory within the RCS by normal operation of the CVS system. The loss of the RCS barrier is based on leakage large enough to cause CMT/PRHR actuation.

There is no Potential Loss Threshold for this condition.

5. Not Applicable

6. Containment Radiation Monitoring

The reading of 100 rad/hr on PXS-JE-RE160, RE161, RE162 or RE163 is a value which indicates the release of reactor coolant to the containment. Reactor coolant concentrations of this magnitude are several times larger than the maximum concentrations (including iodine spiking) allowed within Technical Specifications and are therefore indicative of fuel damage.

There is no Potential Loss Threshold associated with this item.

7. Other Indications

Not Applicable

8. Emergency Coordinator/EOF Director Judgment

The Emergency Coordinator/EOF Director can declare an Alert based on the judgment that conditions exist which indicate the Loss or Potential Loss of the RCS Barrier. This can take any other factors into consideration including the inability to monitor the barrier.

CONTAINMENT BARRIER THRESHOLDS: (1 or 2 or 3 or 4 or 5 or 6 or 7 or 8)

1. Critical Safety Function Status

There is no Loss Threshold associated with this item.

A Containment Red path indicates an extreme challenge to the safety function derived from appropriate instrument readings and/or sampling results, and thus represents a potential loss of containment. Meeting the entry condition satisfies this threshold.

2. Containment Pressure

Rapid unexplained loss of pressure following an initial pressure rise indicates a loss of containment integrity. Containment pressure should increase as a result of mass and energy

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release into the containment. In addition, containment pressure or sump level response not consistent with design basis accident conditions can also be an indicator of a Loss of containment integrity.

This indicator relies on operator recognition of an unexpected response for the condition and therefore does not have a specific value associated with it. The unexpected response is important because it is the indicator for a containment bypass condition.

Containment Pressure at 59 psig (design pressure) and the existence of an explosive mixture of hydrogen means there is potential for damage to containment. Containment pressure at 6.2 psig or greater indicates the pressure has reached the PCS actuation setpoint. Should the PCS system not actuate at this point, this condition would represent a Potential Loss of Containment. This represents a challenge to containment that requires operation of the containment isolation and pressure suppression systems.

3. Core Exit Thermocouples (CETs)

The Core Cooling Red path represents an imminent core melt sequence, which if not corrected, could lead to RPV failure and an increased potential for containment failure. It is appropriate to allow 15 minutes for functional restoration procedures to address the core melt sequence. Whether or not the procedures will be effective should be apparent in 15 minutes. In addition, if the CETs continue to be at or greater than 1200°F for 15 minutes after the ADS Valves have actuated, the conditions in this Potential Loss Threshold represent IMMINENT core melt sequences which, if not corrected, could lead to vessel failure and increased potential for containment failure. If the Emergency Operating Procedures have been ineffective in restoring reactor vessel level above the RCS and Fuel Clad barriers, there is not a success path and a core melt sequence is in progress.

4. SG Secondary Side Release With Primary To Secondary Leakage

Steam generator tube leakage can represent the bypass of containment and the loss of the RCS barrier. This recognizes the non-isolable release path directly to the environment. The first Loss Threshold addresses the condition in which a RUPTURED steam generator is also FAULTED.

The second loss Threshold addresses SG tube leaks that exceed 10 gpm in conjunction with a UNISOLABLE release path to the environment.

5. Containment Isolation Failure or Bypass

The failure of the isolation of a containment penetration allows a direct path to the environment and represents failure of the Containment barrier. The Containment barrier must be considered breached if isolation fails.

6. Containment Radiation Monitoring

There is no Loss Threshold associated with this item.

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The 100 rad/hr reading is a value which indicates significant fuel damage well in excess of the Thresholds associated with both loss of Fuel Clad and loss of RCS barriers. 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.

7. Other Indications

Not Applicable

8. Emergency Coordinator/EOF Director Judgment

The Emergency Coordinator/EOF Director can declare an Alert based on the judgment that conditions exist which indicate the Loss or Potential Loss of the Containment Barrier. This can take any other factors into consideration including the inability to monitor the barrier. 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.

5.8 Hazards Or Other Conditions Affecting Plant Safety EALs

Table A1-H-1 - 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*

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOUE
	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 Coordinator/EOF Director Warrant Declaration of a General Emergency. *Op. Modes: All*	**HS3** Other Conditions Existing Which in the Judgment of the Emergency Coordinator/EOF Director Warrant Declaration of a Site Area Emergency. *Op. Modes: All*	**HA6** Other Conditions Existing Which in the Judgment of the Emergency Coordinator/EOF Director Warrant Declaration of an Alert. *Op. Modes: All*	**HU5** Other Conditions Existing Which in the Judgment of the Emergency Coordinator/EOF 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)

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 or a FORECAST of sustained high winds greater than 73 mph.
3. Turbine failure resulting in casing penetration or damage to turbine or generator seals.

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) or a FORECAST of high winds 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, in NEI 07-01, is used for other site-specific phenomena, such as flood or seiche, that can also be precursors of more serious events. These events cannot be experienced at the Lee Nuclear Station site and this NEI 07-01 EAL is not included.

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
   - Shield Building
   - Aux Building
   - Annex Building
   - Turbine 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 Coordinator/ EOF Director also needs to consider any security aspects of the EXPLOSION, if applicable.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY

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 Coordinator/EOF Director Warrant Declaration of a NOUE.

Operating Mode Applicability: All

Emergency Action Level:

1. Other conditions exist which in the judgment of the Emergency Coordinator/EOF 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 Coordinator/EOF 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)

1. Seismic event greater than Operating Basis Earthquake (OBE) –(0.10g) as indicated by the time history analyzer initiation of the Control Room alarm.

   AND

   Confirmed by **EITHER**:

   - Earthquake felt in plant
   - National Earthquake Center

2. Tornado striking or FORECAST of sustained high winds greater than 73 mph with 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
   - Shield Building
   - Aux 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
   - Shield Building
   - Aux Building

4. 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.

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

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY

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 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 , in NEI 07-01, is used for other site-specific phenomena such as flood or seiche, that can also be precursors of more serious events. These events cannot be experienced at the Lee Nuclear Station site and this NEI 07-01 EAL is not included.

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
   - Shield Building
   - Aux 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 Coordinator/EOF 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 Coordinator/EOF 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 Coordinator/EOF 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 – Title TBD].

2. 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.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY

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. GW-GJP-306, Evacuation of Control Room, 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 Coordinator/EOF Director Warrant Declaration of an Alert.

Operating Mode Applicability: All

Emergency Action Level:

1. Other conditions exist which in the judgment of the Emergency Coordinator/EOF 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 Coordinator/EOF 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] within [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 Coordinator/EOF Director judgment. The Emergency Coordinator/EOF 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),.

Escalation of this event, if appropriate, would be by Fission Product Barrier Degradation, Abnormal Rad Levels/Radiological Effluent, or Emergency Coordinator/EOF 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 Coordinator/EOF 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 Coordinator/EOF 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 Coordinator/EOF 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 Coordinator/EOF 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 Coordinator/EOF 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 Coordinator/EOF Director to fall under the General Emergency class.

5.9 System Malfunction EALs

Table A1-S-1 - 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*	

SYSTEM MALFUNCTION

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOUE
	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*
			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 Coordinator/EOF 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 ECS-ES-1 and ECS-ES-2 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. Liquid Sample Radiation Monitor PSS-RICA-050 High Alarm Setpoint [TBD] µCi/cc indicating fuel clad degradation greater than Technical Specification 3.4.10 allowable limits.

   OR

2. Dose equivalent I-131 greater than 60 µCi/gm OR dose equivalent Xe-133 greater than 280 µCi/gm for more than 6 hours from sampling and analysis.

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 PWR failed fuel monitors, etc., that provide indication of fuel clad integrity. EAL #2 addresses coolant samples exceeding coolant Technical Specifications for iodine or xenon 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 leakage greater than 5 gpm.

2. Identified leakage greater than 25 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:

   - EFS
   - TVS
   - In-Plant/Party Line System
   - Radio Communications System (On-site)

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

   - Emergency Preparedness Telephone System
   - Emergency Preparedness Paging System
   - 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.

SYSTEM MALFUNCTION

The availability of one method of ordinary off-site communications is sufficient to inform state and local authorities of plant conditions. EFS and TVS are comprised of the following:

- Wireless Telephone System
- Telephone-Page System
- Sound Powered System
- Security Communication System
- Closed Circuit Television System

SYSTEM MALFUNCTION

SU8

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Inadvertent Criticality.

OPERATING MODE APPLICABILITY Hot Standby
Safe/Stable Shutdown

Emergency Action Level:

1. UNPLANNED sustained positive startup rate.

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 Coordinator/EOF 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 ECS-ES-1 and ECS-ES-2 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 PMS Trip failed to shutdown the reactor

AND

b. Manual actions taken at the reactor control console successfully shutdown the reactor as indicated by Intermediate Range Nuclear Instrumentation less than [1.0E-8 amps].

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 Coordinator/EOF 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 PLS and PMS 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 Coordinator/EOF 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 ECS-ES-1 and ECS-ES-2 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. An Automatic PMS Trip failed to shutdown the reactor

   AND

   Manual actions taken at the reactor control console DO NOT shutdown the reactor as indicated by Intermediate Range Nuclear Instrumentation greater than [1.0E-8 amps].

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 Coordinator/EOF 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 [TBD] bus voltage on all of the following IE dc Busses for 15 minutes or longer.

IDSA-EA-1	IDSC-EA-1
IDSA-EA-2	IDSC-EA-2
IDSB-EA-1	IDSC-EA-3
IDSB-EA-2	IDSD-EA-1
IDSB-EA-3	IDSD-EA-2

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 Coordinator/EOF 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. Loss of all PLS, PMS and DAS Indication and Monitoring capability

   AND

   b. A SIGNIFICANT TRANSIENT 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 ECS-ES-1 and ECS-ES-2 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. This reduces the fission product barrier protection for the plant to being dependent on the non-safety related ancillary diesels to ensure safety, creating a potential threat to all three fission product barriers. As the batteries would be beyond their design capability, operators would also be dependent upon indications powered by the ancillary diesels for monitoring plant status and other functions.

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 Coordinator/EOF 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 Coordinator/EOF Director judgment as it

SYSTEM MALFUNCTION

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. Failure of PLS, PMS and DAS to complete a Reactor Trip

   AND

   EITHER of the following exists or has occurred due to continued power generation:

   a. Core Cooling CSF - Red.

   OR

   b. Heat Sink CSF - Red.

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

1.0 Introduction

This appendix describes the basis for the Lee Nuclear Station Units 1 & 2 atmospheric transport and diffusion assessment capability, as discussed in Appendix 2 to NUREG-0654, Rev. 1, "Meteorological Criteria for Emergency Preparedness at Operating Nuclear Power Plants" (Reference 1).

The Lee Nuclear Station meteorological instrumentation and measurements meet guidance provided in Revision 1 to NRC Regulatory Guide 1.23 (Reference 2).

Meteorological measurements are discussed in detail in Section 2.3 of the Lee Nuclear Station FSAR.

2.0 Discussion

2.1 Meteorological Measurements

The design of meteorological measurement system is discussed in Section 2.3 of the Lee Nuclear Station FSAR. This design addresses the primary system and backup sources of meteorological information and is based on guidance provided in Supplement 1 to NUREG-0737 (Reference 3).

2.2 Atmospheric Transport and Diffusion Assessment

This Appendix discusses the model used for the Lee Nuclear Station, which addresses guidance associated with the "Class B" model described in Appendix 2 of NUREG-0654.

2.3 Remote Access

Remote access to on-site meteorological conditions and plant parameters is provided to the TSC and EOF via the plant computer network.

3.0 Conceptual Design Description: Atmospheric Transport and Diffusion Assessment

The conceptual design addresses the following program elements for accident assessment that demonstrate compliance with requirements in 10 CFR 50.47(b)(9) and address evaluation criteria from NUREG-0654 as 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.

2. 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.

3. 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.

4. The means exist to make rapid assessment of potential magnitude and locations of any radiological hazards through gaseous release pathways.

5. 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 Raddose-V software package is used by Duke Energy to perform atmospheric transport and diffusion assessments.

3.1.1 Summary and Purpose

Raddose-V is a radiological dose assessment model that uses a variable trajectory, puff advection model. Raddose-V accepts automatic or manual data input. A user may also overwrite data if better information becomes available, then quickly update to the current time period if the release has been occurring for some time.

Raddose-V provides three types of outputs: tabular screen displays, graphical map displays, and printed reports. Forecast and Real-time mode printouts and screens are clearly labeled.

The report options menu provides the user with several choices for obtaining hard copy output of model generated data after each time step. Report options include the ability to print grid receptor and survey point dose rates and doses, a summary report of inputs, a one to two page Emergency Notification Form, and maps. The reports are provided in a format similar to the data displayed on the screen.

3.1.2 General Software Specifications

The Raddose-V software has been developed using the Visual Basic (Version 6) computer language and is designed to operate under the Microsoft™ Windows Operating System.

3.1.3 User Interface

Raddose-V has full screen data entry routines with menu driven option selections. Raddose-V has the ability to obtain meteorological data from the plant computer.

3.2 Accident Calculations

Raddose-V provides the capability 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 Raddose-V is tailored to each unit at a facility, a number of radiation

monitors can be used to develop release rates. Typically, the available monitors included are as follows:

- Containment Radiation Monitors (reading in cpm or R/hr)
- Plant Vent Monitors (reading in cpm or R/hr)
- Steam Line Monitors (reading in mR/hr)

The Raddose-V monitored pathway list is consistent with the list of radiation monitors described in the AP1000 DCD subsection 11.5.5, which identifies the following monitors as used for accident assessment:

- Main steam line radiation monitors
- Steam generator blowdown radiation monitor
- Main control room supply air duct radiation monitors
- Plant vent radiation monitor
- Turbine island vent discharge radiation monitor
- Containment high range radiation monitors

For each available accident type (e.g., LOCA, steam generator tube rupture, fuel handling), Raddose-V maintains an initial inventory for up to 24 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 manually enters an accident type and source term calculation method, then Raddose-V queries the radiation monitor data maintained on the plant's network.

Raddose-V also accommodates entry of meteorological data from the plant's meteorological tower via the plant's computer network. Each time the user enters the program's meteorological data entry screen, Raddose-V automatically queries the plant's computer system for the necessary data, using the plant-specific data selection hierarchy. Data that are not available from the network can be copied from the previous step or entered manually. Meteorological data required by Raddose-V include wind speed and direction, stability class or stability class indicator (i.e., delta-temperature), and precipitation rate.

The auto-mode option provides the user with the capability of initiating automatic model runs and automatic reporting. Once the user has defined the first modeling step with meteorological and source term data, this option may be initiated. Once selected, the model automatically and continually generates an Emergency Notification Form (ENF) for each forecast following a real-time step. The model continues to acquire meteorological and radiological data automatically from the plant's network for each new time step, typically at 15 minute intervals. The model then calculates real-time and forecast doses and generates an Emergency Notification Form without user intervention.

3.4 Modeling

Raddose-V uses a variable trajectory, puff advection dispersion model to estimate atmospheric transport and diffusion of radioisotopes from a nuclear plant. Plume trajectories are calculated using meteorological data obtained from the on-site meteorological tower, via the plant computer system. Puffs are transported by the horizontal winds, which vary with time. Both continuous and intermittent releases from various release points may be considered.

The diffusion (or spread) of each puff is based on a Gaussian distribution model. The dimensions of individual puffs, which compose the plume, are determined as a function of travel distance and atmospheric stability. Further, the initial dimensions of ground level puffs are adjusted to account for building wake effects. Plume growth during changing atmospheric stability conditions is determined using a virtual source concept. The virtual source concept is based on maintaining plume history and incrementing the plume's growth for each new time step.

The program can provide both real-time and forecast (projection) dose and deposition information. In either real-time mode or forecast mode, the same equations and methods are used to calculate concentrations, doses, and deposition.

Meteorological conditions and source term data are allowed to vary in time, and the transport and diffusion component of the program produces the following data:

- Sector maximum dose rates and deposition data
- Plume dose rates and deposition at predefined special receptor points
- Puff concentrations for ground-level receptors
- Plume arrival times at grid receptor distances in the Plume EPZ
- Deposition flux of radioiodines and particulates
- Plume exposure dose rates based on a finite-cloud plume technique

Raddose-V uses a discrete puff formulation to account for atmospheric transport and diffusion under changing meteorological conditions. Puff trajectory and travel time is based on current meteorology.

