VOGTLE ELECTRIC GENERATING PLANT

UNIT 1 AND UNIT 2

EMERGENCY PLAN

JUSTIFICATIONS FOR CHANGES - REVISION 64

Change	Justification
6-1; Added “ETE population reviews will be conducted annually.”	Added to reflect the process for annual population reviews in accordance with 10 CFR 50 Appendix E.
9-2; Deleted “91304-C, Estimating Offsite Dose”	Dose Assessment was standardized throughout the Fleet with NMP-EP-104, Dose Assessment. Site specific procedures were deleted.
9-3; Deleted “NMP-EP-303, Drill and Exercise Standards”	The listed procedure was deleted because they had inaccurately been added to the list of Emergency Plan Implementing Procedures.
D-31, RG1; Editorial. Deleted misplaced “-“ from RE-12444E reading	The negative sign (-) had inaccurately been added to the Emergency Plan.
I-3, I.3; replaced “91304-C with NMP-EP-104, Dose Assessment”	Dose Assessment was standardized throughout the Fleet with NMP-EP-104, Dose Assessment. Site specific procedures were deleted.
Figure J-2; Deleted Follow Up Protective Action Recommendations Flowchart and replaced with current Flowchart to add statement to consider use of KI with each PAR	This addition was made to ensure that every PAR given reflects the consideration for the use of KI. This statement was already reflected in initial PAR flowchart.
Index of Effective pages; Updated Revision Number	Updated to reflect current version number

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PREFACE

The Vogtle Electric Generating Plant (VEGP) is a two-unit pressurized water reactor operated by Southern Nuclear Operating Company (SNC). The plant is on a 3169-acre site located in the eastern portion of Burke County, Georgia, approximately 23 river mi upstream from the intersection of the Savannah River with U.S. Highway 301, as shown on figure i. Figure ii shows the site and the locations of the buildings on the site. The locations of the VEGP emergency facilities are shown on figure ii.

This Emergency Plan is applicable to VEGP, Units 1 and 2, and to its environs as specified by the emergency planning zones (EPZs): a plume exposure pathway EPZ, which nominally consists of the area within approximately 10 mi of the plant, and an ingestion exposure pathway EPZ, which extends to 50 mi. These distances are reckoned from a point midway between the centers of the Unit 1 and Unit 2 containment buildings for the 10 mile EPZ map. The two EPZs are shown in figures iii and iv.

Because of the location of VEGP, the emergency planning and/or protective action responsibilities at the state level involves two states, Georgia and South Carolina. Both Georgia and South Carolina, as well as the counties (Burke County in Georgia and Aiken, Barnwell, and Allendale Counties in South Carolina) within the plume exposure pathway EPZ, have prepared plans for a response to an emergency at VEGP. These plans describe their respective responsibilities, authorities, capabilities, and emergency functions. The major portion of the plume exposure pathway EPZ in South Carolina is within the Department of Energy's Savannah River Site (SRS). The Department of Energy, Savannah River Operations Office (DOE-SR), pursuant to a memorandum of agreement between Georgia Power Company (GPC), as assigned to SNC, and DOE-SR provided in appendix 5, will be responsible for all emergency response actions on the SRS whenever an emergency occurs at VEGP.

Small areas of Georgia within a 10-mi radius of the plant have been excluded from the detailed state and local planning. The area in Richmond County has been excluded because it is a low-lying swampland with no residences, no access routes, and limited recreational use. A letter documenting this provision is included in appendix 11.

Within the plume exposure pathway EPZ, Burke County in the State of Georgia has the largest resident population. However, even here the population is small and dispersed. The areas in South Carolina that are not federally owned or controlled are along the Savannah River lowlands in Aiken, Allendale, and Barnwell Counties. The segment in Aiken County, approximately 8 to 10 mi NNW from VEGP, is part of the Cowden Plantation

and has no resident population. The segments to the ESE, Barnwell and Allendale Counties (approximately 9 to 10 mi from VEGP), are largely comprised of portions of the Creek Plantation, a horse farm. Within the South Carolina portion of the plume exposure pathway EPZ, the only housing occurs within the Creek Plantation in Barnwell County, where there are only a limited number of permanent residences. Figure v presents the permanent population within the plume exposure pathway EPZ.

