

**Southern Nuclear Operating Company**

**STANDARD EMERGENCY PLAN ANNEX**

**for**

**Vogtle Electric Generating Plant**

**Units 1 and 2**

**FINAL DRAFT**

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**Section 1: Introduction (SEP)**

This document serves as the Vogtle Nuclear Generating Plant (VEGP) Units 1 and 2 Annex and contains information and guidance that is unique to VEGP Units 1 and 2. This includes Emergency Action Levels (EALs) and facility geography.

In an emergency situation at VEGP, the initial response would be made by the site staff and, if needed, by local support agencies. This Annex addresses the actions and responsibilities of the VEGP plant staff and the offsite support agencies.

1.1 Facility Description

The Vogtle Electric Generating Plant (VEGP) Units 1 and 2 are a two unit pressurized water reactor. The plant site, to include VEGP Units 1-4, is on a 3169-acre site located in the eastern portion of Burke County, Georgia, approximately 23 river miles upstream from the intersection of the Savannah River with U.S. Highway 301.

1.2 Emergency Planning Zones (SEP J.5)

1.2.1 Plume Exposure Pathway (SEP J.7)

The 10-mile Emergency Planning Zone (EPZ) for VEGP approximates a 10-mile radius around the plant site and is depicted in Figure 1.2.A. Georgia and South Carolina, as well as the counties (Burke County in Georgia and Aiken, Barnwell, and Allendale Counties in South Carolina) are located within the plume exposure pathway EPZ. The major portion of the plume exposure pathway EPZ in South Carolina is within the Department of Energy's Savannah River Site (SRS).

1.2.2 Ingestion Pathway (SEP J.7)

The area between the 10-mile and 50-mile radius is considered the Ingestion Pathway Zone (IPZ). The 50 mile IPZ is depicted in Figure 1.2.B. Planning for the ingestion exposure pathway is a responsibility of the States of Georgia and South Carolina. More information about the IPZ can be obtained from the States' Radiological Emergency Plans.

1.3 State of Georgia (SEP A.2.2)

Georgia has developed a Radiological Emergency Response Plan (RERP) on a statewide basis as an integral part of the Georgia Emergency Operations Plan (GEOP). The GEOP is an emergency operations plan for all natural disasters, accidents, and incidents, including radiological emergencies at fixed nuclear facilities.

Under the procedure established by the GEOP, which was developed pursuant to the Governor's Executive Order, the Department of Natural Resources (DNR) radiological emergency response team assesses the radiological conditions of an incident at the site and confirms or determines whether a state of emergency exists.

Upon being advised that a radiological emergency exists, the Governor declares an emergency condition, which then activates the Georgia Emergency Management Agency (GEMA) authorities to deal with the situation.

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1.3.1 Georgia Emergency Management Agency (GEMA) (SEP A.2.2.1)

GEMA is responsible for:

- General State emergency planning and exercises and overall direction and control of emergency or disaster operations as assigned by Executive Order;
- Coordinates emergency activities of DNR with overall state response efforts;
- On behalf of the Governor, activate all or portions of the GEOP to provide the necessary overall coordinated response;
- Provide communications for the State EOC, as required, through the 24-hour radio net, commercial telephone, National Warning System (NAWAS), teletype, or other communications systems. Communication links will be established, in accordance with existing procedures, with the State EOC, as well as with additional State and local emergency response personnel within the plume exposure pathway and 50-mile radius IPZs. These functions will initially be handled from the State EOC in Atlanta and once activated will be transferred to the Forward Emergency Operations Center (FEOC) in Burke County;
- Maintain liaison with the DNR Radiation Emergency Coordinator (REC);
- Activate public emergency warning and/or evacuation procedures, as needed, pursuant to the Georgia Emergency Operations Plan;
- Assist in performing radiological monitoring and provide radiological monitoring instrumentation;
- Provides radiological monitoring training assistance;
- Provides land or air transportation as requested for radiation safety personnel, other necessary personnel or equipment;
- Coordinates public information releases in cooperation with State and local agencies;
- Assist in area security and control: requests assistance, if needed.

1.3.2 Department of Natural Resources (DNR) (SEP A.2.2.2)

DNR is assigned primary responsibility by Executive Order for implementation and administration of the State radiological response function in accordance with the Georgia Emergency Operations Plan.

1.3.3 Department of Human Resources (SEP A.2.2.3)

Coordinate emergency health and social assistance pursuant to the Georgia Emergency Operations Plan.

1.3.4 Department of Transportation (SEP A.2.2.3)

Assist in traffic control and routing, accident assessment, and recovery operations in transportation incidents.

1.3.5 Department of Public Safety (SEP A.2.2.3)

DPS will be responsible until the arrival of radiation safety personnel and maintain liaison with the DNR REC. DPS will also provide communication

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linkage, as required and provide land or air transportation, or escort, as available, for radiation safety personnel, other necessary personnel, or equipment.

DPS will assist in radiological monitoring, as required, public warning or evacuation, including ground and airborne means as available and other services as prescribed in the GEOP.

#### 1.3.6 Department of Agriculture, Forestry Commission, Department of Administrative Services (SEP A.2.2.3)

Responsibilities of respective agencies are described in the Georgia Emergency Operations Plan (GEOP)

#### 1.4 State of South Carolina (SEP A.2.3)

The State of South Carolina has developed the South Carolina Radiological Emergency Response Plan (SCORERP) which provides guidance to state and local governments on procedures, organization, and responsibilities for preventing and mitigating the effects of a nuclear power plant incident or disaster.

The SCORERP describes the South Carolina Radiological Emergency Response Organization, which consists of the Office of the Adjutant General (Emergency Management Division) (EMD), the Department of Health and Environmental Control (Bureau of Solid and Hazardous Waste, Nuclear Emergency Planning (NEP) Section), and those state resources available to local government(s) during a fixed nuclear facility radiological accident.

The response functions of involved agencies are described in the SCORERP and the South Carolina Technical Radiological Emergency Response Plan (SCTRERP).

##### 1.4.1 Office of the Governor (SEP A.2.3.1)

In the event of the declaration of a radiological emergency, the EMD, Department of Health and Environmental Control (DHEC) and other state agencies are activated.

##### 1.4.2 Office of the Adjutant General - Emergency Management Division (EMD) (SEP A.2.3.1)

The EMD is responsible for coordinating the emergency planning efforts of all state, county, and municipal agencies in developing a State emergency plan. Additional responsibilities include conducting a preparedness program to assure capability of the State government to execute the plan; establishing and maintaining a State EOC and provide support of the State emergency staff and work force; and establishing an effective system for reporting, analyzing, and disseminating emergency information.

##### 1.4.3 Department of Health and Environmental Control (DHEC) (A.2.3.2)

DHEC maintains a radiological hazard assessment capability and provides technical support, coordination, and guidance for the State and local governments. It will conduct and/or coordinate radiological surveillance and monitoring in coordination with DOE-Savannah River Site (SRS) and VEGP.

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1.4.4 Other State Support Agencies (A.2.3.3)

Other State agencies described in the South Carolina Emergency Operating Plan (SCEOP) and South Carolina Operational Radiological Emergency Response Plan (SCORERP) will provide related support pursuant to each plan.

Those agencies include:

- Department of Public Safety (Highway Patrol Division)
- State Law Enforcement division (SLED)
- Forestry Commission
- Department of Natural Resources
- Department of Social Services
- Department of Agriculture
- Clemson University Cooperative Extension Service

1.5 Local Organizations (SEP A.2.4, B.6.1)

Principal activities of Local Emergency Management Agencies (LEMA) and Local Law Enforcement Agencies (LLEA) in Georgia and South Carolina are described in the respective County Emergency Operations Plans.

1.5.1 Burke County Georgia (SEP A.2.4)

The area within the plume exposure pathway (EPZ) in the State of Georgia falls within Burke County. The responsibility for overall radiological emergency response planning rests with the Chairman, Burke County Board of Commissioners. It is the chairman's responsibility to initiate actions and provide direction and control at a level consistent with the specific incident.