Raddose-V uses the puff advection model for both real-time and forecast (projection) calculations. Forecasts (projections) provide the capability to predict 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. The basic internal time step is 15 minutes. The forecast period is incremented in 15 minute time steps and calculations are conducted similar to those performed for a series of 15-minute periods in real-time mode.

Puffs are transported in space using current meteorological data. Raddose-V uses a relative coordinate system, with the origin centered on the release point. For each puff, the east and north coordinate location of its center is stored. The release point is assumed to be E,N=0,0. During an advection step, the centers of new puffs are determined by calculating an incremental change in each puff's east and north component based on the current meteorology. Following the release of all new puffs in an advection step, the centers of old puffs are updated.

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 that 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. The modeling of this effect is included. The methodology follows Regulatory Guide 1.145, Rev. 1, "Atmospheric Dispersion Models for Potential Accident Consequence Assessments at Nuclear Power Plants" (Reference 4). Specifically, DOE/TIC-27611, "Atmospheric Science and Power Production," (Reference 5), is used, with dispersion coefficients derived from Appendix A to NUREG/CR-4000, Vol. 1, "MESORAD Dose Assessment, Technical Basis" (Reference 6).

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 Raddose-V, 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. Because 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. Raddose-V uses this approach to model plume concentration.

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 χ (Ci/m3). 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/Q’s”) are calculated using finite plume techniques.

Puff depletion that takes into consideration the removal of iodines and particulates from the plume, as a result of dry and wet deposition, is also calculated. Deposition fluxes are provided to assist in the identification of areas where relatively high levels of surface contamination might be expected to occur.

3.5 Data Output

Raddose-V provides three types of outputs: tabular screen displays, graphical map displays, and printed reports. Forecast mode and Real-time mode printouts and screens are clearly labeled.

Tabular Output Screens

Dose and dose rate data are reported at radial grid receptors and include:

- The plume effective dose equivalent (Plume EDE exposure)
- The four day ground effective dose equivalent (Ground EDE exposure)
- The committed effective dose equivalent (CEDE) from inhalation
- The total effective dose equivalent (TEDE)
- CDE-Thyroid from inhalation of iodines
- Total ground level concentration of all isotopes
- Deposition rate and accumulated deposition of all isotopes on the ground

In addition, the model provides:

- Dose and deposition information for up to 75 predefined survey points
- Color coding of dose values based on EPA PAGs for TEDE and CDE-Thyroid doses

Dose and dose rates can be reported using either units of rem or mrem, depending on the nomenclature used by the plant. Ground level concentrations are reported as microcuries per cubic centimeter, while deposition is given in units of microcuries per square meter.

Map Displays

Raddose-V produces graphical representations of the position of the released plume at the end of each time step and forecast. Maps are displayed for the area surrounding the plant to the Plume Exposure Pathway EPZ boundary. The plume itself is depicted by a

series of puffs. In addition, the screen provides pertinent information on the time step currently being computed and its associated meteorology.

Also available are representations of the 2-mile and 50-mile maps.

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. Report options include the ability to print grid receptor and survey point dose rates and doses, a summary report of inputs, a one to two page emergency notification form, and maps. The reports are provided in a format similar to the data displayed on the screen.

4.0 References

1. 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,” U.S. Nuclear Regulatory Commission, Washington, DC, November 1980.

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

3. NUREG-0737, Supplement 1, “Clarification of TMI Action Plan Requirements,” U.S. Nuclear Regulatory Commission, Washington, DC, January 1983.

4. Regulatory Guide 1.145, Rev. 1, “Atmospheric Dispersion Models for Potential Accident Consequence Assessments at Nuclear Power Plants,” U.S. Nuclear Regulatory Commission, Washington, DC, November 1982.

5. DOE/TIC-27611, “Atmospheric Science and Power Production,” U.S. Department of Energy, Washington, DC, 1984.

6. NUREG/CR-4000, Vol. 1, “MESORAD Dose Assessment, Technical Basis,” U.S. Nuclear Regulatory Commission, Washington, DC, March 1986.

Appendix 3 - Public Alert and Notification System Description

1.0 General Description

The Alert and Notification System for Lee Nuclear Station consists of an acoustic alerting signal and notification of the public by commercial broadcast (EAS). The system is designed to meet the acceptance criteria of Section B of Appendix 3, NUREG-0654, FEMA-REP-1, Rev. 1.

The Emergency Plans of Duke Energy, the States of North Carolina and South Carolina, and the counties of Cherokee, York, and Cleveland include the organizations and individuals, by title, who will be responsible for decision-making as regards the Alert and Notification System. The county locations from which the sirens would be activated and, potentially, the request for an EAS message would come are manned 24 hours per day. Each organization's plan describes provisions for use of public communications media or other emergency instructions to members of the public. The plans of both States include a description of the information that would be communicated to the public under given circumstances.

2.0 Concept of Operations

A system of fixed sirens provides public emergency warning in the Plume Exposure Pathway EPZ surrounding Lee Nuclear Station. State and County Plans describe a backup means of alerting and notification. This backup method includes area-wide emergency service vehicles traversing the area and giving both an alerting signal and notification message.

Each county will control the activation of the sirens within its boundaries.

3.0 Criteria for Acceptance

The Alert and Notification System for the Lee Nuclear Station provides an alerting signal and an informational or instructional message to the population (via the EAS) on an area-wide basis throughout the Plume Exposure Pathway EPZ within 15 minutes from the time the cognizant off-site agencies have determined the need for such alerting exists. The emergency plans of each State include evidence of EAS preparation for emergency situations and the means for activating the system.

4.0 Physical Implementation

The activation of this alert and notification system requires procedures and relationships between both Duke Energy and the off-site agencies that support Duke and Lee Nuclear Station.

When an incident is determined to have reached the level requiring public protective actions, Duke contacts the cognizant off-site agency via the "selective signaling" phone system and provides its recommendations. This system is available for use 24 hours per day and links the Control Room, TSC, EOF, the county warning points/EOCs, and the State EOCs.

Table A3-2 describes the expected performance of the sirens used in this system. These sirens complement existing alerting systems. The ambient background sound level in the Lee Nuclear Station area is taken to be 50 decibels (dB) for areas of "less than 2000 persons/per square mile" and 60 dB for areas above this density. On this basis, the siren coverages are designed to provide a signal 10dB above the average daytime ambient background.

Furthermore, the siren locations are developed to provide maximum sound levels of less than 126 dB to be received by any member of the public.

The bases for selection of the 60 dB(c) and 70 dB(c) criteria are provided below, based on Model 2001AC sirens used at other Duke Energy facilities. Slight variation may be expected based on technology availability at the time of system procurement and installation:

- Location of heavy industry - There is limited "heavy industry" in the Lee Nuclear Station Plume Exposure Pathway EPZ as described in Chapter 2 of the Lee Nuclear Station FSAR
- Attenuation factors with distance - 10 dB loss per distance doubled (See Table 3-2)
- Siren output dB(c) at 100 ft. versus assumed range and acoustic frequency spectra - 127 ±1.0 dB at 100 feet
- Assumed ranges per Figure 3-1, 10 dB loss column
- Frequency Spectra: top frequency 705Hz
- Map showing siren location – Additional detailed planning required
- Mounting height of sirens - 50 feet (approximate)
- Special weather condition considerations (such as expected heavy snow) - None

The siren system produces a 3 minute steady signal and is capable of repetition.

Table A3-1 - Siren Maintenance and Test Frequencies

Test or Maintenance	Required Frequency	Duke Frequency
Silent Test	Every two weeks	Weekly
Growl Test	Quarterly and when preventive maintenance is performed	Full Cycle Test is performed in lieu of the Growl Test quarterly. A Low Growl Test is performed following preventive maintenance.
Full Cycle Test	Annually	Quarterly
Low Growl Test	N/A	Weekly and following corrective and preventive maintenance
Preventive Maintenance	At least annually	Annually

Table A3-2 - Siren Range in Feet*

Minimum Level Coverage in dB	2001AC 126 dB(C) Siren	
	12	**10**
85	1125	1830
80	1500	2600
75	2000	3680
73	2260	4210
70	2700	5200
68	3000	6000
65	3600	7400
60	4800	10400

* Figured at 12 and 10 dB loss per distance doubled

Appendix 4 - Evacuation Time Estimate

1.0 Introduction

The Lee 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 Lee Nuclear Station located in Cherokee County, SC. 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.

2.0 Overview of Project Activities

The major activities associated with the Lee Nuclear Station ETE project are briefly described below in chronological sequence:

- Held “kick-off” meetings with Duke Energy personnel, Enercon Services and emergency management personnel representing State and local governments.
- Created an analysis network representing the highway system topology and capacities within the EPZ, extending 15 miles radially from the plant. The design was based on U.S. Census Bureau data files for the year 2000 and Geographical Information Systems (GIS) maps of the area in the vicinity of the facility. A detailed field survey of the highway network was also conducted.
- Conducted telephone surveys 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) based on the telephone survey of EPZ residents.

- Following Federal guidelines, the EPZ is subdivided into 12 Emergency Response Planning Areas (ERPA). These ERPA are then grouped within circular areas or "keyhole" configurations (circles plus radial sectors) that define a total of 22 Evacuation Regions.

- The time-varying external circumstances are represented as Evacuation Scenarios, each described in terms of the following factors: (1) Season (Summer, Winter); (2) Day of Week (Midweek, Weekend); (3) Time of Day (Midday, Evening); and (4) Weather (Good, Rain, Ice).

- 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, to represent "upper bound" estimates. This conservative Planning Basis is applicable for all initiating events including the prospect of a terrorist attack.

- If the emergency occurs while schools are in session, the ETE study assumes that the children are evacuated by bus directly to reception centers located outside the EPZ. Parents, relatives, and neighbors are advised to not pick up their children at school prior to the arrival of the buses dispatched for that purpose. The ETE for school children are calculated separately.

- Evacuees who do not have access to a private vehicle 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: bus, van, or ambulance, as required. Separate ETE are calculated for the transit-dependent evacuees and for those evacuated from special facilities.

3.0 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 ETE are calculated for transit-dependent evacuees, including school children for applicable scenarios.

Except for Region R03, 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 the Lee Nuclear Station), 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.

4.0 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.

5.0 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 evacuating 100% of the general population from the Plume Exposure Pathway EPZ under adverse weather conditions is approximately four hours. The maximum calculated ETE for evacuating 100% of the transit-dependent population from the Plume Exposure Pathway EPZ under adverse weather conditions is approximately five hours. The ETE did not identify any impediments to the development of emergency plans for the Lee Nuclear Station site.

The following figures illustrate selected information from the ETE:

- Figure A4-1 – illustrates the Lee Nuclear Station site Plume Exposure Pathway EPZ, including the 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 assumed for conduct of the ETE
- Figures A4-4 through A4-7 – illustrate the evacuation routes for the Plume Exposure Pathway EPZ population

Figure A4-1 - Plume Exposure Pathway EPZ and Emergency Response Planning Areas

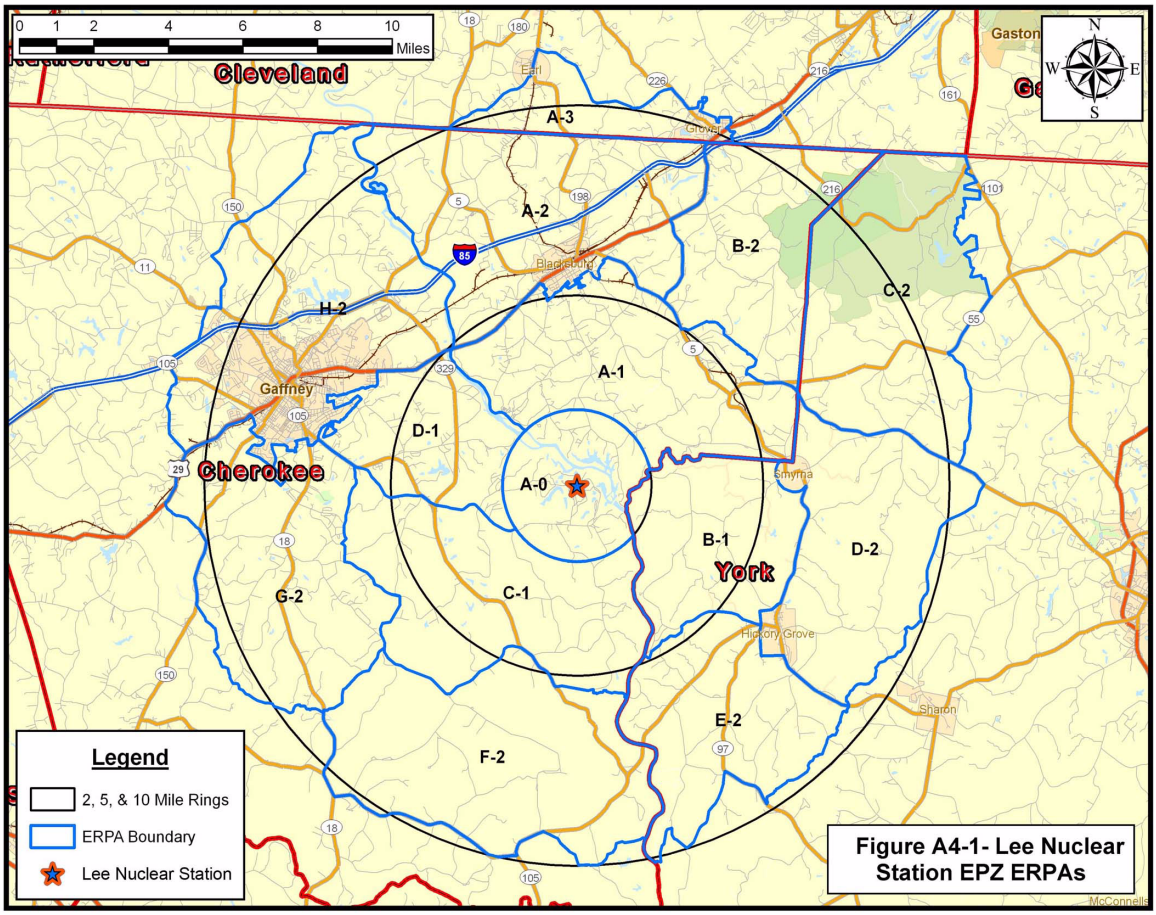
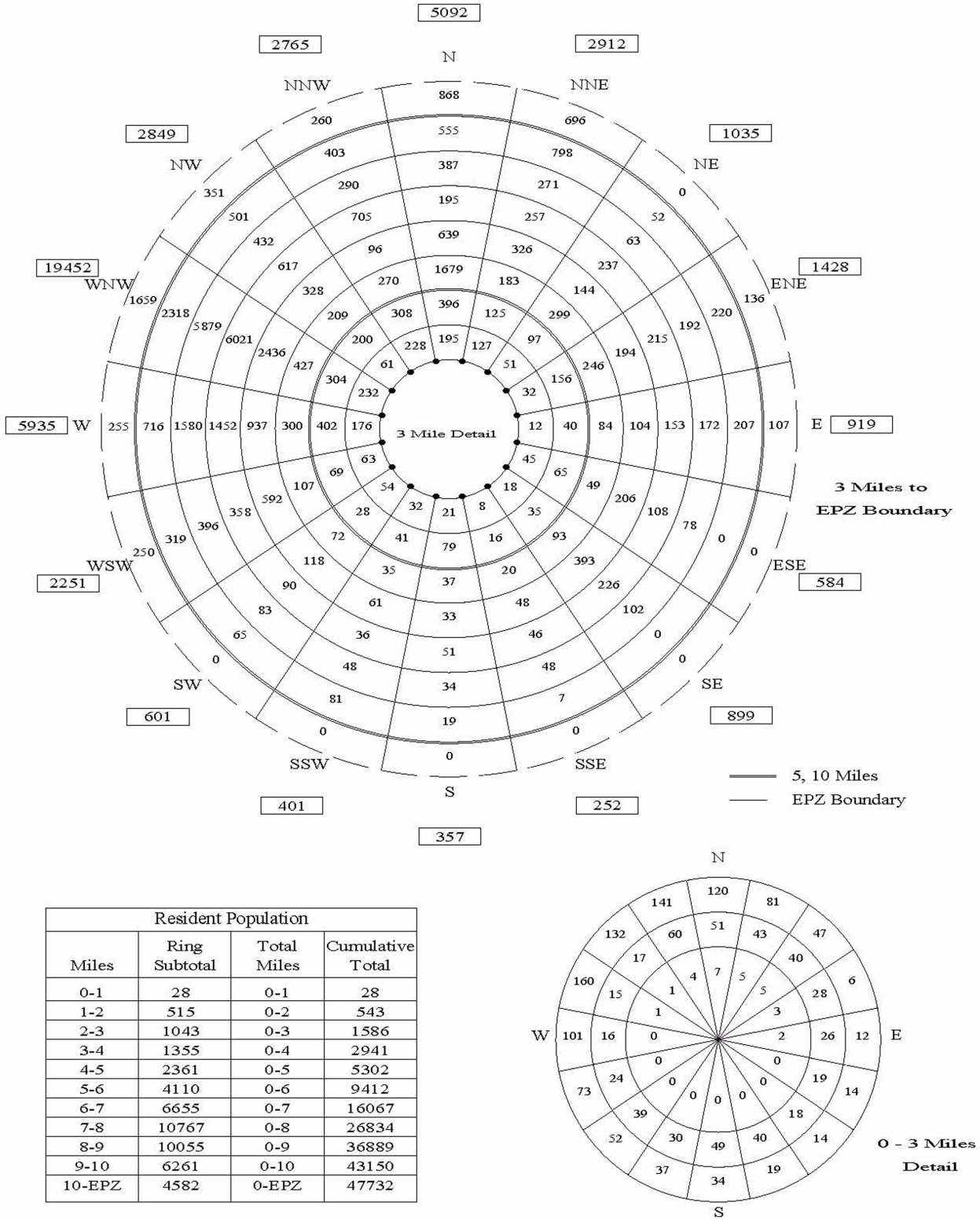