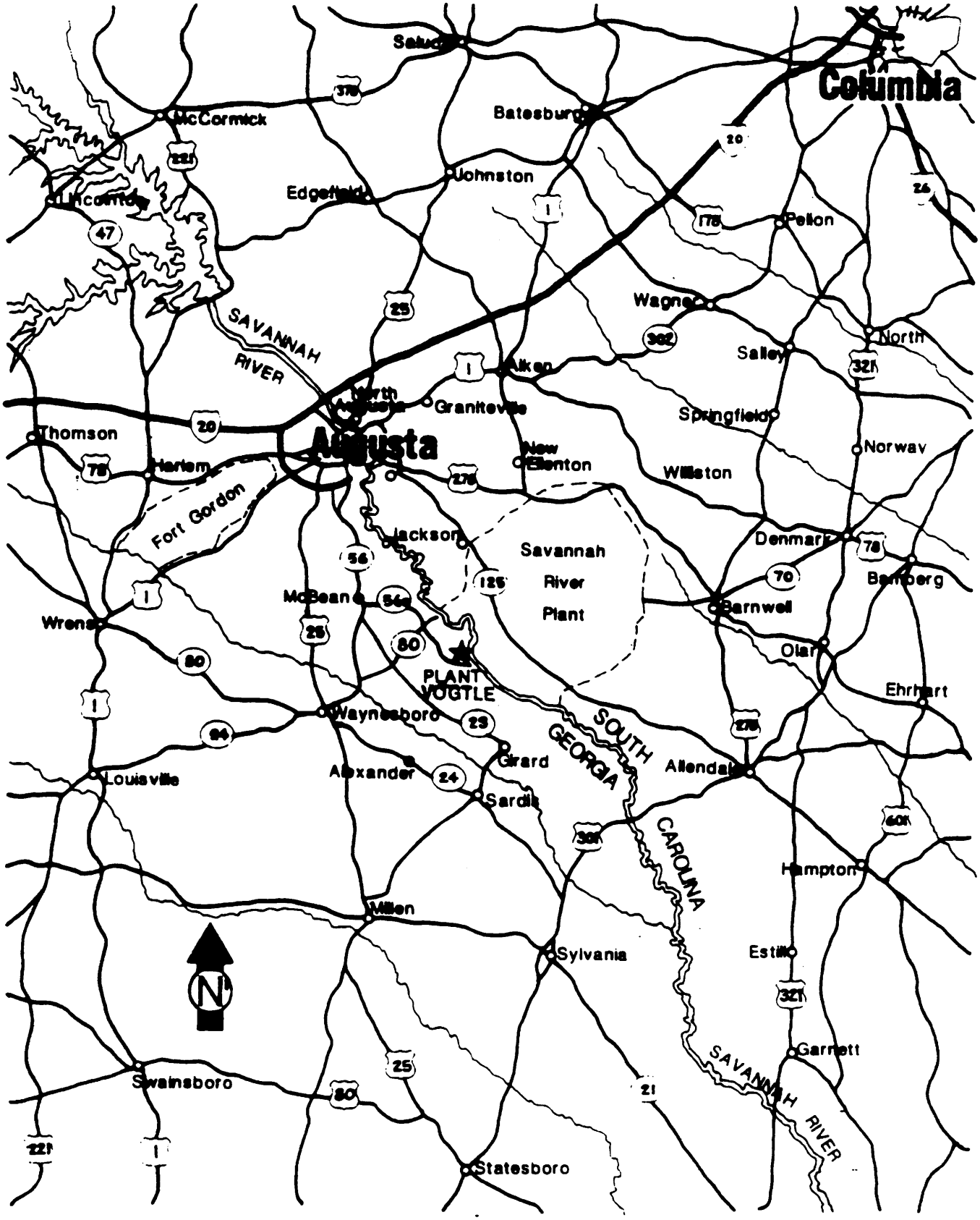
The transient population within the plume exposure pathway EPZ includes persons in the work force at the VEGP and at recreational areas, mainly hunters and fishermen (see figure vi). This transient population is generally along the Savannah River; around the Cowden Plantation and Gray's Landing in Aiken County; around Creek Plantation in Barnwell and Allendale Counties; and at St. Mary's Baptist Church in Barnwell County.

The EPZ for ingestion exposure includes an area within 50 mi of VEGP. Planning for the ingestion exposure pathway is a responsibility of the States of Georgia and South Carolina. More information about the ingestion exposure pathway EPZ can be obtained from the States' Radiological Emergency Plans.

The order of the presentation provided herein follows that of the 16 standards delineated in 10 CFR 50, Section 50.47 (b). Appropriate criteria from NUREG-0654, Revision 1, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, are addressed approximately in the sequence presented in that document.

Although this Plan is designed to stand on its own, two appendices expand on matters mentioned here: the Emergency Operations Facility (appendix 7) and the Emergency Communication Plan (appendix 8). It is to be recognized that this is only a plan and not a prescriptive document. Each incident is a unique event; therefore this Plan is designed to incorporate the flexibility to tailor the response and meet the emergency.