1.5.2 Aiken, Barnwell, and Allendale Counties South Carolina (SEP A.2.4)

Most of the plume exposure pathway EPZ within South Carolina falls within the site boundary of the Savannah River Site (SRS). The United States Department of Energy is responsible for the direction and control of all emergency response actions on the SRS.

Limited portions of Aiken, Barnwell, and Allendale counties are outside of the SRS but within the plume exposure pathway EPZ of VEGP. These counties are similarly organized, with the responsibility for overall radiological emergency response planning resting with the Chairman of the County Council in each case.

1.6 24-Hour Staffing (SEP F.1.2)

Primary offsite authorities provide a 24-hour per day staffing of communications links as follows:

State of Georgia:

- Georgia Emergency Management Agency (GEMA) Duty Officer

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Georgia County authorities:

- Burke - Burke County EMA

State of South Carolina:

- Emergency Management Division (EMD)

South Carolina Counties:

- Barnwell and Aiken County - Sheriff's Department
- Allendale County – County Central Dispatch

Department of Energy – Savannah River Site (DOE-SRS)

- DOE-SRS Operations Center

1.7 Department of Energy (DOE) – Savannah River Site (SRS) (SEP A.1.4)

The DOE-Savannah River Site (SRS) will provide the necessary response within the SRS reservation in accordance with the SRS Emergency Plan. The DOE will exercise overall responsibility, jurisdiction, and authority for conducting response operations on the Savannah River Site to protect the health and safety of SRS personnel. DOE will provide for emergency notification and, as needed, evacuation, monitoring, decontamination, and immediate lifesaving medical treatment of non SRS personnel on the Savannah River Site. DOE will also provide access control for SRS areas.

1.8 Hostile Action Based Events (SEP H.1.4)

Agreements are in place with the State of Georgia, Burke County, Georgia, Aiken, Allendale and Barnwell Counties in South Carolina to provide available resources and equipment to support the mitigation and response to an emergency at Plant Vogtle Units to include Hostile Action Based events. These resources include, but are not limited to, Local Law Enforcement Agency (LLEA) assets, Firefighting assets, medical support resources (including transportation) and coordination through an Incident Command Post. Requests for offsite resources and equipment will be communicated from the control room to Burke County 911 Center or through the Incident Command Post as applicable based on the nature of the event. Copies of these agreements are maintained in the SNC document management system.

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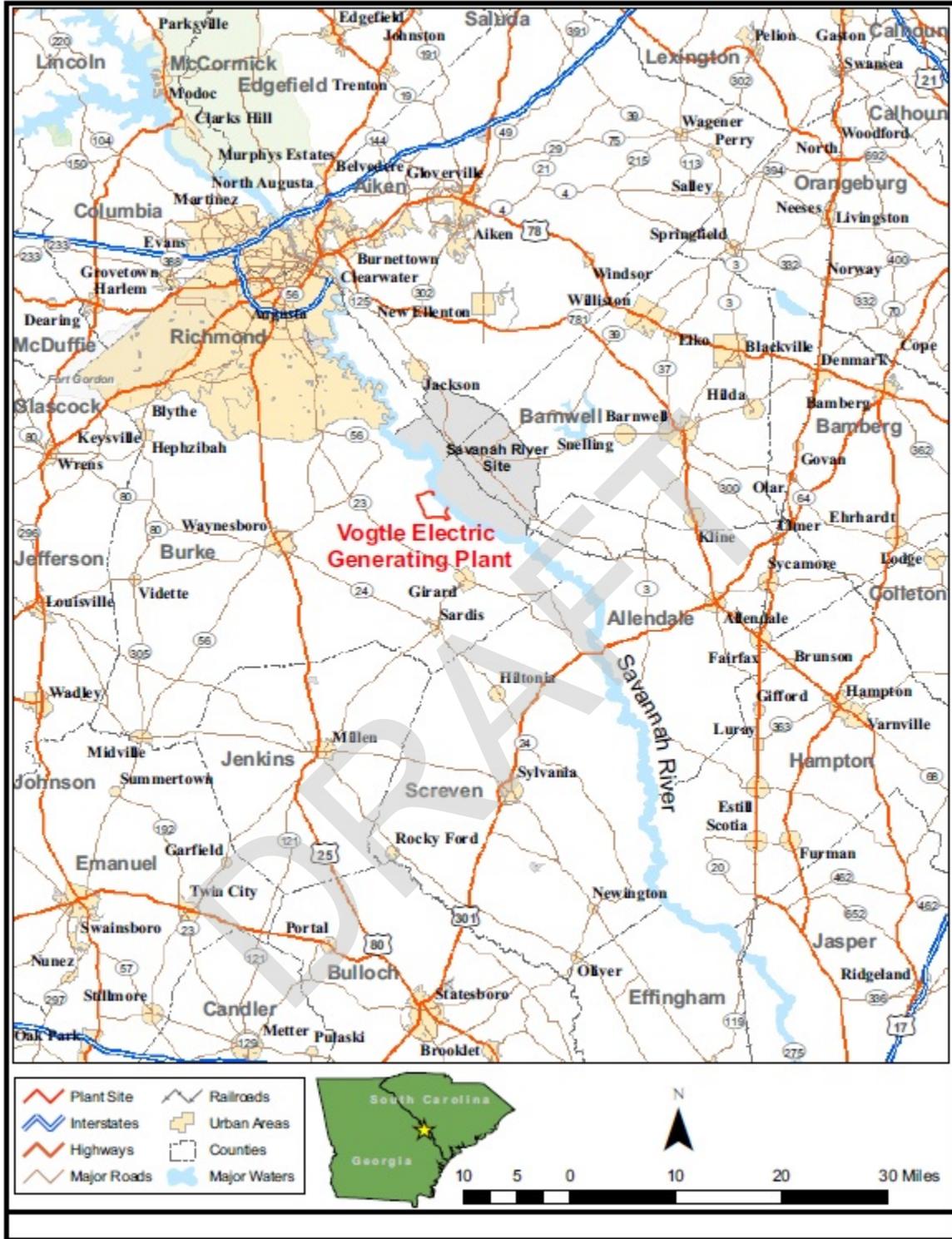


Figure 1.1.A – Location and Vicinity Map

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Figure 1.1.B - Vogtle Electric Generating Plant Site Plan