Figure A4-2 - Plume Exposure Pathway EPZ Permanent Resident Population by Sector



Resident Population			
Miles	Ring Subtotal	Total Miles	Cumulative Total
0-1	28	0-1	28
1-2	515	0-2	543
2-3	1043	0-3	1586
3-4	1355	0-4	2941
4-5	2361	0-5	5302
5-6	4110	0-6	9412
6-7	6655	0-7	16067
7-8	10767	0-8	26834
8-9	10055	0-9	36889
9-10	6261	0-10	43150
10-EPZ	4582	0-EPZ	47732

Figure A4-3 - Assumed Locations of Reception Centers

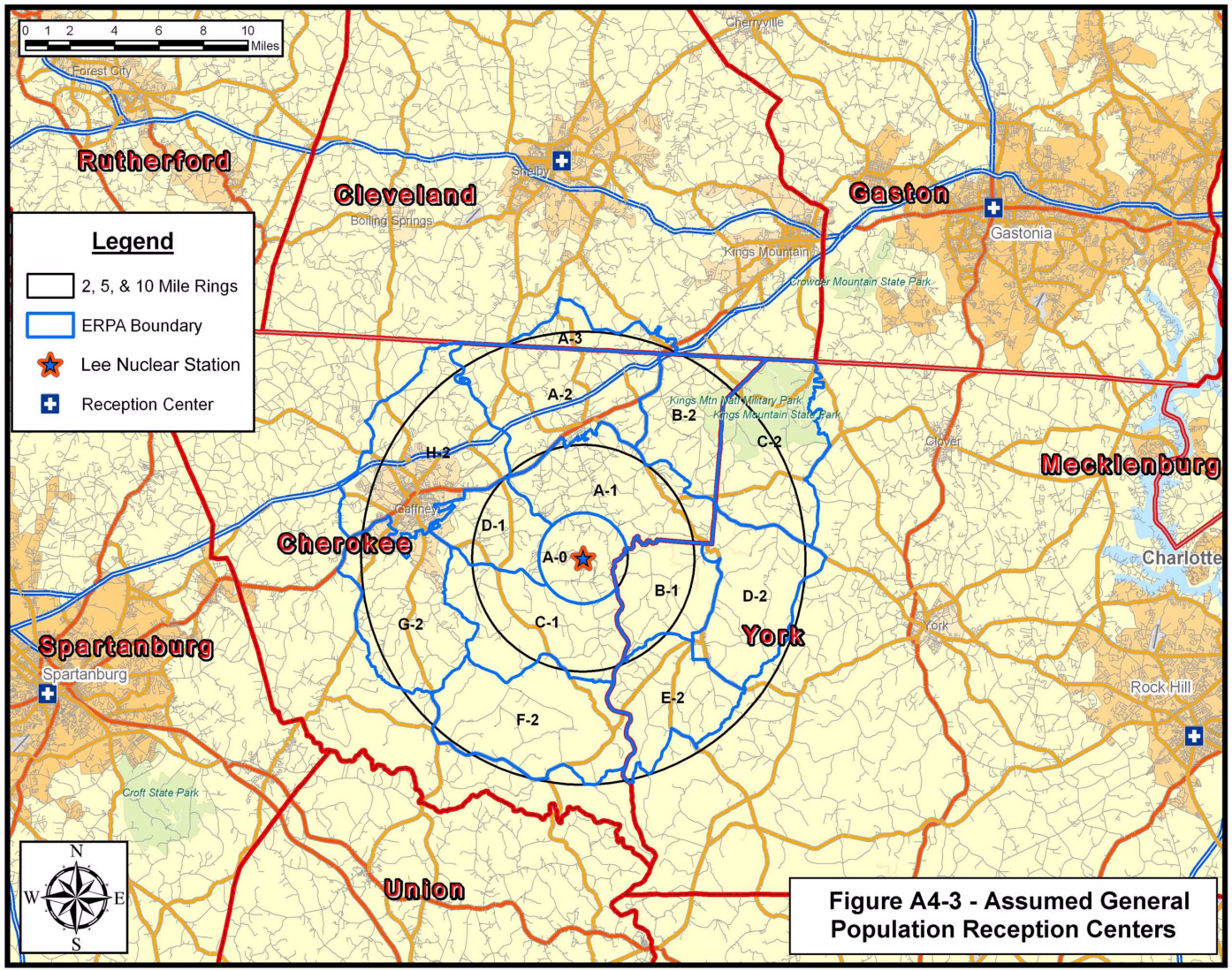


Figure A4-4 - Plume Exposure Pathway EPZ Evacuation Routes – Northeastern Quadrant

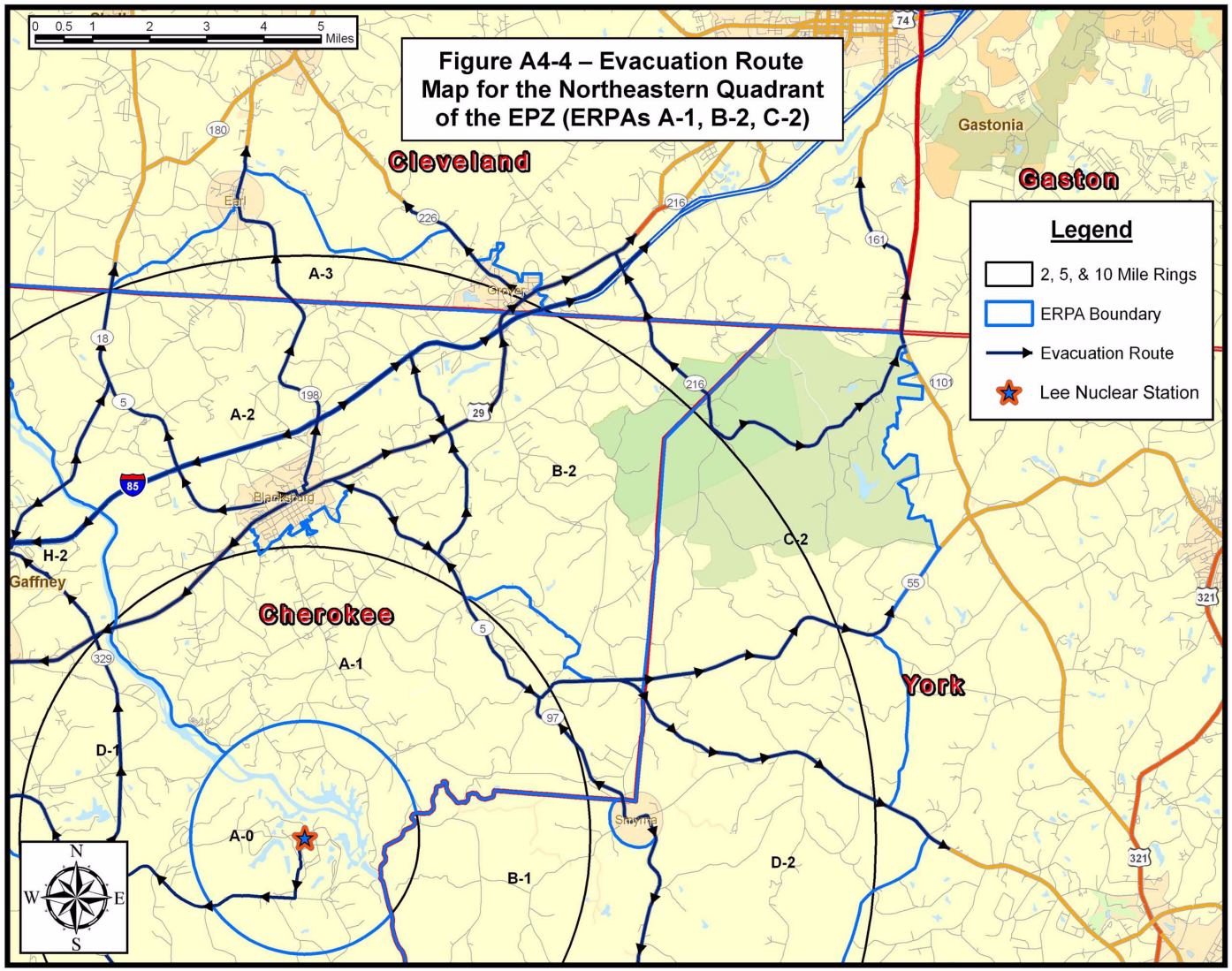


Figure A4-5 - Plume Exposure Pathway EPZ Evacuation Routes – Southeastern Quadrant

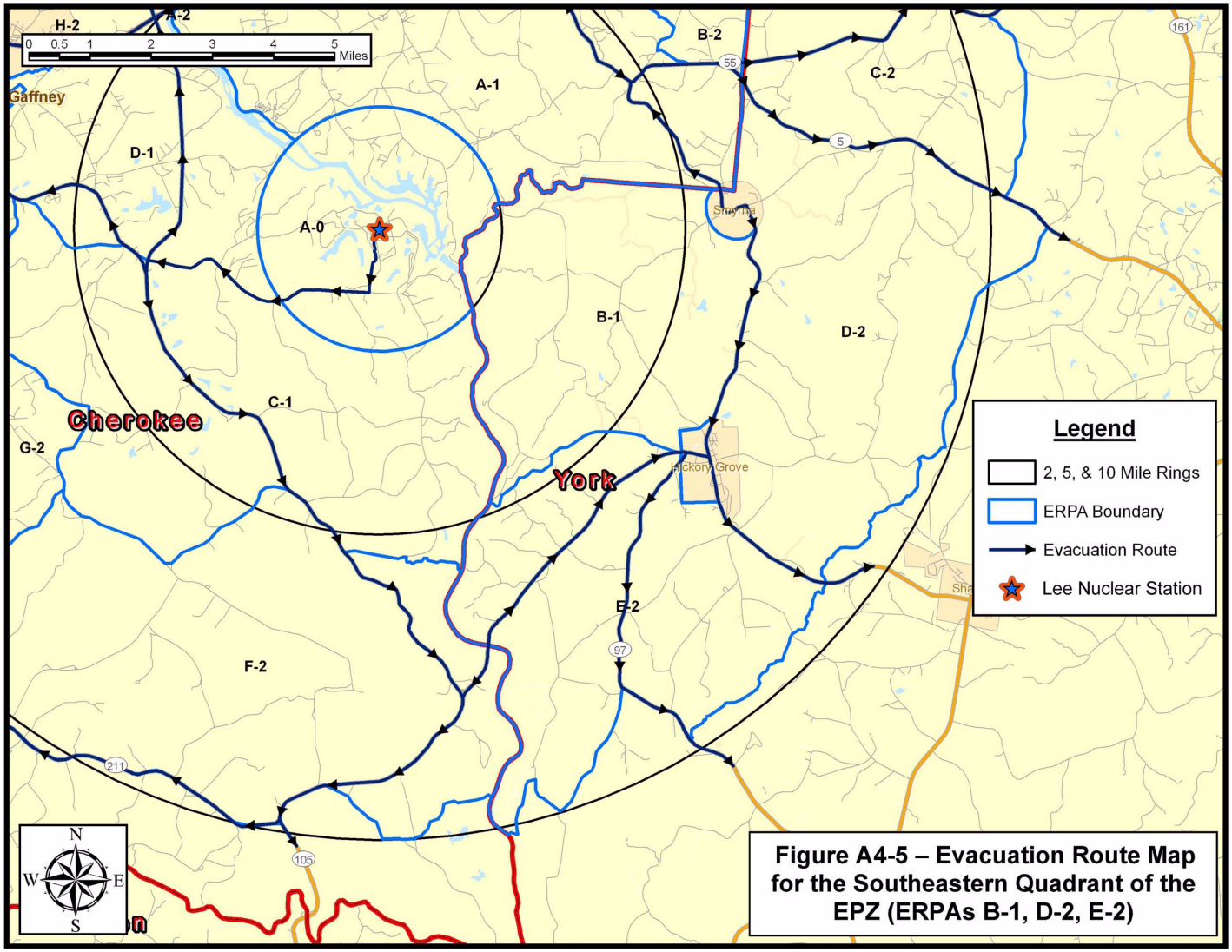


Figure A4-6 - Plume Exposure Pathway EPZ Evacuation Routes – Southwestern Quadrant

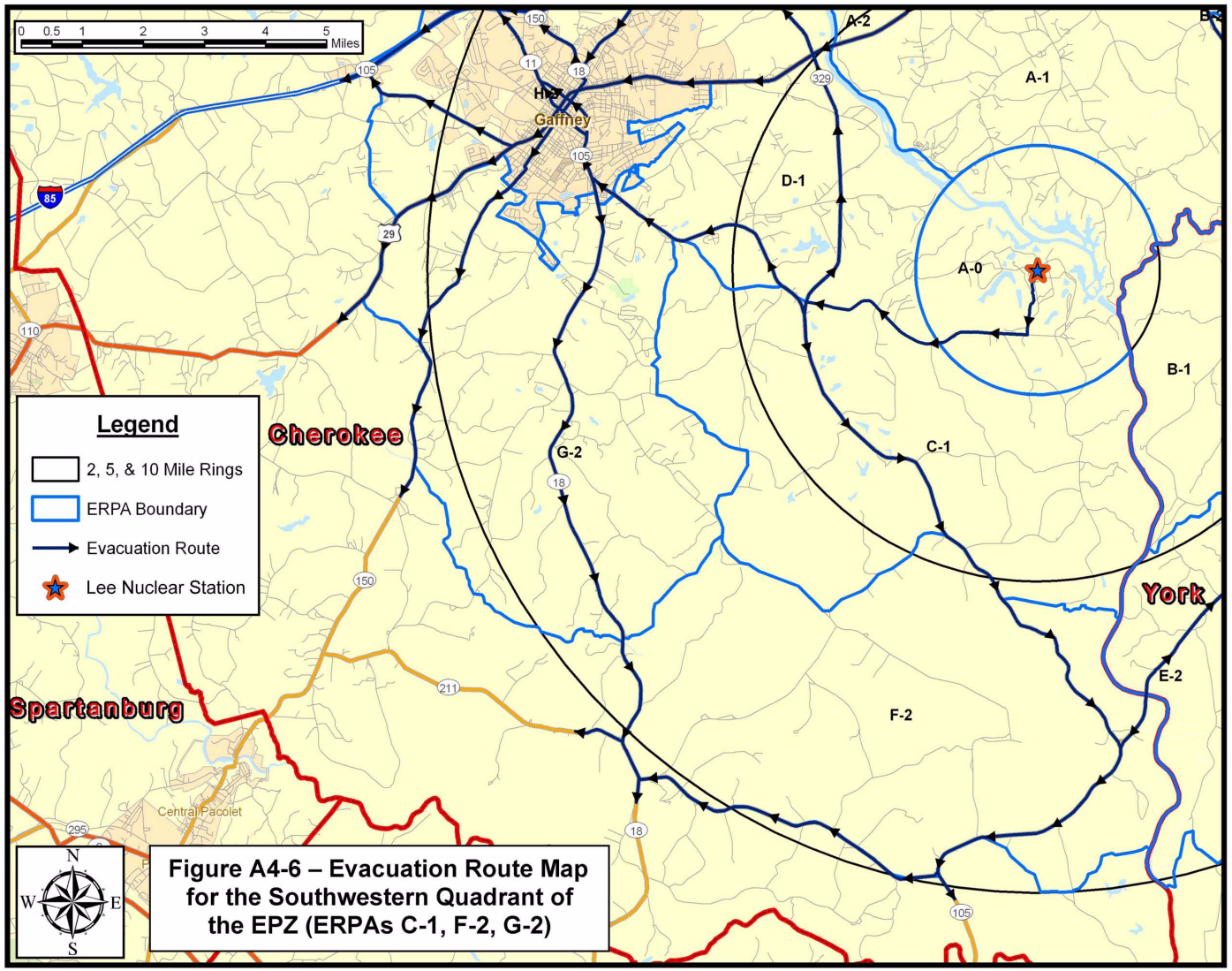
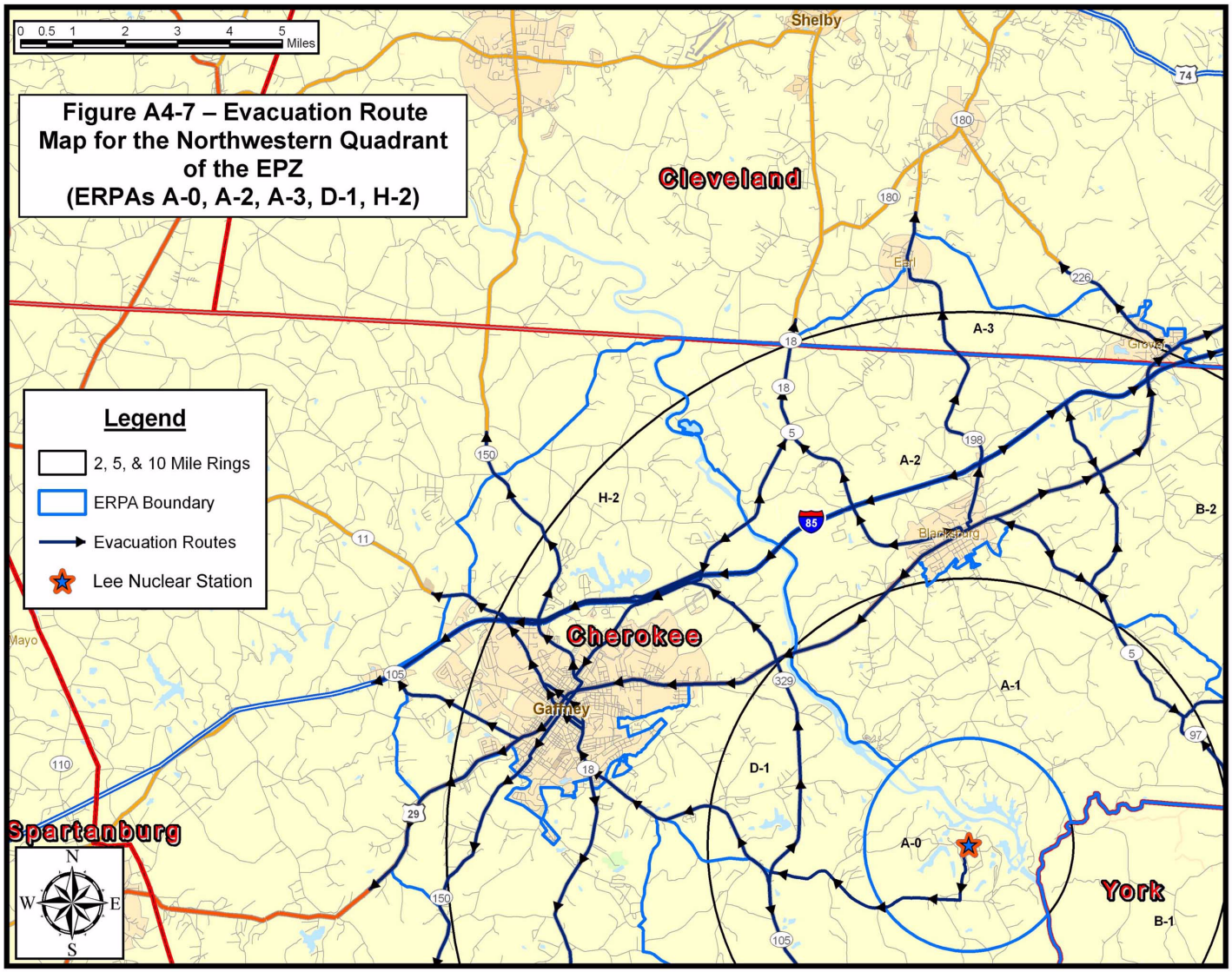


Figure A4-7 - Plume Exposure Pathway EPZ Evacuation Routes – Northwestern Quadrant



Appendix 5 - Implementing Procedures

EPIPs address a range of actions needed to implement the contents of this Emergency Plan. The EPIPs address, at a minimum, the following topics:

EPIP Topic	Corresponding COL Emergency Plan Section(s)
Emergency Classification	Section II.D
Notifications Associated with Emergency Conditions	Sections II.E, II.L.1
Emergency Communications	Section II.F
Protective Action Recommendations	Sections II.J.7, II.J.10
Activation of the Emergency Response Organization	Sections II.B, II.E.2
Site Assembly, Accountability, and Evacuation	Sections II.J.4, II.J.5
Core Damage Assessment	Section II.I
Radiation Protection Under Emergency Conditions	Section II.K
Plume Tracking and Assessment of Off-Site Radiological Conditions	Section II.I
Respiratory Protection and Distribution of Radioprotective Drugs	Section II.J.6
Personnel Monitoring	Sections II.K.2, II.K.3
Decontamination	Sections II.K.5, II.K.7
Obtaining and Analyzing High Activity Samples Under Emergency Conditions	Section II.I
Emergency Media Relations	Section II.G

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 EPIPs. These supporting procedures address, at a minimum, the following topics:

Procedure Topic	Corresponding COL Emergency Plan Section(s)
Emergency Equipment Inventory and Operational Tests	Section II.H.10
Conduct of Emergency Drills and Exercises	Section II.N
Testing of Emergency Communications Systems	Sections II.N, II.F
Emergency Plan Training	Sections II.G.5, II.O, II.P.1
Maintaining Emergency Preparedness	Section II.P

Appendix 6 - Emergency Equipment and Supplies

Duke Energy establishes and maintains inventories of emergency equipment and supplies for use by emergency response personnel in the ERFs and by Duke Energy'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)

Appendix 7 - Certification Letters

BRYAN J. DOLAN.
Vice President
Nuclear Plant Development

Duke Energy Corporation
526 South Church Street
Charlotte, NC 28120

Mailing Address:
EC09D / P.O. Box 1006
Charlotte, NC 28201-1006

704 382 0605
704 382 0448 fax

October 16, 2007

Mr. Charles Miller, President
Piedmont Medical Center
222 South Herlong
Rock Hill, SC 29732

Subject: William States Lee III Nuclear Station
Emergency Support Letter of Intent

Dear Mr. Miller:

As previously indicated in public announcements and meetings, Duke Energy 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 the William States Lee III Nuclear Station (Lee Nuclear Station) near Gaffney, South Carolina. The purpose of this initiative is to develop a COL application that will ultimately lead to NRC approval to construct and operate two commercial nuclear generating units 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 will take credit, to the extent practical, for the site, federal, state, and local plans already in place for other nuclear generating units in South Carolina and North Carolina.

These plans include extending the existing agreement between Piedmont Medical Center (PMC) and Duke Energy for the Catawba Nuclear Station to the proposed Lee Nuclear Station. Duke Energy intends to execute a formal letter of agreement with PMC governing support for radiological emergencies at Lee Nuclear Station.

Terms that will be addressed include the following:

1. PMC, as the proposed primary medical facility, would provide emergency medical services to Lee Nuclear Station personnel in the event of an accident at Lee Nuclear Station (this specifically includes radiological contamination) including:

   a. Ambulance transportation and emergency care for one or more contaminated, injured individuals.

   b. Establishment of radiological contamination control measures at PMC. York County Emergency Management and Lee Nuclear Station may provide assistance in establishing these measures as requested by PMC.

   c. Hospital care at PMC.

2. In the event that PMC could not provide treatment, PMC would provide ambulance transportation and emergency care for one or more contaminated injured individuals from Lee Nuclear Station to a backup medical facility (to be determined in the future). PMC would have the right to deny ambulance transportation in the event that the hospital itself was being evacuated.

3. PMC would participate in sufficient practice drills and an annual emergency exercise to ensure emergency preparedness and would make PMC personnel available for questions from the Nuclear Regulatory Commission and/or the Federal Emergency Management Agency.

4. PMC would allow the Center for Emergency Medicine to act as Director of Emergency Medical Treatment during radiological emergencies, exercises, and drills, as long as they have minimum courtesy staff privileges at PMC. A Center for Emergency Medicine physician would be the primary physician for medical treatment of radiologically contaminated areas once the patient is admitted.

5. PMC Emergency Department, ambulance, and management personnel would be available on an annual basis for training session(s) provided by Duke Energy and/or Center for Emergency Medicine to ensure emergency preparedness.

6. PMC would provide storage space near the Emergency Room for an emergency supply kit (to be provided by Duke Energy) and allow for quarterly inventory of the kit by Duke Energy personnel.

7. Lee Nuclear Station would be responsible for decontamination of PMC facilities and would replace equipment that is not suitable for decontamination.

8. Lee Nuclear Station shall be responsible for reimbursement of PMC for any supplies, procedures, and treatment given in the Emergency Room or as in-patient in the hospital.

This letter of intent shall remain in effect until superseded by a formal letter of agreement and may not be terminated by either party without 90 days written notice.

I am happy to answer any questions you may have and would appreciate your signature below by November 5, 2007 if these terms are acceptable.

ACCEPTED BY:

Bryan Dolan
Vice-President
Nuclear Plant Development

10-16-07
Date

Charles F. Miller, President
Piedmont Medical Center

10/22/07
Date

cc: York County Emergency Management Office
Cherokee County Emergency Management Office

Duke Energy

BRYAN J. DOLAN.
Vice President
Nuclear Plant Development

Duke Energy Corporation
526 South Church Street
Charlotte, NC 28120

Mailing Address:
EC09D / P.O. Box 1006
Charlotte, NC 28201-1006

704 382 0605
704 382 0448 fax

Ted Bailing
Radiological Emergencies

October 16, 2007

Mr. John Gelok, Director
Emergency Medical Services
Upstate Carolina Medical Center
1530 North Limestone St.
Gaffney, SC 29340

704 382 5917

Subject: William States Lee III Nuclear Station
Emergency Support Letter of Intent

Dear Mr. Gelok:

As previously indicated in public announcements and meetings, Duke Energy 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 the William States Lee III Nuclear Station (Lee Nuclear Station) near Gaffney, South Carolina. The purpose of this initiative is to develop a COL application that will ultimately lead to NRC approval to construct and operate two commercial nuclear generating units 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 will take credit, to the extent practical, for the site, federal, state, and local plans already in place for other nuclear generating units in South Carolina and North Carolina.

The purpose of this letter is to certify that Upstate Carolina Medical Center Emergency Medical Services (UCMC) will work with Duke Energy to develop a formal letter of agreement, once construction begins at the Lee Nuclear Station, confirming that UCMC will respond to a request by Duke Energy for ambulance and/or rescue service for any emergency medical situations at the proposed Lee Nuclear Station, including situations that may involve radioactive materials.

The following provisions will be included in the formal letter of agreement:

1. UCMC will provide emergency ambulance service for the transportation of contaminated, injured individuals to Piedmont Medical Center or other medical facility named by Duke Energy. In the event the contaminated individual is transported by UCMC vehicle, a member of the Lee Nuclear Station Radiation Protection organization may accompany the patient to the medical facility.

2. Duke Energy will be responsible for contamination control and decontamination of the UCMC vehicles and equipment if contamination occurs as a result of transporting a contaminated individual.

3. UCMC personnel will participate in annual training that will include topics in radiation safety and care of contaminated/irradiated patients. This training will be provided by Duke Energy personnel or a Duke Energy contractor.

4. UCMC personnel will participate, upon request, in medical drills or full exercises that will be conducted at the Lee Nuclear Station.

This letter of intent shall remain in effect until superseded by a formal letter of agreement and may not be terminated by either party without 90 days written notice.

I am happy to answer any questions you may have and would appreciate your signature below by November 5, 2007 if these terms are acceptable.

ACCEPTED BY:

Bryan J Dolan — 10-16-07

Bryan Dolan
Vice-President
Nuclear Plant Development

Date

Joe D. Howell — 10.29.07

~~John Gelok, Director~~ Joe D. Howell
~~Emergency Medical Services~~ CEO
Upstate Carolina Medical Center

Date

cc: Cherokee County Emergency Management Office

Duke Energy.

BRYAN J. DOLAN.
Vice President
Nuclear Plant Development

Duke Energy Corporation
526 South Church Street
Charlotte, NC 28120

Mailing Address:
EC09D / P.O. Box 1006
Charlotte, NC 28201-1006

704 382 0605
704 382 0448 fax

October 16, 2007

Chief Rick Peterson
Draytonville-McKowns Mountain-Wilkinsville Volunteer Fire Department
538 McKowns Mountain Rd.
Gaffney, SC 29340

Subject: William States Lee III Nuclear Station
Emergency Support Letter of Intent

Dear Chief Peterson:

As previously indicated in public announcements and meetings, Duke Energy 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 the William States Lee III Nuclear Station (Lee Nuclear Station) near Gaffney, South Carolina. The purpose of this initiative is to develop a COL application that will ultimately lead to NRC approval to construct and operate two commercial nuclear generating units 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 will take credit, to the extent practical, for the site, federal, state, and local plans already in place for other nuclear generating units in South Carolina and North Carolina.

The purpose of this letter is to certify that: (1) Draytonville-McKowns Mountain-Wilkinsville Volunteer Fire Department would respond to requests for aid in firefighting resulting from emergency situations at the Lee Nuclear Station and (2) Draytonville-McKowns Mountain-Wilkinsville Volunteer Fire Department will participate in future periodic drills and training as required by the Lee Nuclear Station Emergency Plan. This letter of intent shall remain in effect until superseded by a formal letter of agreement and may not be terminated by either party without 90 days written notice.

I am happy to answer any questions you may have and would appreciate your signature below by November 5, 2007 if these terms are acceptable.

ACCEPTED BY:

Bryan Dolan — 10-16-07

Bryan Dolan
Vice-President
Nuclear Plant Development
Date

Chief Rick Peterson — 11-5-07

Chief Rick Peterson
Draytonville-McKown Mountain-Wilkinsville
Volunteer Fire Department
Date

cc: Cherokee County Emergency Management Office

Duke Energy®

BRYAN J. DOLAN.
Vice President
Nuclear Plant Development

Duke Energy Corporation
526 South Church Street
Charlotte, NC 28120

Mailing Address:
EC09D / P.O. Box 1006
Charlotte, NC 28201-1006

704 382 0605
704 382 0448 fax

October 16, 2007

Mr. Rick Peterson, Director
Cherokee County Emergency Management
1404 North Limestone Street
Gaffney, South Carolina 29340

Dear Mr. Peterson:

As previously indicated in public announcements and meetings, Duke Energy 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 the William States Lee III Nuclear Station near Gaffney, South Carolina. The purpose of this initiative is to develop a COL application that will ultimately lead to NRC approval to construct and operate two commercial nuclear generating units 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 South Carolina and North Carolina. With the cooperation of affected state and local agencies, Duke Energy has developed Part 5 of the COL application, the "William States Lee III Nuclear Station Combined License Application Emergency Plan," Revision 0 dated. The emergency plan includes the emergency classification system required by 10 CFR 50. Duke Energy has 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 South Carolina and North Carolina. 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 Duke Energy "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 Cherokee County Emergency Management that:

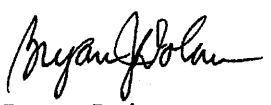
- the proposed emergency plans are practicable;
- the agency is committed to participating in any further development of the plans, including any required field demonstrations; and
- the agency is committed to executing its responsibilities under the plans in the event of an emergency.

The actual emergency planning arrangements will be finalized in a letter of agreement at a later stage in the new facilities' licensing process.

Cherokee County Emergency Management's participation in these emergency planning efforts is greatly appreciated. Your signature on the enclosure also indicates that you concur with the emergency classification system, initiating conditions and emergency action levels and evacuation time estimates proposed in the Lee Nuclear Station Emergency Plan.