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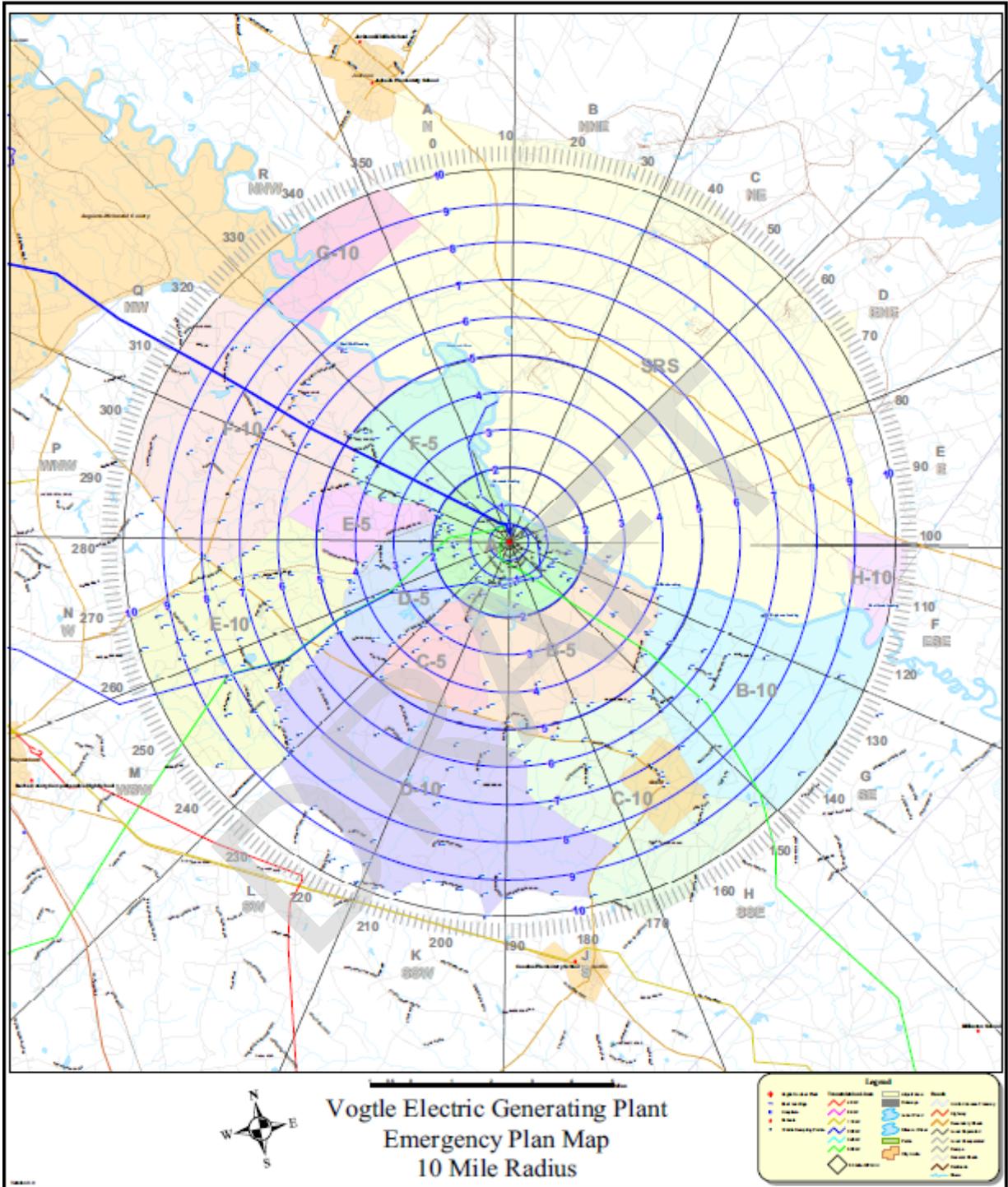


Figure 1.2.A – 10 Mile Emergency Planning Zone (EPZ)

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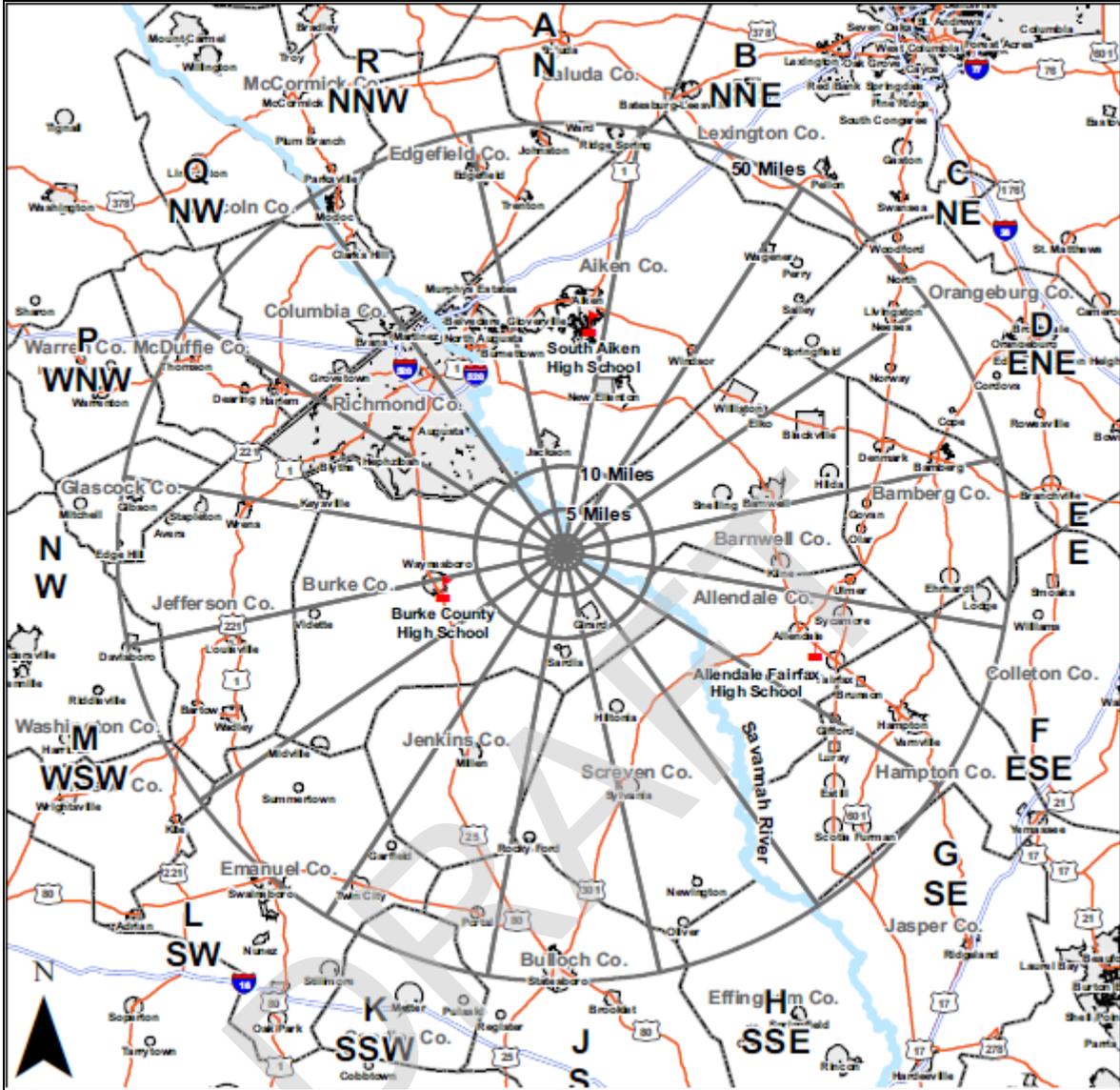


Figure 1.2.B – 50 Mile Ingestion Pathway IPZ

**Section 2: Organizational Control of Emergencies** (SEP B.1)

2.1 Normal Plant Organization (SEP B.1)

The normal plant operating crew is staffed and qualified to perform actions that may be necessary to initiate immediate protective actions and to implement the emergency plan and is designated as the responsible group for such actions.

The normal plant organization is described in Section B.1 of the Emergency Plan.

2.2 Emergency Organization (SEP B.2, B.3)

2.2.1 The VEGP On-Shift Emergency Response Organization is described in Table 2.2.A (SEP B.1)

2.2.2 The VEGP Augmented Emergency Response Organization is described in Figures B.2.B through B.2.E of the Emergency Plan (SEP B.2, B.3)

An On-Shift Staffing Analysis completed in accordance with the requirements of 10 CFR 50 Appendix E IV.A.9. This analysis forms the basis for the on-shift staff as described in Table 2.2.A. A copy of the analysis is maintained in the SNC document management system.