Please sign the enclosed certification for the Lee Nuclear Station Emergency Plan and return it to me by November 5, 2007 in the enclosed pre-addressed stamped envelope, retaining a copy of this letter and enclosure for your records.

Sincerely,



Bryan Dolan
Vice-President
Nuclear Plant Development

Enclosure: W.S. Lee III Nuclear Station Emergency Plan Certification

cc: Mr. Ronald Osborne, Director
South Carolina Emergency Management Division

Mr. Ernest Moore Jr
South Carolina Emergency Management Division

W.S. Lee III Nuclear Station Emergency Plan Certification

The Cherokee County Emergency Management has reviewed the emergency plan supporting the Combined License Application for new nuclear generating units at the William States Lee III Nuclear Station, including:

- William States Lee III Nuclear Station Combined License Application Emergency Plan, August 2007
- Proposed changes to the March 2007 South Carolina Emergency Operations Plan, August 2007
- Proposed changes to the March 2006 South Carolina Operational Radiological Emergency Response Plan, August 2007
- Proposed Part 7, William States Lee III to the South Carolina Operational Radiological Emergency Response Plan, August 2007
- Proposed changes to the South Carolina Technical Radiological Emergency Response Plan, August 2007
- Proposed Annex Q, Cherokee County Emergency Operations Plan, August 2007

Cherokee County Emergency Management certifies its commitment that:

- The proposed emergency plans are practicable within the continuing development of the plans;
- Cherokee County Emergency Management is committed to participating in further development of the plans, including any required field demonstrations; and
- Cherokee County Emergency Management is committed to executing their responsibilities under the plans in the event of an emergency.

Furthermore, Cherokee County Emergency Management concurs with the proposed emergency classification system, initiating conditions, emergency action levels described in the Combined License Application Emergency Plan and evacuation time estimates.

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 William States Lee III Site Emergency Plan if and when Duke Energy proceeds with construction and operation of this nuclear facility.

Rick Peterson
Print Name

Signature

11-5-07
Date

Director of Emergency Mgmt
Title

Duke Energy®

BRYAN J. DOLAN.
Vice President
Nuclear Plant Development

Duke Energy Corporation
526 South Church Street
Charlotte, NC 28120

Mailing Address:
EC09D / P.O. Box 1006
Charlotte, NC 28201-1006

704 382 0605
704 382 0448 fax

October 16, 2007

Mr. Dewey Cook, Director/Fire Marshall
Cleveland County Emergency Management
and Fire Marshall's Office
P.O. Box 2232
Shelby, North Carolina 28151

Dear Mr. Cook:

As previously indicated in public announcements and meetings, Duke Energy 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 the William States Lee III Nuclear Station near Gaffney, South Carolina. The purpose of this initiative is to develop a COL application that will ultimately lead to NRC approval to construct and operate two commercial nuclear generating units 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 South Carolina and North Carolina. With the cooperation of affected state and local agencies, Duke Energy has developed Part 5 of the COL application, the "William States Lee III Nuclear Station Combined License Application Emergency Plan," Revision 0. The emergency plan includes the emergency classification system required by 10 CFR 50. Duke Energy has 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 South Carolina and North Carolina. 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 Duke Energy "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 Cleveland County Emergency Management and Fire Marshall's Office that:

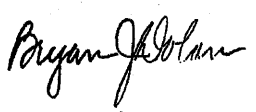
- the proposed emergency plans are practicable;
- these agencies are committed to participating in any further development of the plans, including any required field demonstrations; and
- these agencies are committed to executing their responsibilities under the plans in the event of an emergency.

The actual emergency planning arrangements will be finalized in a letter of agreement at a later stage in the new facilities' licensing process.

Cleveland County Emergency Management and Fire Marshall's Office's participation in these emergency planning efforts is greatly appreciated. Your signature on the enclosure also indicates that you concur with the emergency classification system, initiating conditions and emergency action levels and evacuation time estimates proposed in the Lee Nuclear Station Emergency Plan.

Please sign the enclosed certification for the Lee Nuclear Station Emergency Plan and return it to me by November 5, 2007 in the enclosed pre-addressed stamped envelope, retaining a copy of this letter and enclosure for your records.

Sincerely,



Bryan Dolan
Vice-President
Nuclear Plant Development

Enclosure: W.S. Lee III Nuclear Station Emergency Plan Certification

cc: Mr. H. Douglas Hoell, Director
North Carolina Emergency Management

Mr. Stephen G. Payne
North Carolina Emergency Management

W.S. Lee III Nuclear Station Emergency Plan Certification

The Cleveland County Emergency Management and Fire Marshall's Office has reviewed the emergency plan supporting the Combined License Application for new nuclear generating units at the William States Lee III Nuclear Station, including:

- William States Lee III Nuclear Station Combined License Application Emergency Plan, August 2007
- Proposed changes to the September 2005 North Carolina Emergency Operations Plan, August 2007
- Proposed changes to the January 2005 North Carolina Radiological Emergency Response Plan, August 2007
- Proposed changes to the August 2004 Cleveland County Annex, North Carolina Radiological Emergency Response Plan, August 2007

Cleveland County Emergency Management and Fire Marshall's Office certifies its commitment that:

- the proposed emergency plans are practicable;
- Cleveland County Emergency Management and Fire Marshall's Office is committed to participating in further development of the plans, including any required field demonstrations; and
- Cleveland County Emergency Management and Fire Marshall's Office is committed to executing their responsibilities under the plans in the event of an emergency.

Furthermore, Cleveland County Emergency Management and Fire Marshall's Office concurs with the proposed emergency classification system, initiating conditions, emergency action levels described in the Combined License Application Emergency Plan and evacuation time estimates.

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 William States Lee III Site Emergency Plan if and when Duke Energy proceeds with construction and operation of this nuclear facility.

Dewey C. Cook
Print Name

Dewey C. Cook
Signature

10-25-07
Date

E.M. Director
Title

Duke Energy®

BRYAN J. DOLAN.
Vice President
Nuclear Plant Development

Duke Energy Corporation
526 South Church Street
Charlotte, NC 28120

Mailing Address:
EC09D / P.O. Box 1006
Charlotte, NC 28201-1006

704 382 0605
704 382 0448 fax

October 16, 2007

Mr. H. Douglas Hoell, Director
North Carolina Emergency Management
North Carolina Department of Crime Control & Public Safety
4713 Mail Service Center
Raleigh, North Carolina 27699-4713

Dear Mr. Hoell:

As previously indicated in public announcements and meetings, Duke Energy 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 the William States Lee III Nuclear Station near Gaffney, South Carolina. The purpose of this initiative is to develop a COL application that will ultimately lead to NRC approval to construct and operate two commercial nuclear generating units 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 South Carolina and North Carolina. With the cooperation of affected state, and local agencies, Duke Energy has developed Part 5 of the COL application, the "William States Lee III Nuclear Station Combined License Application Emergency Plan," Revision 0. The emergency plan includes the emergency classification system required by 10 CFR 50. Duke Energy has 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 South Carolina and North Carolina. 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 Duke Energy "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 North Carolina Emergency Management that:

- the proposed emergency plans are practicable;
- the agency is committed to participating in any further development of the plans, including any required field demonstrations; and
- the agency is committed to executing its responsibilities under the plans in the event of an emergency.

The actual emergency planning arrangements will be finalized in a letter of agreement at a later stage in the new facilities' licensing process.

North Carolina Emergency Management's participation in these emergency planning efforts is greatly appreciated. Your signature on the enclosure also indicates that you concur with the emergency classification system, initiating conditions and emergency action levels and evacuation time estimates proposed in the Lee Nuclear Station Emergency Plan.

Please sign the enclosed certification for the Lee Nuclear Station Emergency Plan and return it to me by November 5, 2007 in the enclosed pre-addressed stamped envelope, retaining a copy of this letter and enclosure for your records.

Sincerely,

Bryan Dolan
Vice-President
Nuclear Plant Development

Enclosure: W.S. Lee III Nuclear Station Emergency Plan Certification

cc: Mr. Stephen G. Payne
North Carolina Emergency Management

Mr. Dewey Cook
Cleveland County Emergency Management

W.S. Lee III Nuclear Station Emergency Plan Certification

The North Carolina Emergency Management has reviewed the emergency plan supporting the Combined License Application for new nuclear generating units at the William States Lee III Nuclear Station, including:

- William States Lee III Nuclear Station Combined License Application Emergency Plan, August 2007
- Proposed changes to the September 2005 North Carolina Emergency Operations Plan, August 2007
- Proposed changes to the January 2005 North Carolina Radiological Emergency Response Plan, August 2007
- Proposed changes to the August 2004 Cleveland County Annex, North Carolina Radiological Emergency Response Plan, August 2007

North Carolina Emergency Management certifies its commitment that:

- the proposed emergency plans are practicable;
- North Carolina Emergency Management is committed to participating in further development of the plans, including any required field demonstrations; and
- North Carolina Emergency Management is committed to executing their responsibilities under the plans in the event of an emergency.

Furthermore, North Carolina Emergency Management concurs with the proposed emergency classification system, initiating conditions, emergency action levels described in the Combined License Application Emergency Plan and evacuation time estimates.

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 William States Lee III Site Emergency Plan if and when Duke Energy proceeds with construction and operation of this nuclear facility.

H. DOUGLAS HOELL, JR.
Print Name

W. Doug Hoell
Signature

10-23-07
Date

DIRECTOR, NCEM
Title

Duke Energy®

BRYAN J. DOLAN.
Vice President
Nuclear Plant Development

Duke Energy Corporation
526 South Church Street
Charlotte, NC 28120

Mailing Address:
EC09D / P.O. Box 1006
Charlotte, NC 28201-1006

704 382 0605
704 382 0448 fax

October 16, 2007

Mr. C. Earl Hunter, Agency Commissioner
Department of Health and Environmental Control
2600 Bull Street
Columbia, SC 29201

Dear Mr. Hunter:

As previously indicated in public announcements and meetings, Duke Energy 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 the William States Lee III Nuclear Station near Gaffney, South Carolina. The purpose of this initiative is to develop a COL application that will ultimately lead to NRC approval to construct and operate two commercial nuclear generating units 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 South Carolina and North Carolina. With the cooperation of affected state and local agencies, Duke Energy has developed Part 5 of the COL application, the "William States Lee III Nuclear Station Combined License Application Emergency Plan," Revision 0. The emergency plan includes the emergency classification system required by 10 CFR 50. Duke Energy has 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 South Carolina and North Carolina. 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 Duke Energy "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 the Department of Health and Environmental Control that:

- the proposed emergency plans are practicable;
- the agencies is committed to participating in any further development of the plans, including any required field demonstrations; and
- the agencies is committed to executing its responsibilities under the plans in the event of an emergency.

The actual emergency planning arrangements will be finalized in a letter of agreement at a later stage in the new facilities' licensing process.

The Department of Health and Environmental Control's participation in these emergency planning efforts is greatly appreciated. Your signature on the enclosure also indicates that you concur with the emergency classification system, initiating conditions and emergency action levels and evacuation time estimates proposed in the Lee Nuclear Station Emergency Plan.

Please sign the enclosed certification for the Lee Nuclear Station Emergency Plan and return it to me by November 5, 2007 in the enclosed pre-addressed stamped envelope, retaining a copy of this letter and enclosure for your records.

Sincerely,

Bryan Dolan
Vice-President
Nuclear Plant Development

Enclosure: W.S. Lee III Nuclear Station Emergency Plan Certification

cc: Ms. Sandra J. Threatt
Department of Health and Environmental Control

Mr. Ronald Osborne, Director
South Carolina Emergency Management Division

Mr. Ernest Moore Jr
South Carolina Emergency Management Division

Mr. Rick Peterson, Director
Cherokee County Emergency Management

Mr. Cotton Howell, Director
York County Emergency Management

W.S. Lee III Nuclear Station Emergency Plan Certification

The Department of Health and Environmental Control has reviewed the emergency plan supporting the Combined License Application for new nuclear generating units at the William States Lee III Nuclear Station, including:

- William States Lee III Nuclear Station Combined License Application Emergency Plan, August 2007
- Proposed changes to the South Carolina Technical Radiological Emergency Response Plan, August 2007

The Department of Health and Environmental Control certifies its commitment that:

- the proposed emergency plans are practicable;
- Department of Health and Environmental Control is committed to participating in further development of the plans, including any required field demonstrations; and
- Department of Health and Environmental Control is committed to executing their responsibilities under the plans in the event of an emergency.

Furthermore, the Department of Health and Environmental Control concurs with the proposed emergency classification system, initiating conditions and emergency action levels described in the Combined License Application Emergency Plan.

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 William States Lee III Site Emergency Plan if and when Duke Energy proceeds with construction and operation of this nuclear facility.

Robert W. King, Jr., PE
Print Name

Signature

11/07/07
Date

Deputy Commissioner, Environmental Quality Control
Title

Duke Energy®

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October 16, 2007

Mr. Ronald Osborne, Director
South Carolina Emergency Management Division
2779 Fish Hatchery Road
West Columbia, South Carolina 29172

Dear Osborne:

As previously indicated in public announcements and meetings, Duke Energy 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 the William States Lee III Nuclear Station near Gaffney, South Carolina. The purpose of this initiative is to develop a COL application that will ultimately lead to NRC approval to construct and operate two commercial nuclear generating units 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 South Carolina and North Carolina. With the cooperation of affected state and local agencies, Duke Energy has developed Part 5 of the COL application, the "William States Lee III Nuclear Station Combined License Application Emergency Plan," Revision 0. The emergency plan includes the emergency classification system required by 10 CFR 50. Duke Energy has 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 South Carolina and North Carolina. 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 Duke Energy "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 South Carolina Emergency Management Division 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 will be finalized in a letter of agreement at a later stage in the new facilities' licensing process.

South Carolina Emergency Management Division's participation in these emergency planning efforts is greatly appreciated. Your signature on the enclosure also indicates that you concur with the emergency classification system, initiating conditions and emergency action levels and evacuation time estimates proposed in the Lee Nuclear Station Emergency Plan.

Please sign the enclosed certification for the Lee Nuclear Station Emergency Plan and return it to me by November 5, 2007 in the enclosed pre-addressed stamped envelope, retaining a copy of this letter and enclosure for your records.

Sincerely,

Bryan Dolan
Vice-President
Nuclear Plant Development

Enclosure: W.S. Lee III Nuclear Station Emergency Plan Certification

cc: Mr. Ernest Moore Jr.
South Carolina Emergency Management Division

Mr. Rick Peterson, Director
Cherokee County Emergency Management

Mr. Cotton Howell, Director
York County Emergency Management

W.S. Lee III Nuclear Station Emergency Plan Certification

The South Carolina Emergency Management Division has reviewed the emergency plan supporting the Combined License Application for new nuclear generating units at the William States Lee III Nuclear Station, including:

- William States Lee III Nuclear Station Combined License Application Emergency Plan, August 2007
- Proposed changes to the March 2007 South Carolina Emergency Operations Plan, August 2007
- Proposed changes to the March 2006 South Carolina Operational Radiological Emergency Response Plan, August 2007
- Proposed Part 7, William States Lee III to the South Carolina Operational Radiological Emergency Response Plan, August 2007

South Carolina Emergency Management Division certifies its commitment that:

- the proposed emergency plans are practicable within the continuing development of the plans;
- South Carolina Emergency Management Division is committed to participating in further development of the plans, including any required field demonstrations; and
- South Carolina Emergency Management Division is committed to executing their responsibilities under the plans in the event of an emergency.

Furthermore, South Carolina Emergency Management Division concurs with the proposed emergency classification system, initiating conditions, emergency action levels described in the Combined License Application Emergency Plan and evacuation time estimates.

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 William States Lee III Site Emergency Plan if and when Duke Energy proceeds with construction and operation of this nuclear facility.

RONALD C. OSBORNE

Print Name

Signature

11/16/2007

Date

DIRECTOR

Title

Duke Energy.

BRYAN J. DOLAN.
Vice President
Nuclear Plant Development

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October 16, 2007

Mr. Cotton Howell, Director
York County Emergency Management
155 Johnston Street
Rock Hill, South Carolina 29730

Dear Mr. Howell:

As previously indicated in public announcements and meetings, Duke Energy 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 the William States Lee III Nuclear Station near Gaffney, South Carolina. The purpose of this initiative is to develop a COL application that will ultimately lead to NRC approval to construct and operate two commercial nuclear generating units 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 South Carolina and North Carolina. With the cooperation of affected state and local agencies, Duke Energy has developed Part 5 of the COL application, the "William States Lee III Nuclear Station Combined License Application Emergency Plan," Revision 0. The emergency plan includes the emergency classification system required by 10 CFR 50. Duke Energy has 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 South Carolina and North Carolina. 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 Duke Energy "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 York County Emergency Management that:

- The proposed emergency plans are practicable within the continuing development of the plans;
- the agency is committed to participating in any further development of the plans, including any required field demonstrations; and
- the agency is committed to executing their responsibilities under the plans in the event of an emergency.