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**Table 2.2.A - Vogtle Electric Generating Plant On-Shift Staffing**

<b>Vogtle 1 &amp; 2</b>				
<b>Major Functional Area</b>	<b>Major Tasks</b>	<b>Position</b>	<b>On-Shift</b>	<b>Shared Resources</b>
Emergency Direction and Control		Shift Manager (SM)/ Emergency Director (ED)	1	
Plant Operations and Assessment of Operational Aspects		Shift Supervisor (SRO)	2	
		Plant Operator (RO)	4	
		Shift Support Supervisor <sup>Note 1</sup>	1	
		System Operators (SO) <sup>Note 1</sup>	7	
Plant System Engineering, Repair and Corrective Actions	Technical Support	Shift Technical Advisor <sup>Note 2</sup>	Qualification	
Notification/ Communication	Notify licensee, State local and Federal personnel & maintain communication	Shift Administrative Assistant or other trained personnel	2	
Radiological Accident Assessment and Support of Operational Accident Assessment	Offsite Dose Assessment	RP/Chemistry Shared Foreman	1	
	Offsite Surveys Onsite (out-of-plant)	Chemistry Technician, RP Technician, System Operator or other trained personnel	2	
Protective Actions	Radiation Protection: a. Access Control b. RP Coverage for repair, corrective actions, search and rescue first-aid & firefighting c. Personnel monitoring d. Dosimetry	RP Technician	2	
	Chemistry/Radio- chemistry	Chemistry Technician	1	
Plant System Engineering, Repair and Corrective Actions	Repair and Corrective Actions	Mechanic	1	
		Electrician	1	
		I & C Technician	1	
<b>Total:</b>			<b>26</b>	<b>0</b>
Fire Fighting		Fire Brigade <sup>Note 1</sup>	5	
Rescue Operations and First Aid		Rescue Operations/First Aid <sup>Note 3</sup>	2	
Site Access Control and Personnel Accountability		Security	Sec Plan	

Note 1 – Fire Brigade made up of FB Leader (SSS) and 4 System Operators not assigned safe shutdown responsibilities

Note 2 – Required unless Shift Manager or other SRO meets the qualification for STA

Note 3 – May be provided by shift personnel assigned other functions

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2.3 Non-SNC Support Groups (SEP B.4, B.5, B.6)

2.3.1 Fire Fighting (SEP B.6.4)

VEGP has established an agreement with the Burke County EMA to provide, upon request, offsite fire support to the VEGP Units 1 and 2 Fire Brigade. Fire support provided includes, but is not limited to, firefighters and firefighting equipment. Request for fire support will be made by the control room or site security to the Burke County 911 center, Burke County EOC, or the Incident Command Post, as applicable, based on the nature and timing of the event. A copy of this agreement is maintained in the SNC document management system.

2.3.2 Hospital and Medical Support (SEP B.6.3, K.1.3, L.1)

Agreements are in place with the University of Alabama Hospital, Burke Medical Center, Doctors Hospital, and Burke County Emergency Management Agency to provide assistance for injured personnel, including cases involving radioactive contamination. This assistance will be requested whenever necessary in accordance with plant procedures. Medical Specialists, Inc., a group of medical professionals, has agreed to provide treatment services through Burke Medical Center and Doctors Hospital.

2.3.3 Ambulance Service (SEP B.6.2, L.4)

VEGP has established agreements with the Burke County EMA to provide ambulance service for the transportation of injured personnel, including people who may be radioactively contaminated, to hospital facilities for treatment.

Support provided includes, but is not limited to, Emergency medical services, ambulances, and emergency medical technicians. Request for fire support will be made by the control room or site security to the Burke County 911 center, Burke County EOC, or the Incident Command Post, as applicable, based on the nature and timing of the event. A copy of this agreement is maintained in the SNC document management system.

2.3.4 Emergency Broadcasts (SEP E.2.5.1)

VEGP has established agreements with media agencies to broadcast emergency messages and information to the public during an emergency event. The messages will be coordinated with local or state Emergency Management Agencies and are available on a 24 hour basis as members of the Emergency Alert System (EAS). These agencies include;

- WJBF-TV Channel 6
- WRDW-TV Channel 12
- WAGT-TV Channel 26
- WFXG-TV Channel 54
- iHeart Media (WBBQ-FM, WPRW-FM, WKSP-FM, WSCG, WYNF and WNRR)
- WDOG Radio Station
- WKXC/KICKS 99 Radio Station

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2.3.5 Voluntary Assistance Group (SEP B.4.2)

VEGP is a signatory to two comprehensive agreements among electric utility companies:

- The Nuclear Power Plant Emergency Response Voluntary Assistance Agreement, and;
- The Voluntary Assistance Agreement By and Among Electric Utilities Involved in Transportation of Nuclear Materials.

2.3.6 Information for Transients (SEP G.8)

Signs and notices providing information to transients are placed in public recreation areas as well as other public places in the plume EPZ such as siren poles, the Plant Vogtle Visitors Center, and in commercial establishments; for example, motels, restaurants, and gas stations. This material will include the following information:

- How people will be warned of an emergency.
- What to do if warned of an emergency.
- A list of radio and television stations to tune to for further information

A VEGP emergency information brochure will be made available within the EPZ to transients at commercial establishments, churches, motels, hunting clubs, Creek and Cawden Plantations, the Plant Vogtle Visitors Center, and through residents whose land is used by nonresidents (e.g., the occasional nonresident hunter). Outside the EPZ, the brochure will be made available to timber company offices for distribution to their employees who enter the EPZ on Company business, and to the Waynesboro Office of the Agriculture Stabilization & Conservation Service for distribution to farmers who farm, but do not reside, in the EPZ.

**Section 3: Classification of Emergencies** (SEP D.1)

3.1 Emergency Classifications: (SEP D.1)

Four classes of Emergency Action Levels are considered according to severity, taking into consideration potential, as well as actual, events in progress. They are, from the least to the most serious, Unusual Event, Alert, Site Area Emergency, and General Emergency. Initiating Conditions (ICs), which determine which level will be declared, are predetermined subsets of plant conditions where the potential exists for a radiological emergency, or such an emergency has occurred. Emergency Action Levels (EALs) are plant-specific indications, conditions or instrument readings that are utilized to classify emergency conditions.

3.1.1 The described emergency classes and the emergency action levels which determine them are agreed on by SNC and State and local authorities. The emergency action levels will be reviewed by these (state and local) officials annually.

3.2 Determination of Levels: (SEP D.1.2)

Appendix B to this Annex contains the matrix for Initiating Conditions used to determine an Emergency Action Level (EAL). They are part of the scheme established by NEI 99-01, Methodology for Development of Emergency Action Levels.

3.3 Operating Mode Applicability (SEP D.2.7)

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 level can be declared, the emergency classification level shall be based on the mode that existed at the time the event occurred.

**PWR Operating Modes at VEGP 1&2**

Power Operations (1):	Reactor Power > 5%, $K_{eff} \geq 0.99$
Startup (2):	Reactor Power $\leq 5\%$ , $K_{eff} \geq 0.99$
Hot Standby (3):	RCS $\geq 350$ °F, $K_{eff} < 0.99$
Hot Shutdown (4):	200 °F < RCS < 350 °F, $K_{eff} < 0.99$
Cold Shutdown (5):	RCS < 200 °F, $K_{eff} < 0.99$
Refueling (6):	One or more vessel head closure bolts less than fully tensioned
Defueled (None):	All reactor fuel removed from reactor pressure vessel. (Full core off load during refueling or extended outage)

**Section 4: Emergency Measures** (SEP E)

4.1 Notification of Off-Site Agencies (SEP E.2.2)

4.1.1 Notification Process (SEP E.2.2.1)

State and local counties surrounding VEGP are to be notified within 15 minutes of the declaration of an emergency condition are:

State of Georgia:

- Georgia Emergency Management Agency (GEMA) Duty Officer

Georgia County authorities:

- Burke - Burke County EMA

State of South Carolina:

- Emergency Management Division (EMD)

South Carolina Counties:

- Barnwell and Aiken County - Sheriff's Department
- Allendale County – County Central Dispatch

Department of Energy – Savannah River Site (DOR-SRS)

- DOE-SRS Operations Center

4.2 Alert and Notification System (ANS) (SEP E.2.5)

Within the Plume Exposure Emergency Planning Zone (EPZ) there exist provisions for alerting and providing notification to the public. The state and/or local authorities are responsible for activation of this system.