The actual emergency planning arrangements will be finalized in a letter of agreement at a later stage in the new facilities' licensing process.

York County Emergency Management's participation in these emergency planning efforts is greatly appreciated. Your signature on the enclosure also indicates that you concur with the emergency classification system, initiating conditions and emergency action levels and evacuation time estimates proposed in the Lee Nuclear Station Emergency Plan.

Please sign the enclosed certification for the Lee Nuclear Station Emergency Plan and return it to me by November 5, 2007 in the enclosed pre-addressed stamped envelope, retaining a copy of this letter and enclosure for your records.

Sincerely,

Bryan Dolan
Vice-President
Nuclear Plant Development

Enclosure: W.S. Lee III Nuclear Station Emergency Plan Certification

cc: Mr. Ronald Osborne, Director
South Carolina Emergency Management Division

Mr. Ernest Moore, Jr.
South Carolina Emergency Management Division

W.S. Lee III Nuclear Station Emergency Plan Certification

The York County Emergency Management has reviewed the emergency plan supporting the Combined License Application for new nuclear generating units at the William States Lee III Nuclear Station, including:

- William States Lee III Nuclear Station Combined License Application Emergency Plan, August 2007
- Proposed changes to the March 2007 South Carolina Emergency Operations Plan, August 2007
- Proposed changes to the March 2006 South Carolina Operational Radiological Emergency Response Plan, August 2007
- Proposed Part 7, William States Lee III to the South Carolina Operational Radiological Emergency Response Plan, August 2007
- Proposed changes to the South Carolina Technical Radiological Emergency Response Plan, August 2007
- Proposed changes to December 2005 Annex Q, York County Emergency Operations Plan, August 2007

York County Emergency Management certifies its commitment that:

- The proposed emergency plans are practicable within the continuing development of the plans;
- York County Emergency Management is committed to participating in further development of the plans, including any required field demonstrations; and
- York County Emergency Management is committed to executing their responsibilities under the plans in the event of an emergency.

Furthermore, York County Emergency Management concurs with the proposed emergency classification system, initiating conditions, emergency action levels described in the Combined License Application Emergency Plan and evacuation time estimates.

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 William States Lee III Site Emergency Plan if and when Duke Energy proceeds with construction and operation of this nuclear facility.

COTTON E. HOWELL
Print Name

Signature

Nov. 1, 2007
Date

DIRECTOR
Title

Appendix 8 - Cross-References 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 Lee Nuclear Station Units 1 and 2. Such details are 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 COL 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.1.g
10 CFR 50.72(c)(3)	II.E.4
10 CFR 50 App E.IV	COL 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 - NUREG-0654 Cross-Reference

(Sheet 1 of 17)

NUREG-0654 Eval. Criterion	COL EPlan	State of South Carolina	State of North Carolina	Cherokee County, SC	York County, SC	Cleveland County, NC
A.1.a	Plan § II.A.1.a	Plan § V, Plan Part 7 § IV.A	Plan § III.A	Annex Q § I.D	Annex Q § I.D	Plan § III, Plan § VIII.Fig 2
A.1.b	Plan § II.A.1.b	Plan § III, Plan § IV, Plan Part 7 § IV	Plan § III.B & C	Annex Q § IV.A	Annex Q § IV.A	Plan § II
A.1.c	Plan § II.A.1.c	Plan § IX Fig 1, Plan Part 7 Fig. 4	Plan Figs. 5, 6, 7	SCORERP	SCORERP Part 7 § VII Fig. 4	Plan § VIII.Fig 1
A.1.d	Plan § II.A.1.d	Plan § V.A.4	Plan § II. B	Annex Q § IV.B	Annex Q § IV.B	Plan § II.E
A.1.e	Plan § II.A.1.e	Plan § V.A.4 (c)	Plan § II. B	Annex C App. 1, Annex Q § IV.C.5, Annex Q § IV.D.3	Annex C § IV.C, Annex Q § IV.C.5, Annex Q § IV.D.3	Plan § II.F & H, § III.D.1, § VI.B.4
A.2.a		Plan App. 2	Plan § III, Plan Fig. 4	Annex Q App. 1	Annex Q App. 1	Plan § III, Plan § VIII.Fig 2 & Fig 3
A.2.b		Plan § IX.A, Plan Part 7 § III.B.3	Att. 1	SCORERP App. 10 § II	Basic Plan § I.A.2.a-d	Att.1
A.3	Plan § II.A.3	Annex H	Att. 1	Annex Q App. 7	Annex Q App. 7	Plan page iii
A.4	Plan § II.A.4	Plan § IV.A.1	Plan § II. B.,Plan § III.B.3	Annex Q § IV.B, Annex Q § IV.D.3, Annex Q App. 1	Annex Q § IV.B, Annex Q § IV.D.3, Annex Q App. 1	Plan § III.B.1
B.1	Plan § II.B.1					
B.2	Plan § II.B.2					
B.3	Plan § II.B.3					

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NUREG-0654 Eval. Criterion	COL EPlan	State of South Carolina	State of North Carolina	Cherokee County, SC	York County, SC	Cleveland County, NC
B.4	Plan § II.B.4					
B.5	Plan § II.B.5					
B.6	Plan § II.B.6					
B.7 B.7.a	Plan § II.B.7 Plan § II.B.7.a					
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	Annex H § III.C.4	Plan § III.B.3.b.(i).(a).(8),Plan § V.A			
C.1.b	Plan § II.C.1.b	Annex H	Plan § III.B.11, Plan § V.A			
C.1.c	Plan § II.C.1.c	Annex H § III.C.8	Plan § V.A.4.a	Annex Q § VI.A, Annex Q § VI.B.1	Annex Q § VI.A, Annex Q § VI.B.1	Plan § V.A.5.c
C.2.a		Plan § IV.B.2, Plan Part 7 § IV.B.2.d	Plan § V.A.4.a	Annex Q § VI.A	Annex Q § VI.A	Plan § V.A.1
C.2.b	Plan § II.C.2.b					

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NUREG-0654 Eval. Criterion	COL EPlan	State of South Carolina	State of North Carolina	Cherokee County, SC	York County, SC	Cleveland County, NC
C.3	Plan § II.C.3	Annex G § III.A.3(c)	Plan § III.B.3.b.(i).(a).(9), Plan § III.B.3.e.(ii), Plan § IV.J.B.a.(v), Plan § V.A.3, Fig. 10			
C.4.	Plan § II.C.4, App. 7	Plan § V.A.4(a)(18), Plan App 10, Plan Annex E § III.B, Plan Annex E App. 3 Att. 2-5, Plan Part 7 Annex C App. 1-2	Plan § V.A - V.C	Annex Q § II.D, Annex Q App. 7	Annex Q § II.D, Annex Q App. 7	Plan § V.A.4
D.1	Plan § II.D.1, App. 1					
D.2	Plan § II.D.2, App. 1					
D.3		Plan App. 3	Plan § IV.A, Plan Fig 8	Annex Q § IV.D	Annex Q § IV.D	Plan § IV.A
D.4		Plan App. 3, STRERP § B.III	Plan Fig. 8, Att. 4	Annex Q § IV.C, Annex Q § IV.L	Annex Q § IV.C, Annex Q § IV.L, Annex Q Att. A	Plan § VIII.Fig 4
E.1	Plan § II.E.1	Plan Annex A § III, Plan Part 7 Annex A § III	Plan § IV.B, Annex F	Annex Q § IV.A, Annex Q § IV.C	Annex Q § IV.A , Annex Q § IV.C	§ VIII.Fig 5

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NUREG-0654 Eval. Criterion	COL EPlan	State of South Carolina	State of North Carolina	Cherokee County, SC	York County, SC	Cleveland County, NC
E.2	Plan § II.E.2	Plan Annex A § III, Plan Annex A App. 1	Plan § IV.B - E, Annex F	Annex Q § VI.B	Annex Q § VI.B, Annex Q Att. A	Plan § IV.B, Plan § IV.C.7, Plan § VIII.Fig 5 & Fig 7
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					

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NUREG-0654 Eval. Criterion	COL EPlan	State of South Carolina	State of North Carolina	Cherokee County, SC	York County, SC	Cleveland County, NC
E.5		Plan Annex C, Plan Annex C App. 2-3, Plan Part 7 Annex A § III.B	Annex D	Annex D, Annex Q § IV.C, SOP - Additional Detailed Planning Required	Annex D, Annex Q § IV.C, Public Alert & Notification SOP	Plan § IV.D, § VI.I
E.6	Plan § II.E.6	Plan § IV.B.2, Plan Part 7 Annex A § III.A-B	Annex C, Annex E, Annex G	Annex Q § IV.A-E	Annex Q § IV.A-E	Plan § II.B, IV.B
E.7	Plan § II.E.7	Annex C App. 1-3	Message Book	SOP - Additional Detailed Planning Required	Emergency Public Information FNF SJD	State Plan Annex D, State Plan Annex E, State Plan Annex E App. 7
F.1.a	Plan § II.F.1.a	Plan § IV.B.10, Plan § V.A.4(a), Plan Part 7 § IV.B.1.b, Plan Part 7 § IV.B.10	Plan § VI.B.	Annex Q § IV.C.6	Annex Q § IV.C.6	Plan § II.H, § III.D.1, § VI.B
F.1.b	Plan § II.F.1.b	Plan § IV.B.10.j	Plan § VI.B & D	Annex Q § IV.A, Annex Q § VI.A	Annex Q § IV.A, Annex Q § VI.A	Plan § VI.D
F.1.c	Plan § II.F.1.c	Plan § IV.B.10.k	Plan § VI.D & E	Annex Q § VI.A	Annex Q § VI.A.8	Plan § VI.D
F.1.d	Plan § II.F.1.d	Plan Annex A § III, Plan Part 7 § IV.B.10.a	Plan § VI.F - I	Annex Q § IV.Q.3 & 5, Annex Q § VI.A.5	Annex Q § IV.Q.3 & 5, Annex Q § VI.A.5	Plan § VI.D & E & G
F.1.e	Plan § II.F.1.e	Plan Annex A § III, Plan Annex A App. 1	Plan § VI.I	SCORERP Part 7, Annex A § III.A & B, Annex Q § IV.A.3 & 4	Annex B § IV.B.2.a, Annex Q § IV.A.3 & 4	Plan § II.A, § IV.B.7

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NUREG-0654 Eval. Criterion	COL EPlan	State of South Carolina	State of North Carolina	Cherokee County, SC	York County, SC	Cleveland County, NC
F.1.f	Plan § II.F.1.f					
F.2	Plan § II.F.2	Annex E § V.A	Plan § VI. B	Annex Q § VI.B.1.c	Annex Q § VI.B.1.c	Plan § VI.F
F.3	Plan § II.F.3	Plan Annex D § III.C.1, Plan Part 7 § IV.B.10.c	Plan § VI.J & K, Plan Fig. 13	Annex Q § IV.R.2.a	Annex Q § IV.R.2.a	Plan § VI.H, Plan § VII.C.1 & 2
G.1	Plan § II.G.1	Annex C App 1	Plan § IV.G.1	Annex Q § IV.E-G, EP Calendar & EP Info. Summary Brochure-Additional Detailed Planning Required	Annex Q § IV.E-G, EP Calendar & EP Info. Summary Brochure for Lee Nuclear Station TBD	Plan § IV.D.4
G.2	Plan § II.G.2	Annex C App. 1	Plan § IV. D.	Annex Q, EP Calendar & EP Info. Summary Brochure-Additional Detailed Planning Required	Annex Q, EP Calendar & EP Info. Summary Brochure for Lee Nuclear Station TBD	Plan § IV.D - Transient info TBD
G.3.a	Plan § II.G.3.a	Plan § IV.B.9, Plan Annex C § V.D, Plan Part 7 § VII.C.2	Plan § IV.G.3 & 4	Annex D § IV.A, Annex D § IX.B.6	Annex D § IV.A, Annex D § IX.B.6	Plan § IV.D.2.c, 5 & 6
G.3.b	Plan § II.G.3.b					
G.4.a	Plan § II.G.4.a	Annex C § III	Plan § IV.G.2	Annex D § IX.B, SOP - Additional Detailed Planning Required	Emergency Public Information FNF SJD, Annex D § IX.B	Plan § IV.D.1

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NUREG-0654 Eval. Criterion	COL EPlan	State of South Carolina	State of North Carolina	Cherokee County, SC	York County, SC	Cleveland County, NC
G.4.b	Plan § II.G.4.b	Plan § IV.B.9, Annex C § III.B	Plan § IV.G.2	Annex D § IX.B.5	Annex D § IX.B.5	Plan § IV.D.2
G.4.c	Plan § II.G.4.c	Plan § IV.B.9(c), Annex C § III.C	Plan § IV.G.6	Annex D § IV.B.1.e, SOP - Additional Detailed Planning Required	Annex D § IV.B.1.e, Emergency Public Information FNF SJD	Plan § IV.D.2.d
G.5	Plan § II.G.5	Annex C App 1 § IV	Plan § IV.G.7	SCORERP App. 10 § III.C.12	SCORERP App. 10 § III.C.12	Plan § IV.D.4, IV.D.9.a
H.1	Plan § II.H.1					
H.2	Plan § II.H.2					
H.3		Plan § IV.B.3, Plan Part 7 § VII.A & B	Plan § V.C	Annex Q § VI.A.1	Annex Q § VI.A.1	Plan § V.C.1
H.4	Plan § II.H.4	Plan § IV.B.3(c)	Plan § V.C	SCORERP Part 7 § IV.B.1	Annex A § V.A.1	Plan § III.B.5, Plan § VIII.Figs 5 & 7
H.5	Plan § II.H.5					
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					

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NUREG-0654 Eval. Criterion	COL EPlan	State of South Carolina	State of North Carolina	Cherokee County, SC	York County, SC	Cleveland County, NC
H.6.c	Plan § II.H.6.c					
H.7	Plan § II.H.7, App. 6	Plan Annex G § III, Plan Part 7 § IV.B.5	Plan § IV.F, Plan § V.C.8, Att. 3	Annex Q § IV.Q	Annex Q § IV.Q	Plan § IV.C.1, IV.F.5
H.8	Plan § II.H.8, App. 2					
H.9	Plan § II.H.9, App. 2					
H.10	Plan § II.H.10, App. 6	STRERP App. IV § II & III, Plan Part 7 § IV.B.5.d	Plan § V.C.5 & 6	Annex Q § IV.Q.8	Annex Q § IV.Q.8	Plan § V.C.8.c, Att. 3
H.11	Plan § II.H.11, App. 6	STRERP § B.IV, App. IV	Att. 3	Annex Q § IV.Q.7	Annex Q § IV.Q.7	Att. 3
H.12	Plan § II.H.12	STRERP App. II § III	Plan § V.C.8	Annex Q § IV.Q.5 & 6	Annex Q § IV.Q.5 & 6	Plan § IV.F.7
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	COL EPlan	State of South Carolina	State of North Carolina	Cherokee County, SC	York County, SC	Cleveland County, NC
I.7	Plan § II.I.7, App. 6	STRERP App. II	Plan § IV.F	Annex Q § IV.M	Annex Q § IV.M	Plan § IV.C.1, § V.C.9
I.8	Plan § II.I.8	STRERP § VI, App. II, III, IV, VIII,	Plan § IV.F, Plan § IV.I, Plan § VIII.Fig 10	Annex Q § IV.M, Annex Q § IV.Q	Annex Q § IV.M, Annex Q § IV.Q	Plan § III.S.7, § IV.C & F, Additional Detailed Planning Required
I.9	Plan § II.I.9	STRERP App. I, III	Plan § IV.F			
I.10	Plan § II.I.10, App. 2	Plan Annex F § V, VII.E, STRERP App. I	Plan § IV.F.8, Plan § IV.I, Plan § VIII.Fig 9			
I.11		STRERP § A.IV.B.2.c	Plan § IV.F.2,			
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	Plan § IV.B.4.e, Plan Part 7 § IV.B.6	Plan § III.B.3.a, Plan § IV.H.4, Plan § VIII.Fig 11	Annex Q § II.A.1	Annex Q § II.A.1	Plan § IV.C.5, § IV.E.4.a, § IV.E.7
J.3	Plan § II.J.3					
J.4	Plan § II.J.4					
J.5	Plan § II.J.5					