The Vogtle Electric Generating Plant (VEGP) has developed a Public Alert and Notification system designed for essentially 100% coverage of the population within the EPZ. This is accomplished utilizing a combination of fixed sirens and tone-alert radios. Sirens installed by VEGP have been sited according to FEMA-REP-10 criterion to ensure the required coverage. Siren Locations are shown in Figure 4.2.A, Fixed Siren Location Map. Provisions for transient population notification are also included in State and County plans.

Anyone not notified by the primary means will be notified by using State and local resources on an as needed and/or as available basis. These alternate methods of notification consist of:

- Vehicles equipped with sirens/loudspeakers
- Boats equipped with sirens/loudspeakers
- Door-to-door contact

In the event of an emergency declaration at the VEGP, DOE-Savannah River Site has agreed to provide for the prompt notification of all persons on the SRS within VEGP's plume exposure pathway EPZ.

A full Alert and Notification System (ANS) description is provided in the FEMA approved Alert and Notification System Design Report (ANS-VEGP-001) located in the SNC document management system.

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4.3 Protective Actions for Onsite Personnel (SEP J.4)

Protective response for onsite personnel (including visitors and contractor personnel) depends upon alerting, assembly and accountability, site evacuation, monitoring, and decontamination. Protective actions may also be taken for onsite personnel for emergencies such as fires, security related events or natural disasters where personnel safety is threatened.

4.3.1 Alerting (SEP E.2.1, J.1)

Section E of the Emergency Plan (EP), Notification Methods and Procedures, describes the methods to be used to alert onsite personnel of emergency conditions.

4.3.2 Assembly (SEP J.4.1)

Personnel assembly is mandatory at the Site Area Emergency or higher level classification. Upon activation of the plant emergency alarm, plant personnel assigned specific emergency responsibilities proceed to their designated emergency response locations. Assembly of site personnel outside of the Protected Areas is accomplished by non-essential personnel reporting to designated assembly areas. Assembly may be initiated at any time site management deems it appropriate for personnel safety reasons.

Nonessential plant personnel located within the Protected Area (PA) will exit the PA upon hearing the Site Area or the General Emergency alarm and report to designated assembly areas. Visitors, contractors, and escorted personnel will leave the protected area during an Alert or higher declaration.

4.3.4 Security Events (SEP J.4)

Onsite protection of employees during security events involves a combination of restricted movement, movement to safe locations and site evacuation depending on the nature of the event and advance warning. Specific actions to be taken during such events are included in site procedures.

4.3.5 Monitoring and Decontamination (SEP K)

When an Alert is declared but no site evacuation is anticipated, personnel who have left the protected area are monitored by portal monitors. If necessary, decontamination is completed using the plant decontamination facilities located in the Control building or other onsite locations.

When site evacuation with monitoring is expected and release of radioactivity has occurred, monitoring is performed by Burke County emergency workers at an established reception center.

4.4 Protective Actions for the Offsite Public (SEP J.5)

The Emergency Director will recommend the necessary protective actions to offsite authorities based on predetermined protective actions for a General Emergency Classification or results of offsite dose assessment. Upon activation of the EOF, the EOF Manager will be responsible for recommending protective actions for the offsite population. Responsibility for carrying out the protective actions rests with offsite authorities.

4.4.1 Protective Action Recommendations (SEP J.5)

A range of Protective Actions have been developed and agreed upon with State and Local authorities. They may include the following:

- Shelter in Place;
- Evacuation;
- Controlling food, milk, and water distribution;
- Thyroid blocking agent;
- Heightened Preparedness

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**Section 5: Emergency Facilities and Equipment** (SEP H)

5.1 Emergency Response Facilities (SEP H.1, H.2)

5.1.1 Control Room (SEP H.1.1)

The Control Room contains the necessary instrumentation, both process and radiological, to evaluate plant conditions, as detailed in the plant Final Safety Analysis Report. Habitability is maintained by shielding and the Emergency Filtration Train (EFT) ventilation system, which is capable of operating in a cleanup or recycle mode. Emergency equipment is supplied power from the emergency diesel generators with vital instrumentation powered from inverters connected to the storage batteries located in the battery rooms.

5.1.2 Technical Support Center (SEP H.1.2)

The TSC will be located in the lower level of the Communication Support Center (CSC) sited between the Unit 2 and 3 power blocks within the VEGP Site protected area as shown on Figure 1.1.B. The TSC will be designed to withstand plant design basis earthquakes and high winds. The layout of the proposed TSC is shown in Figure 5.1.A.

The TSC will be common for all four VEGP units. The TSC will accommodate the required personnel to support an event on any or all Units. Technical and operational data and information will be available for all Units within the TSC. Support facilities will be located within the TSC to support long term operation of the TSC.

The TSC will provide plant management and technical support personnel (including five Nuclear Regulatory Commission (NRC) personnel) with a facility from which they can assist plant operating personnel located in the control rooms during an emergency. The Emergency Director and NRC director will be co-located to ensure proper communications. The TSC will be 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. In addition, the TSC will have ready access to plant records. The TSC structure and ventilation system will be designed to ensure that the TSC personnel are protected from radiological hazards.

The ventilation system will include high efficiency particulate air (HEPA) and charcoal filters. The ventilation system will be designed to maintain exposures to occupants at or below 5 rem total effective dose equivalent (TEDE) for the duration of the accident.

The ventilation system will be operated in accordance with emergency plan implementing procedures (EPIPs) and will be manually controlled from the TSC. The ventilation system will operate in the pressurization and filtering mode upon detection of high radiation in the TSC ventilation intake. In addition, portable radiation monitors will be available for personnel in transit from the TSC to other

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areas. Portable air breathing apparatus and anti-contamination clothing will also be provided in the TSC.

The TSC will be powered by reliable and redundant power supplies. Lighting will be powered by the normal and redundant electrical supply system. An emergency battery operated lighting system will be installed. Power for vital information systems will be provided by redundant power supplies including a battery backed uninterruptible power supply system.

The records storage is shared by the control room and the TSC. These records can be accessed via a digital records system. This system is supplied backup power via an uninterruptible power supply to allow retrieval of records in the event of a loss of power. These records include;

- Technical Specifications.
- Plant Operating Procedures.
- Final Safety Analysis Report.
- Emergency Plan.
- Emergency Plan Implementing Procedures.
- 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 Vogtle Electric Generating Plant (VEGP) Document Control:

- Plant operating records.
- Plant Review Board records and reports.
- System piping and instrumentation diagrams and heating, ventilation, and air-conditioning (HVAC) flow diagrams.
- Piping area drawings.
- Electrical one-line, elementary, and wiring diagrams.
- Control logic and loop diagrams.

The above records are available in current form and are updated as necessary to ensure currency and completeness.

### 5.1.3 Operations Support Center (SEP H.1.3)

The OSC is located in the Maintenance Support Building located between Unit 2 and Unit 3. The OSC is where operational support personnel (such as instrument technicians, engineers, mechanics, electricians, chemical/radiation technicians, equipment operators, and incoming shift personnel) assemble to aid in the response to an emergency.

Status boards containing plant conditions and emergency classification will be available in the OSC. Emergency kits containing radiation monitoring equipment,

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first aid supplies, decontamination supplies, breathing apparatus, portable lighting, and hand-held radios are stored in the OSC.

The OSC is common for all four VEGP units. The OSC will accommodate the staff support and technical staff to support an event on any or all Units. The OSC has the communications capability to communicate with all four control rooms, the Technical Support Center (TSC) and the Emergency Operations Facility (EOF).

In the event that this facility becomes uninhabitable, the functions of the OSC will be conducted from the designated back-up OSC space in the Outage Control Center (OCC) located in the Annex Building if Unit 3 or Unit 4 is the affected unit and from Clearance and Tagging (C&T) located in the control building if Unit 1 or Unit 2 is the affected unit. These designated back-up OSC spaces will have the same capability as the OSC. Evacuation of the OSC will be conducted according to emergency implementing procedures. These procedures will describe the method by which the OSC is evacuated and the movement of personnel to other facilities. The OSC manager will keep the TSC manager informed of the initiation, progress, and completion of the evacuation and relocation of the OSC personnel. Operations at this facility will be directed by the OSC manager.

5.1.4 Alternative Facility (SEP H.1.4)

During a security related event or other event that precludes onsite access, the TSC and OSC ERO staff will be directed to an alternative facility. This facility is located in the SNC/Vogtle building in Waynesboro, GA. The alternative facility is equipped with the necessary communications and data links to support communications with the control room, site security and the EOF. The available communications and data links also provide access to the SNC document management resources, work planning resources for performing engineering assessment activities including damage control team planning and preparation for return to the site. Guidance for use of the facility is contained in site procedures.

5.1.5 Emergency Operations Facility (SEP H.2.1)

The EOF is the central location for management of the offsite emergency response, coordination of radiological assessment, and management of initial recovery operations. The EOF is a dedicated facility located in Birmingham, Alabama, and serves as the EOF for SNC sites (VEGP, FNP, and HNP). Additional details of the EOF is contained in section H.2.1 of the Emergency Plan.

A near site location is maintained at the Vogtle Training Center space for members of an NRC Site Team and Federal, state and local responders which includes space for conducting briefings with emergency response personnel and communications with other licensee and offsite emergency responders.

5.1.6 Joint Information Center (JIC) (SEP H.2.2)

The JIC is the central location for the coordination and dissemination of information to news media and responses to media inquiries. Details of the JIC for VEGP can be found in section H of the Emergency Plan. At the discretion of

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the Public Information Director, a near site media center may be activated to coordinate press releases with local media. The near site media center is located in Waynesboro, Georgia.

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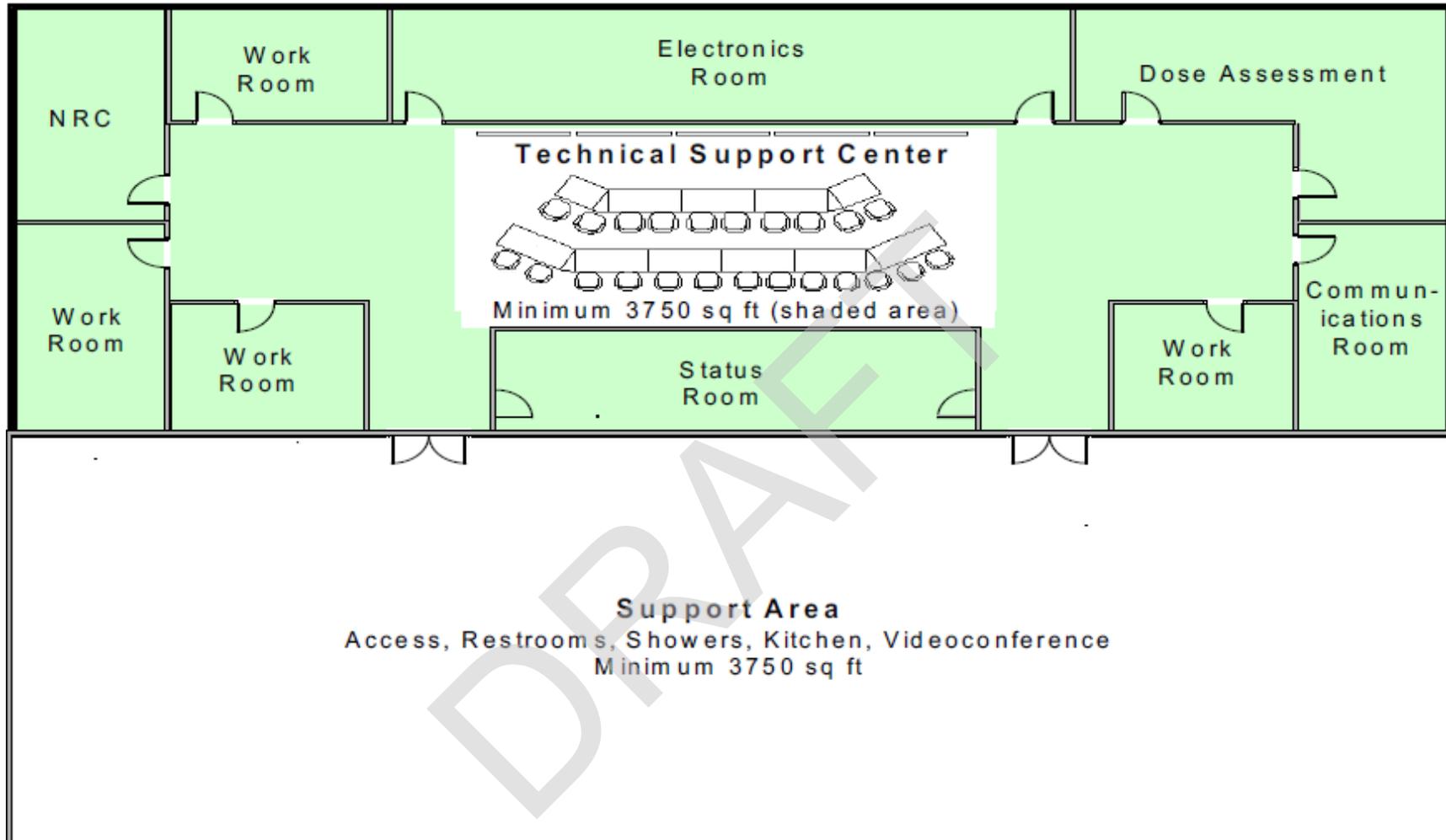


Figure 5.1.A – Sample Technical Support Center

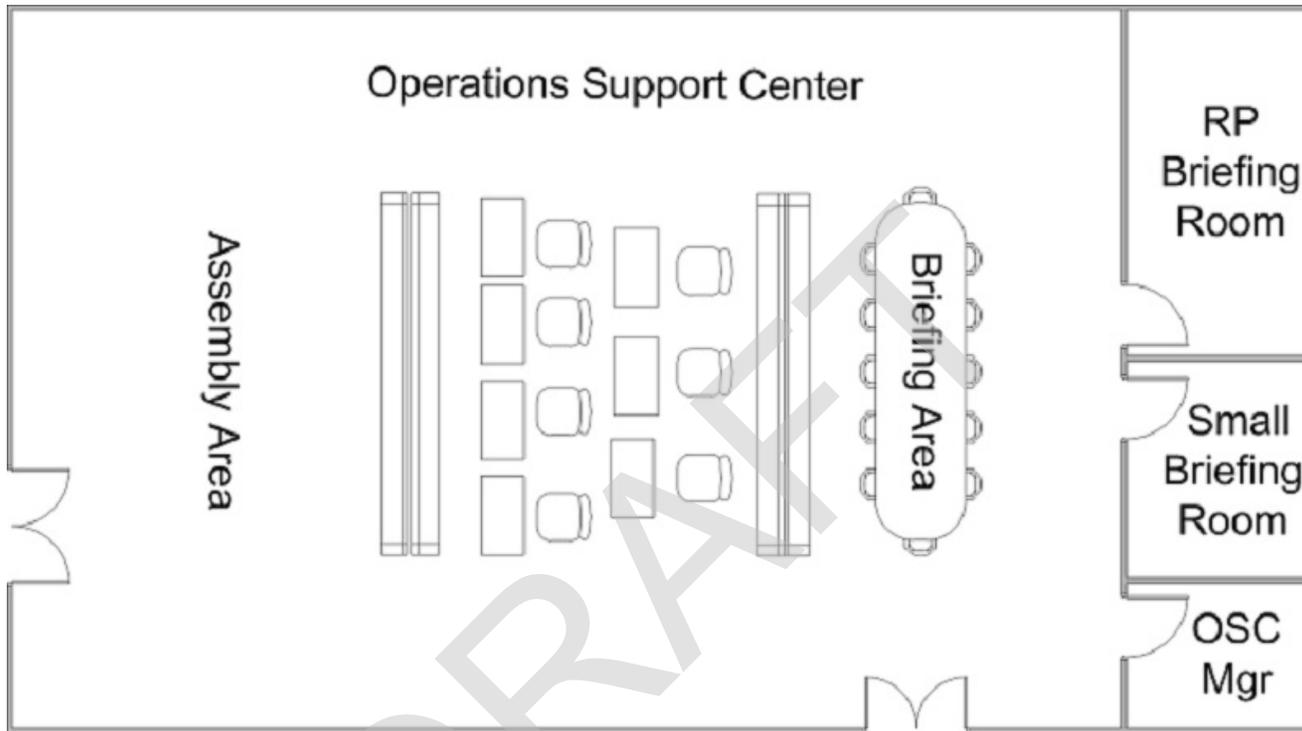


Figure 5.1.B – Sample Operations Support Center

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5.2 On-Site Communications (SEP F.1)