NUREG-0654 Eval. Criterion	COL EPlan	State of South Carolina	State of North Carolina	Cherokee County, SC	York County, SC	Cleveland County, NC
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 Annex F § V.B, Plan Annex F § VI, STRERP App. I	Plan § III.B.b, Plan § IV.F.8, Plan § IV.H.2, Plan § IV.I & J, Plan § VIII.Fig 9	Annex Q § IV.L.1	Annex Q § IV.L.1	Plan § IV.E.4, IV.F.1.a
J.10.a	Plan § II.J.10.a	Plan § IV. B.4.e, Plan Part 7 § IV.B.6, Plan Part 7 Table to Fig 1, Plan Part 7 Annex B	EOC Maps, Plan § VIII.Fig 11, Att. 6, Annex I	Annex Q § IV.L.5, SCORERP Part 7 (Maps) – Additional Detailed Planning Required	Annex Q § IV.L.5, SCORERP Part 7 Additional Detailed Planning Required	Plan § VIII.Fig 6-8
J.10.b	Plan § II.J.10.b	Plan Part 7 Fig 3	EOC Maps, Plan § IV.H.1.a, Annex I	Annex Q § IV.L.5, SCORERP Part 7 Fig. 3	Annex Q § IV.C, SCORERP Part 7 § VII Fig. 3	Additional Detailed Planning Required
J.10.c	Plan § II.J.10.c, App. 3	Plan Annex C App 1 § IV, Plan Part 7 § IV.B.1.b, Plan Part 7 Annex A , Plan Part 7 Annex D § IV.C	Plan § IV.G.2, Plan § VI.L, Annex C, Annex G,	Annex Q § IV.C, SOP - Additional Detailed Planning Required	Annex Q § IV.C, Public Alert & Notification SOP	Plan § III.X.2, § IV.B, § IV.D.7, § VI.I

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NUREG-0654 Eval. Criterion	COL EPlan	State of South Carolina	State of North Carolina	Cherokee County, SC	York County, SC	Cleveland County, NC
J.10.d		Plan Part 7 Annex D § V, STRERP App. 1 § II.B & C	Plan § IV.E.6, Plan § IV.H.4.a & b	Annex Q § IV.K	Annex Q § IV.K	Plan § IV.E.5-6, § IV.7.b
J.10.e		Plan § IV.B.7, Plan Annex F § IV.A, Plan Annex F § IV.E, STRERP App. I § II	Plan § III.B.3.e, Plan § IV.H.2.b, Annex K	Annex Q § IV.L.3, Plan - Additional Detailed Planning Required	Annex Q § IV.L.3, Potassium Iodide Distribution Plan	Plan § IV.C.4, § IV.E.6
J.10.f		Plan Annex F § V.B.4, Plan Annex F § VI.E, STRERP § B.V.B	Plan § IV.H.2.b, Annex K	Annex Q § IV.L.2 & 3, SCORERP § IV.B.7.c, SCORERP V.A.4.(i).(3), SCORERP Annex F	Annex Q § IV.L.2 & 3, SCORERP § IV.B.7.c, SCORERP V.A.4.(i).(3), SCORERP Annex F	Plan § IV.C.4, § IV.E.5.d
J.10.g		Plan Part 7 Annex B § III	Plan § IV.H.4	Annex Q § IV.K, Annex Q Att. C	Annex Q § IV.K, Annex Q Att. C	Plan § IV.E.7, § IV.F.1
J.10.h		Plan Part 7 Annex B App 1	Plan § IV.H.1.a	Annex Q § II.D.5, Annex Q App. 8, EP Calendar & EP Info Summary Brochure-Additional Detailed Planning Required	Annex Q § II.D.5, Annex Q App. 8, EP Calendar & EP Info Summary Brochure for Lee Nuclear Station TBD	Plan § IV.F, § VIII.Fig 6
J.10.i		See Cherokee Annex Q Att. D and York Annex Q Att. D	Plan § IV.H.4.c.(vii)	Annex Q Att. D	Annex Q Att. D	Plan § IV.E.7.c.(4).a
J.10.j		Plan Part 7 § IV.B.4.a, Plan Part 7 Table to Fig. 1	Plan § III.B.3.a.(ii), Plan § III.B.3.h, Plan § IV.H.1.a	Annex Q § IV.J.2, Annex Q App. 1	Annex Q § IV.J.2, Annex Q App. 1	Plan § III.F.1, § III.G.3, § IV.C.5 & 6, § IV.E.7.c.(1)

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NUREG-0654 Eval. Criterion	COL EPlan	State of South Carolina	State of North Carolina	Cherokee County, SC	York County, SC	Cleveland County, NC
J.10.k		Plan Part 7 § IV.B.8.a	Plan § III.B.3.h	FNF Job Description-Public Works-Additional Detailed Planning Required	Public Works FNF SJD	Plan § IV.E.7.c.(2)
J.10.l		Plan Part 7 § IV.B.6.e	Additional Detailed Planning Required	Annex Q § IV.L.5.a	Annex Q § IV.L.5.a	Additional Detailed Planning Required
J.10.m	Plan § II.J.10.m	Plan Annex F § V.B, STRERP App. I	Plan § IV.H, Plan § VIII.Fig 9			
J.11		Plan Annex G § III, STRERP App. I	Plan § IV.H.2, Att. 6, Annex H			
J.12		Plan Annex F § VII, Plan Part 7 § III.B	Plan § IV.J.10.a	Annex Q § II.D 3-6	Annex Q § II.D 3-6	Plan § III.R & U, § IV.F, § VIII.Fig 6, Additional Detailed Planning Required
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					

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NUREG-0654 Eval. Criterion	COL EPlan	State of South Carolina	State of North Carolina	Cherokee County, SC	York County, SC	Cleveland County, NC
K.2	Plan § II.K.2					
K.3.a	Plan § II.K.3.a	Plan § IV.B.7, Plan Annex F § IV.B-C, STRERP App. 5 § IV	Plan § III.B.3.b.(i), Plan § IV.K	Annex Q § IV.N, Plan-Additional Detailed Planning Required	Annex Q § IV.N, Potassium Iodide Distribution Plan	Plan § IV.F.3
K.3.b	Plan § II.K.3.b	Annex F App. 3	Plan § IV.K.3	Annex Q § IV.N, Annex Q Att. B	Annex Q § IV.N, Annex Q Att. B	Plan § IV.F.3
K.4		Plan Annex F § IV.B, STRERP App. I	Plan § IV.K.8	Annex Q § IV.N.10.c, Annex Q § IV.N.12	Annex Q § IV.N.10.c, Annex Q § IV.N.12	Plan § IV.F.4.b & c
K.5.a	Plan § II.K.5.a	Plan Annex F § VII.C, Plan Annex F App. 1 § V.C.7, STRERP App. I Table 1	Plan § IV.K.9	Annex Q Att. B	Annex Q Att. B	Plan § IV.F.6
K.5.b	Plan § II.K.5.b	Plan Annex F App. 1, STREP App. VI	Plan § IV.K.9, Plan § V.B	Annex Q § IV.M.1, SOP-Additional Detailed Planning Required	Annex Q § IV.M.1, Annex Q § IV.M.1, Emergency Worker Decon SOP, PMC ER Contaminated Injury Procedure	Plan § IV.F.5 & 8, Plan § V.B.2 & 3
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					

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NUREG-0654 Eval. Criterion	COL EPlan	State of South Carolina	State of North Carolina	Cherokee County, SC	York County, SC	Cleveland County, NC
L.1	Plan § II.L.1	Plan Part 7 Annex C § V, Plan Part 7 Annex C App. 1-4	Plan § V.B	Annex Q § IV.O, SCORERP Part 7 § IV.B.9, SCORERP Part 7 Annex C § V	Annex Q § IV.O, SCORERP Part 7 § IV.B.9, SCORERP Part 7 Annex C § V	Plan § V.B.2 & 3
L.2	Plan § II.L.2					
L.3		Annex E App. 3	Plan § V.B, Plan § VIII.Fig 12			
L.4	Plan § II.L.4	Plan Part 7 Annex C § IV.A	Plan § II.B.12, Plan § V.B.7	Annex Q § IV.K.2.d	Annex Q § IV.K.2.d	Plan § V.B.2 & 3
M.1	Plan § II.M.1	Plan Annex G § IV.B, STRERP App. VII	Plan § III.B.3.b.(i), Plan § IV.L,	Annex Q § IV.P	Annex Q § IV.P	Plan § IV.G
M.2	Plan § II.M.2					
M.3	Plan § II.M.3	Plan Annex G § IV, STRERP App. VII § IV	Plan § IV.L.3			
M.4	Plan § II.M.4	STRERP App. III § V	Plan § IV.F.7 & 8			
N.1.a	Plan § II.N.1.a	Plan Annex D § III.B, Plan Part 7 § IV.B.12	Plan § VII.E	Annex Q § IV.R	Annex Q § IV.R	Plan § VII.D.1
N.1.b	Plan § II.N.1.b	Annex D § III.B	Plan § VII.E	Annex Q § IV.R	Annex Q § IV.R	Plan § VII.D
N.2.a	Plan § II.N.2.a	Annex D § III.C.1	Plan § VII.D, Plan § VIII.Figs 13 & 14	Annex Q § IV.R.2.a	Annex Q § IV.R.2.a	Plan § VII.C.1 & 2

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NUREG-0654 Eval. Criterion	COL EPlan	State of South Carolina	State of North Carolina	Cherokee County, SC	York County, SC	Cleveland County, NC
N.2.b	Plan § II.N.2.b					
N.2.c	Plan § II.N.2.c	Plan Annex D § III.C.2, Plan Part 7 § IV.B.12.c(2)	Plan § VII.D, § VIII.Fig 13	Annex Q § IV.R.2.b	Annex Q § IV.R.2.b	Plan § VII.C.4
N.2.d	Plan § II.N.2.d	Annex D § III.C.3(a)	Plan § VII.D, Plan § VIII.Fig 13	Annex Q § IV.R.2.c	Annex Q § IV.R.2.c	Plan § VII.C.3
N.2.e(1)	Plan § II.N.2.e	Annex D § III.C.3(b)	Plan § VII.D, Plan § VIII.Fig 13			
N.2.e(2)	Plan § II.N.2.e					
N.3.a	Plan § II.N.3.a	Annex D § III.B	Plan § VII.E.6.(i)	Annex Q § IV.R.3	Annex Q § IV.R.3	Plan § VII.D.5.b
N.3.b	Plan § II.N.3.b	Annex D § III.B	Plan § VII.E.6.(ii)	Annex Q § IV.R.3.d(1)	Annex Q § IV.R.3.d(1)	Plan § VII.D.5.c
N.3.c	Plan § II.N.3.c	Annex D § III.B	Plan § VII.E.6.(iii)	Annex Q § IV.R.3.d(2)	Annex Q § IV.R.3.d(2)	Plan § VII.D.5.d
N.3.d	Plan § II.N.3.d	Annex D § III.B	Plan § VII.E.6.(iv)	Annex Q § IV.R.3.d(3)	Annex Q § IV.R.3.d(3)	Plan § VII.D.5.d
N.3.e	Plan § II.N.3.e	Annex D § III.B	Plan § VII.E.6.(v)	Annex Q § IV.R.3.d(4)	Annex Q § IV.R.3.d(4)	Plan § VII.D.5.e
N.3.f	Plan § II.N.3.f	Annex D § III.B.2	Plan § VII.E.6.(vi)	Annex Q § IV.R.3.d(5)	Annex Q § IV.R.3.d(5)	Plan § VII.D.5.f

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NUREG-0654 Eval. Criterion	COL EPlan	State of South Carolina	State of North Carolina	Cherokee County, SC	York County, SC	Cleveland County, NC
NUREG-0654 Eval. Criterion	COL EPlan	State of South Carolina	State of North Carolina	Cherokee County, SC	York County, SC	Cleveland County, NC
N.4	Plan § II.N.4	Plan Part 7 § IV.B.12.a	Plan § VII.F.1	Annex Q § IV.R.3.b & c	Annex Q § IV.R.3.d(b) & (c)	Plan § VII.D.6.a
N.5	Plan § II.N.5	Plan Part 7 § IV.B.12.c	Plan § VII.A, Plan § VII.F.2	Annex Q § IV.R.3.d(6)	Annex Q § IV.R.3.d(6)	Plan § VII.D.6.b
O.1	Plan § II.O.1	Annex B § IV	Plan § VII.C	Annex Q § IV.S	Annex Q § IV.S	Plan § III.A, Plan § III.C.5, Plan § VIII.Fig 2
O.1.a	Plan § II.O.1.a					
O.1.b		Plan § V.4.k, Plan § IV.5, Annex B § III – IV	Plan § VII.C	Annex Q § IV.S	Annex Q § IV.S	Plan § III.B.4, § III.H.1, III.U.6, III.Z.2
O.2	Plan § II.O.2					
O.3	Plan § II.O.3					
O.4.a	Plan § II.O.4.a	Annex B § V	Plan § VII.C.3.a	Annex Q § IV.S.1	Annex Q § IV.S.1	Plan § VII.B.1.a
O.4.b	Plan § II.O.4.b	Annex B § V	Plan § VII.C.3.b	Annex Q § IV.S.2	Annex Q § IV.S.2	Plan § VII.B.1.b
O.4.c	Plan § II.O.4.c	Annex B § V	Plan § VII.C.3.c	Annex Q § IV.S.3	Annex Q § IV.S.3	Plan § VII.B.1.d
O.4.d	Plan § II.O.4.d	Annex B § V	Plan § VII.C.3.d	Annex Q § IV.S.4	Annex Q § IV.S.4	Plan § VII.B.1.c
O.4.e	Plan § II.O.4.e					
O.4.f	Plan § II.O.4.f	Annex B § V	Plan § VII.C.3.e	Annex Q § IV.S.5	Annex Q § IV.S.5	Plan § VII.B.1.c

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NUREG-0654 Eval. Criterion	COL EPlan	State of South Carolina	State of North Carolina	Cherokee County, SC	York County, SC	Cleveland County, NC
O.4.g	Plan § II.O.4.g			Annex Q § IV.S	Annex Q § IV.S	Plan § VII.B.1
O.4.h	Plan § II.O.4.h	Annex B § IV.F	Plan § VII.C.3.g	Annex Q § IV.S.6	Annex Q § IV.S.6	Plan § VII.B.1.c
O.4.i	Plan § II.O.4.i					
O.4.j	Plan § II.O.4.j	Annex B § IV.G	Plan § VII.C.3.h	Annex Q § IV.S.7	Annex Q § IV.S.7	Plan § VII.B.1.e
O.5	Plan § II.O.5	Annex B § V	Plan § VII.C.4	Annex Q § IV.S	Annex Q § IV.S	Plan § VII.B.2
P.1	Plan § II.P.1	Plan § V.4(a)(12)	Plan § III.D.2, Plan § VII.B & C	Annex Q § IV.S, Annex Q § IV.T.4	Annex Q § IV.S, Annex Q § IV.T.4	Plan § VII.A.2.a
P.2	Plan § II.P.2	Plan § V.A.1	Plan § VII.B.1	Annex Q App. 2	Annex Q App. 2	Plan § VII.A.1
P.3	Plan § II.P.3	Plan § V.4(a)	Plan § VII.B.1	Annex Q § V.C	Annex S § I.D.(1)(e)	Plan § VII.A
P.4	Plan § II.P.4	Plan § V.4(a)(18), Plan § V.F.9	Plan § VII.B	Annex Q § IV.T.1 & 2	Annex Q § IV.T.1 & 2	Plan § VII.A.2.e
P.5	Plan § II.P.5	Plan § VI	Plan § VII.B	Annex Q § IV.T.1, SCEOP § VI.4	Annex Q § IV.T.1, Basic Plan § VII.B.2	Plan § VII.A.2.b
P.6	Plan § II.P.6	Plan App. 1	Att. 2	Annex Q § I.B	Annex Q § I.B	Att. 2
P.7	Plan § II.P.7, App. 5	Plan App. 1	Plan Annex G, Plan Part 2 § 4 Att. 2	Annex Q App. 6	Annex Q App. 6	Att. 2
P.8	Plan § II.P.8, App. 8	TOC p. i-ii, but crosswalk TBD	Plan pages i thru xii, Annex J	Annex Q p. 1-2	Annex Q p. 1-2	TBD
P.9	Plan § II.P.9					
P.10	Plan § II.P.10	Annex A § III.H	Plan § VII.B.3	Annex Q § IV.T.5	Annex Q § IV.T.5	Plan § VII.A.2.f

Table A8-3 - Cross-Reference of Evacuation Time Estimate to NUREG-0654/FEMA-REP-1 Appendix 4

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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

NUREG-0654/FEMA-REP-1 Appendix 4 Guidance	Corresponding ETE Section
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
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

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NUREG-0654/FEMA-REP-1 Appendix 4 Guidance	Corresponding ETE Section
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
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.