Normal on-site communications is provided by the plant telephone system (network and commercial). The plant Public Address (PA) system may also be used for in-plant communications. The PA system is powered by normal plant power, backed up by uninterruptible power.

Portable radios are used for communications between individuals and base stations located in the Control Room, TSC, OSC EOF, and Security Building. There is also a plant intercom system. Intercom units are installed at selected plant locations primarily for specific task related activities.

5.2.1 Direct Dedicated Telephones (SEP F.1.1)

Dedicated Voice Over Internet Protocol (VOIP) telephones connect the Control Room, Technical Support Center (TSC), Operations Support Center (OSC), and Emergency Operations Facility (EOF).

5.2.2 Other Communication Systems include: (SEP F.1.1)

- Sound Powered Phones (Internal to the Control Room)
- Base station radio console with multiple frequencies
  - Plant Field Monitoring frequency
  - Security frequency
  - Operations frequency
  - Digital Radio system
- Facsimile lines
- Southern LINC radio equipment
- Beacon lights in high noise areas

5.3 Offsite Communications (SEP F.1)

5.3.1 Communications with the State of Georgia and Burke County (SEP F.1.2)

The primary means of communication between VEGP, the State of Georgia and Burke County is the Emergency Notification Network (ENN). The ENN is a dedicated communications system from the plant to the EOC at GEMA headquarters in Atlanta, Georgia and the Burke County EOC. Extensions for this system are located in the Control Room, the TSC, and the EOF.

5.3.2 Communications with the State of South Carolina, Aiken, Barnwell, and Allendale Counties (SEP F.1.2)

The primary means of communication between the VEGP and South Carolina is the ENN, a dedicated telephone system from the plant to South Carolina emergency response agencies. The ENN has multiple drops in South Carolina state facilities which are located at: the South Carolina Warning Point (the State emergency operations center (SEOC)) which is staffed 24 hours per day. Commercial telephones provide the backup for the ENN.

The primary means of communication between VEGP and the South Carolina counties is the ENN, a dedicated telephone system which includes the plant and

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Aiken, Barnwell, and Allendale County emergency response agencies. Commercial telephone is the backup means of communication.

5.3.3 Communications with the Savannah River Site (SEP F.1.2)

The primary means of communication between VEGP and the Savannah River Site (SRS) is the ENN. SRS has two ENN drops, both located in their Operations Center.

The ENN system is available and staffed 24 hours per day. Commercial telephones provide a backup for the ENN.

5.3.4 Medical Support Facility Communications (SEP F.2)

Communications with Doctors Hospital or the Burke County Hospital will be by commercial telephone. Radio contact through the Burke County EOC serves as a backup. The Burke County Ambulance Service is equipped with a radio for communications with the hospitals. The ambulance service and hospitals within the state are interconnected in a statewide hospital radio network. VEGP can communicate with the ambulances by contacting the hospitals, which have radio communications with the ambulances.

5.3.5 Alternate Offsite Communications (SEP F.1.1)

Commercial telephones, microwave, or land lines provide backup for the ENN.

5.4 Communications System Testing (SEP F.3)

Communication channels with the State of Georgia, the State of South Carolina, the Savannah River Site, the plume exposure pathway EPZ counties, and the NRC (with the exception of ERDS) are tested each calendar month, using the extensions in the Control Room, the TSC, and the EOF. ERDS is tested each calendar quarter. Communications procedures and systems are also tested each calendar year during a communications drill. This drill is normally conducted in an exercise each calendar year.

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	CONTROL ROOM	TSC	OSC	EOF		JOINT INFORMATION CENTER	CORPORATE OFFICE	BURKE COUNTY EOC GEMA FEOC	GEMA EOC	SRS	NRC OPERATIONS CENTER	NRC REGION II OFFICE ATLANTA	SC STATE EOC	SC COUNTY EOC'S	SC COUNTY WARNING POINTS
ENN	●	●		●				●	●	●			●	●	●
ENS	●	●		●							●	● (a)			
VEGP DIAL	●	●	●	●		●		●							
DEDICATED DIAL	●	●	●	●											
BELL DIAL	●	●	●	●		●	●	●	●	●	●	●	●	●	●
IN-PLANT RADIO	●	●	●												
PLANT PAGE SYSTEM (PA)	●	●	●												
SOUTHERN COMPANY COMMUNICATIONS	●	●	●	●		●	●	●	●	●			●	●	●
HPN		●		●							●				
FACSIMILE	●	●		●		●	●	●	●	●	●	●	●	●	●
FIELD TEAM RADIO		●		●											
DNR RADIO								●							
SC EMD RADIO		●								●			●	●	
ADMINISTRATIVE DECISION LINE				●				●	●	●			●	●	
ERDS		●							●		●	●			

Table 5.2.A - Emergency Response Communications

## 5.5 Emergency Kits (SEP H.9)

Emergency supplies and equipment are located in the TSC (also for the control room), the OSC, the health physics control point, and other plant locations. An ambulance kit will be carried by the VEGP health physics technician who accompanies the ambulance. Procedures require an inspection and operational check of equipment in these kits on a quarterly basis and after each use. Equipment in these kits is calibrated in accordance with the suppliers' recommendations. A set of spares of certain equipment is also maintained to replace inoperative or out-of-calibration equipment.

## 5.6 Facilities and Equipment for On-site Monitoring (SEP H.5)

The plant instrumentation and monitors perform indicating, recording and protective functions. The Reactor Protection System and associated plant instrumentation provide the ability to maintain plant safety from shutdown to full power operations and to monitor and maintain key variables such as reactor power, flow, temperature, and radioactivity levels within predetermined safe limits at both steady state conditions and during plant transients. Plant instrumentation and control systems also provide means to cope with abnormal operating conditions. The control and display of information of these various systems are centralized in the unit Control Room. This instrumentation would provide the basis for initiation of protective actions.

### 5.6.1 Geophysical Phenomena Monitors (SEP H.5.1)

#### Meteorological (SEP H.5.1)

A meteorological monitoring program is in place at VEGP. Instruments are mounted on a 60-meter tower located to the south-southwest of the power block. Parameters measured and transmitted to the control room include:

- Windspeed (10 m and 60 m).
- Wind direction (10 m and 60 m).
- Standard deviation of horizontal wind direction (10 m).
- Vertical temperature difference (10 m and 60 m).
- Ambient temperature (10 m).
- Dewpoint temperature (10 m).
- Precipitation (base).

An equipment building which houses the recording, calibration, and amplification equipment is located near the base of the tower. The system is powered by an uninterruptible power supply consisting of wet cell batteries, charger, and inverter for high availability. Additionally, meteorological information can be obtained from the National Weather Service to supplement onsite data and provide a backup to the plant meteorological monitoring program on an as needed basis.

The important parameters for characterizing the transport of airborne radioactivity are wind speed, wind direction, and atmospheric stability (derived from the standard deviation of the horizontal wind direction or vertical temperature

difference). These meteorological parameters are used in a calculational methodology to assess the offsite radiological consequences of accidental releases of airborne radioactivity.

#### Hydrologic (SEP H.5.1)

The normal source of plant cooling water is the Savannah River, which provides makeup to the cooling towers. The probable maximum flood level has been determined to be about 140 ft mean sea level (MSL). However, since the access elevations to safety-related structures are at 220 ft MSL, high river level is not relevant to plant safety. The ultimate heat sink for VEGP is the nuclear service cooling water towers. Two 100-percent towers are provided for each unit, and the system will provide sufficient shutdown cooling for approximately 30 days with no makeup. Because of these design features, hydrologic monitors will not be required for initiation of emergency actions; therefore, there will be no emergency levels based on hydrologic monitors.

#### Seismic (SEP H.5.1)

Seismic monitoring instrumentation for VEGP consists of time-history accelerographs, central control unit, and free-field ETNA.

A strong-motion accelerometer (SMA) is installed in the containment tendon gallery on the basemat. The second SMA is located on the containment operating floor at elevation 220 feet.

Activation of the time history accelerographs causes visual and audible annunciation in the control room to alert the plant operator that an earthquake has occurred.

### 5.7 Protective Facilities and Equipment (SEP J)

#### 5.7.1 Assembly Points (SEP J.4.1)

In the event of a plant evacuation, the On-Site Assembly Point (or an Off-Site Assembly Point, as appropriate) will be activated. The function of the assembly point is to provide a center for personnel accountability and radiological contamination screening along with any other immediately necessary actions.

The On-Site Assembly Point is located approximately 1000 feet south of the plant, within the Site Administration Building. The location of the Off-Site Assembly Point is dependent upon the nature of the emergency conditions. Its location will be announced over the public address system when announcement of evacuation is made.

This structure offers cover from fallout, but does not have special ventilation or shielding properties. It has the capacity to handle the number of people expected to report there.

Protective actions including relocation of onsite personnel in the event of an attack or threat of hostile action against the site have been developed for that specific situation. Specific protective actions in this case are identified in site procedures not readily available to the public.

5.8 Medical Support (SEP B.6, SEP L)

5.8.1 Hospital and Medical Support (SEP B.6.3, L.1)

Agreements are in place with Burke County Hospital, Doctors Hospital, and Burke County Emergency Management Agency to provide assistance for injured personnel, including cases involving radioactive contamination. This assistance will be requested whenever necessary in accordance with plant procedures.

5.8.2 Ambulance Service (SEP B.6.2, L.4)

Injured/externally contaminated personnel who require medical attention will normally be transported by ambulance to the cooperating hospitals. Ambulance crews are trained to handle external contamination cases, and an RP technician accompanies any contaminated patients to the hospital. Ambulance service is provided by the Burke County Ambulance Service.

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**Appendix A – Evacuation Time Estimate Study and Map Reference** (SEP J.6)

In order to ensure the safety of the public living in the vicinity of nuclear power plants in the nation, the U.S. Nuclear Regulatory Commission (NRC) requires licensees to develop and update evacuation time estimates (ETEs) for areas within the emergency planning zone (EPZ). Updates are required following the availability of data from the decennial census (10 years) or when the sensitivity factor for changes in population within the EPZ has been exceeded. This appendix implements the requirements of 10 CFR 50, Appendix E, Sections IV.3 and IV.4 and in accordance with NUREG/CR-7002, *Criteria for Development of Evacuation Time Estimate Studies*.

Southern Nuclear Operating Company (SNC) contracted IEM to estimate evacuation times for the 2012 populations within the 10-mile plume exposure pathway emergency planning zone (EPZ) surrounding VEGP. The report provided a breakdown of population by geographic areas and protective actions zones (PAZ). Four categories of population are identified in the report:

- Permanent residents
- Transient population
- Transit dependent permanent residents
- Schools

The permanent resident population is made up of individuals residing in the 10-mile EPZ. The total year 2012 permanent resident populations within the 10-mile EPZ for VEGP Units 1 and 2 are estimated to be 3,080. The transient population consists of workers employed within the area, recreational sportsmen and visitors. The total peak transient population within the 10-mile EPZ is estimated to be 2,915. Only one school, Lord's House of Praise Christian School, was identified in the VEGP Units 1 and 2 EPZ. The total peak population for the school in the EPZ is estimated to be 70. Transient dependent permanent residents in the EPZ are estimated to be 29. This study also considered shadow evacuees that reside within 10-15 miles from VEGP.

IEM utilized a computer traffic simulation model, PTV Vision VISUM, to perform the ETE analyses. For the analyses, the 10-mile plume exposure pathway EPZ was divided into 19 unique geographic areas based on two-mile, five-mile, and ten-mile radius rings, the 16 22.5-degree PAZs, as well as keyhole and staged evacuation logic. In order to represent the most realistic emergency scenarios, evacuations for the 19 geographic evacuation areas were modeled individually for the midweek daytime, midweek – weekend evening, and weekend daytime scenarios. Each of these scenarios was then considered under both normal and adverse weather conditions using the 2012 population estimations. A total of 114 evacuation scenarios were considered as part of this study to represent different wind, temporal, seasonal and weather conditions.

Both 100% and 90% ETEs for each scenario were collected. The 100% ETEs for the evacuation areas ranged from 2 hours 10 minutes to 3 hours 25 minutes for the normal scenarios, and from 2 hours 15 minutes to 3 hours 25 minutes for those occurring in adverse weather. The 90% ETEs for the evacuation areas ranged from 1 hour 20 minutes to 2 hours 20 minutes for the normal scenarios, and from 1 hour 20 minutes to 2 hours 25 minutes for those occurring in adverse weather.

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The factors that contributed to the variations in EPEs between scenarios include differences in the number of evacuating vehicles, the capacity of the evacuation routes used, or the distance from the origin zones to the EPZ boundary.

Based on the data gathered and the results of the evacuation simulations, the existing evacuation strategy was determined to be functional for the 2012 conditions, given the lack of severe congestion or very high ETEs. Recommendations were provided for enhancements to improve the evacuation time estimate.

Assumptions utilized in the ETE will be reviewed when evaluating changes to roadways or evacuation networks to ensure the results of the ETE remain valid. Changes in population will be evaluated utilizing the sensitivity factor developed during the ETE analysis.

The full Evacuation Time Estimate was submitted for NRC review in accordance with NRC regulations Evacuation Time Estimate (ETE) Updates 10 CFR 50, Appendix E, Section IV.3. Following the NRC review, the results of the study and recommendations will be reviewed with applicable offsite agencies. Modifications, if any, will be incorporated as part of the ongoing emergency planning process. SNC will work with OROs and maintain a protective action strategy using the 6-3 REV 61 06/14 applicable portions of NUREG 0654 Supplement III. (Reference: Evacuation Time Estimates Update dated November 26, 2013 NL-13-2340; ETE Report ETE-VEGP-001; Annual ETE Review ETE-VEGP-002).

**Appendix B - Emergency Action Level (EAL) Scheme** (SEP D.1)

**HOLD FOR CLASSIFICATION IC's/EAL Scheme**

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**Appendix C - Supporting Plans & Implementing Procedures** (SEP P.3)

Supporting Plans

- State of South Carolina Radiological Emergency Response Plan
- State of Georgia Emergency Operations Plan.
- Burke County Georgia Emergency Response Plan
- Aiken, Allendale, Barnwell County Emergency Response Plan
- VEGP Security Plan
- VEGP Fire Protection Plan

Administrative and Emergency Plan Implementing Procedures (EPIP)

**Placeholder for future EPIPs to be developed**

<b>Procedure #</b>	<b>Title</b>	<b>Applicable Plan Section</b>