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NUREG-0654/FEMA-REP-1 Appendix 4 Guidance	Corresponding ETE Section
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
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

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NUREG-0654/FEMA-REP-1 Appendix 4 Guidance	Corresponding ETE Section
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

NUREG-0654/FEMA-REP-1 Appendix 4 Guidance	Corresponding ETE Section
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.
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.

NUREG-0654/FEMA-REP-1 Appendix 4 Guidance	Corresponding ETE Section
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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NUREG-0654/FEMA-REP-1 Appendix 4 Guidance	Corresponding ETE Section
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.	Documentation of any comments received has been maintained.

Appendix 9 - Justification for Common EOF

Under 10 CFR 50, Appendix E, Section III.E.8, Duke Energy Carolinas, LLC (Duke) is required to provide a licensee near-site Emergency Operations Facility (EOF) from which effective direction can be given and effective control can be exercised during an emergency. The U.S. Nuclear Regulatory Commission provides guidance for design and location of the EOF in NUREG-0696. Duke requests that an exception be granted from the EOF location criteria provided in NUREG-0696 for the Lee Nuclear Station. Duke proposes locating the EOF for the Lee Nuclear Station at the Duke Energy Center in Charlotte, North Carolina, approximately 40 air miles from the Lee Nuclear Site. Because the proposed location of the EOF involves an exception from the guidance in NUREG-0696 for locating an EOF within 20 miles of the Technical Support Center (TSC), Duke is requesting NRC approval of the proposed location for the EOF as part of the Lee Nuclear Station Combined License (COL) issued under 10 CFR 52. This request does not alter the functions of the EOF as described in NUREG-0696.

The Charlotte EOF is located in Duke's Energy Center Building in Charlotte, North Carolina. The EOF currently serves as the EOF for the McGuire Nuclear Station (MNS), Catawba Nuclear Station (CNS), and Oconee Nuclear Station (ONS). MNS and CNS have used a common EOF since August 1987. The existing facility has been in use since October 2005 and was used in the Catawba 2006 biennial exercise. In 2006, Duke received NRC approval to use the EOF for ONS. Communications systems, data links, and staffing have been incorporated and tested. Using the EOF for the Lee Nuclear Station would allow Duke to apply its corporate emergency response structure and experience to the Lee Nuclear Station emergency plan.

Duke has discussed this proposal with South Carolina (SC) Emergency Management, North Carolina (NC) Emergency Management, SC Department of Health and Environmental Control, NC Department of Environmental Health and Natural Resources, Cherokee County SC Emergency Management, York County SC Emergency Management, and Cleveland County NC Emergency Management. North and South Carolina are familiar with the EOF because it is the facility used for responding to an event at MNS, CNS, and ONS. Acknowledgement of their support for use of the EOF location is included in their respective letters certifying their agreement with the Lee Nuclear Station COL Application Emergency Plan.

Access to the station by the NRC site team is accommodated. Provisions for the South Carolina and North Carolina liaisons reporting to the EOF in Charlotte, and for the State/county Public Information Team is made to allow each group to best perform its role in response to an event at the Lee Nuclear Station. Existing State Plans for North Carolina (North Carolina Radiological Emergency Response Plan) and South Carolina (South Carolina Operational Radiological Emergency Response Plan) designate liaisons to respond to the EOF and to interact with those responsible for off-site monitoring, dose assessment, and making protective action recommendations. These State Liaisons are able to quickly respond to the EOF from Columbia, South Carolina and Hickory, North Carolina. These State Liaisons are already familiar with the EOF and responding to the EOF is consistent with their emergency response for the other Duke nuclear stations.

Under both the North Carolina and South Carolina plans, local officials do not respond to the EOF. NC State and SC State decision makers respond to their respective EOCs in Raleigh, NC, and Columbia, SC. Duke sends liaisons to the NC State, SC State, and County EOCs for all exercises and events involving activation of the off-site agency emergency response facilities.

The States also dispatch their Public Information Teams to the Joint Information Center (JIC). The joint public information center is located at the Duke Energy Center (the EOF location).

State and utility staff at the JIC are responsible for providing timely and accurate information, concerning an emergency to the media. County plans require dispatch of the County Public Information Officer (PIO) to the JIC.

The following discussion provides an evaluation of the EOF against criteria in NUREG-0696.

Evaluation Against NUREG-0696

The proposed EOF is adequate to facilitate the effective and timely performance of the following functions:

- Management of overall licensee emergency response;
- Coordination of radiological and environmental assessment;
- Determination of recommended public protective actions; and
- Coordination of emergency response activities with Federal, State, and local agencies.

The primary role of the EOF is to relieve the plant staff of the functions of keeping the Federal, State and county emergency response organizations informed, for directing dose assessment and field monitoring, for managing the informational needs of the media, interested industry groups, and elected officials, and for supporting the accident assessment needs of the TSC staff. The NRC will have access to plant data through the Duke Satellite Display System (SDS) and Emergency Response Data System (ERDS). NRC also has telephones on the Emergency Telecommunications System (ETS) in Charlotte.

Equipment already exists in the EOF for the acquisition, display, and evaluation of radiological, meteorological, and plant system data used to determine off-site protective measures. Actual release information is provided by the field monitoring teams and is used in determining appropriate protective action recommendations. Plant and effluent data would be provided on as timely a basis at an EOF in Charlotte as it would be at a near-site location.

Normal industrial security is already provided for the EOF and processes are already established to upgrade security during an activation.

Location, Structure, and Habitability

The EOF is located in Phase I of the Energy Center, at 526 South Church Street, Charlotte, North Carolina. The existing EOF has been used since October 2005 and has proven to be an effective facility for implementation of the nuclear station emergency plans. The EOF is used for Duke's existing MNS, CNS and ONS nuclear plants. The facility is more than ten miles away from any of the Duke nuclear stations; therefore, there are no specific habitability criteria.

Phase I of the Energy Center, which houses the EOF, is capable of withstanding wind loads and live loads equal to or greater than those specified in the current North Carolina State Building Code (2000 International Building Code). The current Code specifies a basic design wind speed of 90 MPH -3 second gust and a total minimum floor live load of 70 PSF. This evaluation is

based on a review of original structural drawings and comparison to requirements of the current North Carolina State Building Code.

Phase I of the Energy Center is located in Charlotte, NC, on South Church Street, between West 1st Street and West Stonewall Street. This location is classified as FEMA Zone X, which is defined as "areas determined to be outside 0.2% annual chance floodplain." Therefore, the building is not subject to flooding from the 100-year flood as defined by FEMA. The reference document for this evaluation is FEMA Flood Insurance Rate Map (FIRM) Number 37119C0186E, Panel 0186E, effective date February 4, 2004.

Staffing and Training

Incorporation of Lee Nuclear Station emergency response functions into the EOF will not adversely affect the ability of the EOF to be staffed in a timely manner. The Lee Nuclear Station EOF is staffed with experienced EOF staff from the Duke Power Nuclear General Office in Charlotte, and personnel from Catawba Nuclear Station and McGuire Nuclear Station. The EOF staff has demonstrated their ability to staff the EOF within 75 minutes of emergency declaration during annual augmentation drills for McGuire Nuclear Station and Catawba Nuclear Station. The EOF staff will include personnel to manage overall licensee emergency response, coordinate radiological and environmental assessment, determine recommended public protective actions, and interface with off-site officials.

Size

The size of the EOF is approximately 7,414 square feet. Expected staffing for a single site event is 51 (30 licensee, 9 State, 12 NRC), and for a dual site event is 61 (allowing for additional licensee personnel). Thus, the working space is adequate (greater than 75 square feet per person) without crowding. As shown in the table below, a separate work area is provided for NRC personnel. In addition, the NRC has workspace co-located with the Decision Makers, Radiological Assessment, and Accident Assessment.

Room	Area ($ft.^2$)
Lobby/Access Control	278
Coats	103
Director's Area	1230
Accident Assessment	337
Data Coordinator	200
Radiation Assessment	480
Off Site Monitoring	321
NRC	324
Off Site Communications	275
Drill Coordinator	298

Room	Area ($ft.^2$)
Conference	356
Copy/Supply/Storage	290
EOF Services and Supply	303
Break Room	960
Storage	102
Telephone Room	180
Miscellaneous halls, etc.	921

Radiological Monitoring

The EOF is beyond 10 miles from all four Duke nuclear stations; therefore, radiological monitoring equipment is not required.

Communications

The communications systems available in the EOF are:

- Duke telephone system
- Selective Signaling System (for State/county notifications)
- Decision Line (for discussion/coordination of protective action recommendations)
- Commercial telephones from the Charlotte switch network
- Radio System to communicate with the Field Monitoring Teams
- NRC Emergency Telecommunications System phones
- South Carolina Local Government Radio
- North Carolina State Radio
- Facsimile transmission capability

The emergency communications systems at the EOF are designed to provide for the reliable, timely flow of information between all parties having an emergency response role. The single facility results in commonality of communications and interface with off-site officials and liaisons. The Selective Signaling System continues to be the primary means of communicating changes in event classification and protective action recommendations to the States and counties. The Selective Signaling System, as well as the Decision Line, operate on a combination of the Duke Telecommunications network and leased circuits.

Existing commercial telephone service will serve as the designated backup means of communications in the event of a Selective Signaling System or Decision Line failure. Duke Energy has telecommunications capabilities that can provide access to long distance networks without having to go through a local telephone company switch. Long distance calls from the EOF are routed through Duke's corporate Private Branch Exchange (PBX) in Charlotte directly to either a primary or backup long distance carrier. Telephones are provided for the respective Federal and State representatives, including lines for faxes and modems. Also, telephones for the NRC Emergency Telecommunications System, the Emergency Notification System (ENS) and Health Physics Network (HPN), are available. Fax machines are available in the EOF to support the transmission of information between the Emergency Response Facilities and with State, local, and Federal authorities.

A control station with a remote connection to the EOF allows the EOF to communicate with the Lee Nuclear Station Field Monitoring Teams. Additional radio communications capability for communications with counties within the Lee Nuclear Station plume exposure pathway EPZ will include SC Local Government Radio for Cherokee and York Counties, and NC Satellite Radio for Cleveland County.

Instrumentation, Data System Equipment, and Power Supplies

Various plant parameters are available to the EOF staff via a connection through Duke's Wide Area Network (WAN). Data available at the EOF provide a snapshot of system-specific parameters from each unit. Data from the Satellite Display System (SDS) can be displayed on projection screens in the EOF Director's Area and on large screen monitors in other areas in the facility. These data are sufficient to perform accident assessment and evaluate the potential on-site and off-site environmental consequences of an emergency at the Lee Nuclear Station. Detailed discussion on specific plant parameters are described elsewhere in the Emergency Plan. The computers in the Dose Assessment Area are capable of running the dose projection computer program (RADDOSE V) and accessing SDS data.

The EOF draws its primary power from commercial power. There is electrical generator backup power to the EOF, as well as the wiring closet that supports both the voice and data communications in the EOF. A loss of commercial power should not impact any of the voice or data communications equipment located in the EOF. All common Duke telecommunications infrastructure that supports EOF functions, including, but not limited to, fiber optic transmission equipment, telephone switching equipment and data network routers, is configured to operate from at least one and usually multiple backup power sources in the event of a loss of commercial power. These backup sources include generator, DC battery and UPS systems.

Technical Data and Data Systems

As discussed in the previous section, a variety of plant parameters are provided over the Duke WAN to the EOF.

Reports Availability and Management

Hard copies of key reference materials are maintained in the Nuclear General Office facilities in Charlotte, and are brought to the EOF upon activation. In addition, station design documentation, plant drawings, FSAR, procedures, etc. are available via Local Area Network connection from the Nuclear Electronic Document Library.

The following information will be available for the Lee Nuclear Station at the EOF:

- Plant technical specifications,
- Plant operating procedures,
- Emergency operating procedures,
- Final Safety Analysis Report,
- Up-to-date records related to licensee, State, and local emergency response plans,
- Off-site population distribution data,
- Evacuation plans

Conclusion

The EOF meets all functional and design criteria provided in NUREG-0696 for an Emergency Operations Facility with the exception that it is located more than 20 miles from the Lee Nuclear Site. This document describes Duke's approach to assuring that these functional and design criteria are met and maintained. The consolidation of Duke corporate emergency response functions into a centralized facility will facilitate a timely and effective response to a radiological emergency at the Lee Nuclear Station.

Appendix 10 - Technical Support Center Decription

Introduction

The TSC is part of the emergency response facilities provided for emergency response to accidents. The TSC is established consistent with NUREG 0696, as described below.

Function

The TSC provides plant management and technical support personnel (including the appropriate number of NRC personnel) with a facility from which they can assist plant operating personnel located in the control rooms during any emergency. The Emergency Coordinator and the NRC representative are located in the same general area to promote proper communications.

Location

The TSC is located in the Maintenance Support Building sited in the southern region of the protected area, just south of and between the Lee Nuclear Station Units 1 and 2.

The TSC may not be within a two minute walk of either units' control room as identified in NUREG-0696, section 2.2. The ability to retrieve plant data and displays available in the control room, coupled with the sophisticated communications systems, preclude the need for frequent face to face interchange between the TSC and control room personnel.

The TSC is common for both Lee Nuclear Station units, which is a departure from the DCD, Tier 2, Section 18.8.3.5. The additional benefit of managing licensee emergency response from a single TSC is a major consideration for this departure from the DCD.

Staffing and Training

The level of staffing and training is described in the Emergency Plan. The TSC accommodates the required personnel to support an event affecting one or both units. The level of staffing may vary according to the severity of the emergency condition.

Size

The TSC provides working space, without crowding, for the personnel assigned to the TSC at the maximum level of occupancy. The working space is sized for a minimum of 25 persons. Minimum size of working space is exceeds 75 ft^2 per person.

Structure

The TSC is designed in accordance with the Uniform Building Code to withstand earthquakes and high winds. The preliminary layout of the TSC is shown in Figure A10-1

Habitability

The ventilation system is operated in accordance with approved procedures and is manually controlled from the TSC. In addition, portable radiation monitors are available to personnel in the TSC. Equipment and supplies are provided in accordance with Appendix 6 of the Emergency Plan.

The ventilation system includes high efficiency particulate air (HEPA) filters and charcoal filters. The ventilation system is designed to maintain exposures at or below 0.05 Sv (5 rem) total effective dose equivalent (TEDE) for the duration of an accident.

The TSC structure, shielding, and ventilation system are designed to protect the TSC personnel from radiological hazards.

Communications

The TSC has reliable voice communications to the control room, the OSC, the EOF, and the NRC. Provisions for communications with State and local operations centers are also provided in the TSC. The communications facilities include the means for reliable primary and backup communication.

Instrumentation, Data System Equipment, and Power Supplies

The TSC is provided with reliable power and backup power supplies. Lighting is powered by the normal and backup electrical supply system. An emergency battery operated lighting system is installed. Power for vital information systems is provided by reliable power supplies including a battery backed Uninterruptible Power Supply (UPS) system.

Technical Data and Data System

Technical and operational data and information is available for each Lee Nuclear Station unit within the TSC. Support facilities are located within the TSC to support long term operation of the TSC.

The TSC is equipped with a computer system, which provides source term and meteorological data and technical data displays to allow TSC personnel to perform detailed analysis and diagnosis of abnormal plant conditions, including assessment of any significant release of radioactivity to the environment.

Human Factors Engineering (HFE) is incorporated into the design of the TSC related to the display and availability of plant data.

Records Availability and Management

The TSC has ready access to plant records. The documents maintained in the TSC include:

- Technical Specifications
- Plant Operating Procedures
- Emergency Operating Procedures
- Final Safety Analysis Reports
- System piping and ventilation diagrams and heating, ventilation, and air conditioning(HVAC) flow diagrams

- Piping area diagrams
- Records needed to perform the functions of the emergency operating facility (EOF) when it is not operational

In addition, copies of the above-listed documents and the following documents are available in Lee Nuclear Station Document Control:

- Plant operating records
- Plant Review Board records and reports.

The above records are updated as necessary to maintain currency and completeness. Operations at this facility are directed by the TSC Manager/Emergency Coordinator when the TSC is operational.

Figure A10-1 - Preliminary TSC Layout