This Plan is supported by a set of implementing procedures. A listing of these procedures is included as appendix 9.



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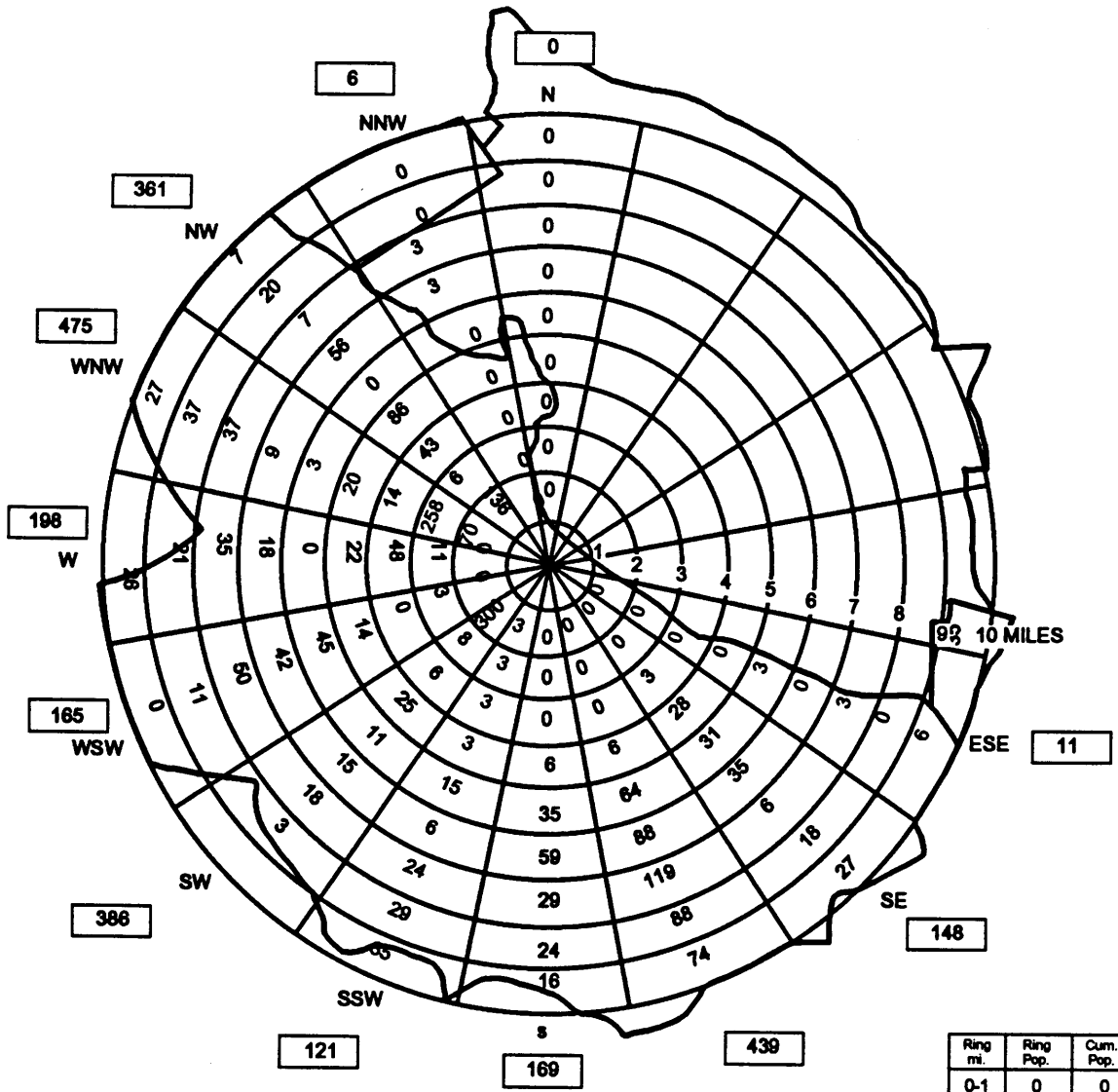
Vogtle Electric Generating Plant	GENERAL VICINITY MAP
	FIGURE i

FIGURE ii
Vogtle Electric Generating Plant Site Plan

FIGURE iii
Vogtle Electric Generating Plant 10-Mile EPZ
(Plume Exposure Pathway)

FIGURE iv
Vogtle Electric Generating Plant & Savannah River Site
50-Mile EPZ (Ingestion Pathway)

These figures are available in hard copy only.
See Christopher E. Boone, Emergency Planning Coordinator
(205) 992-6635

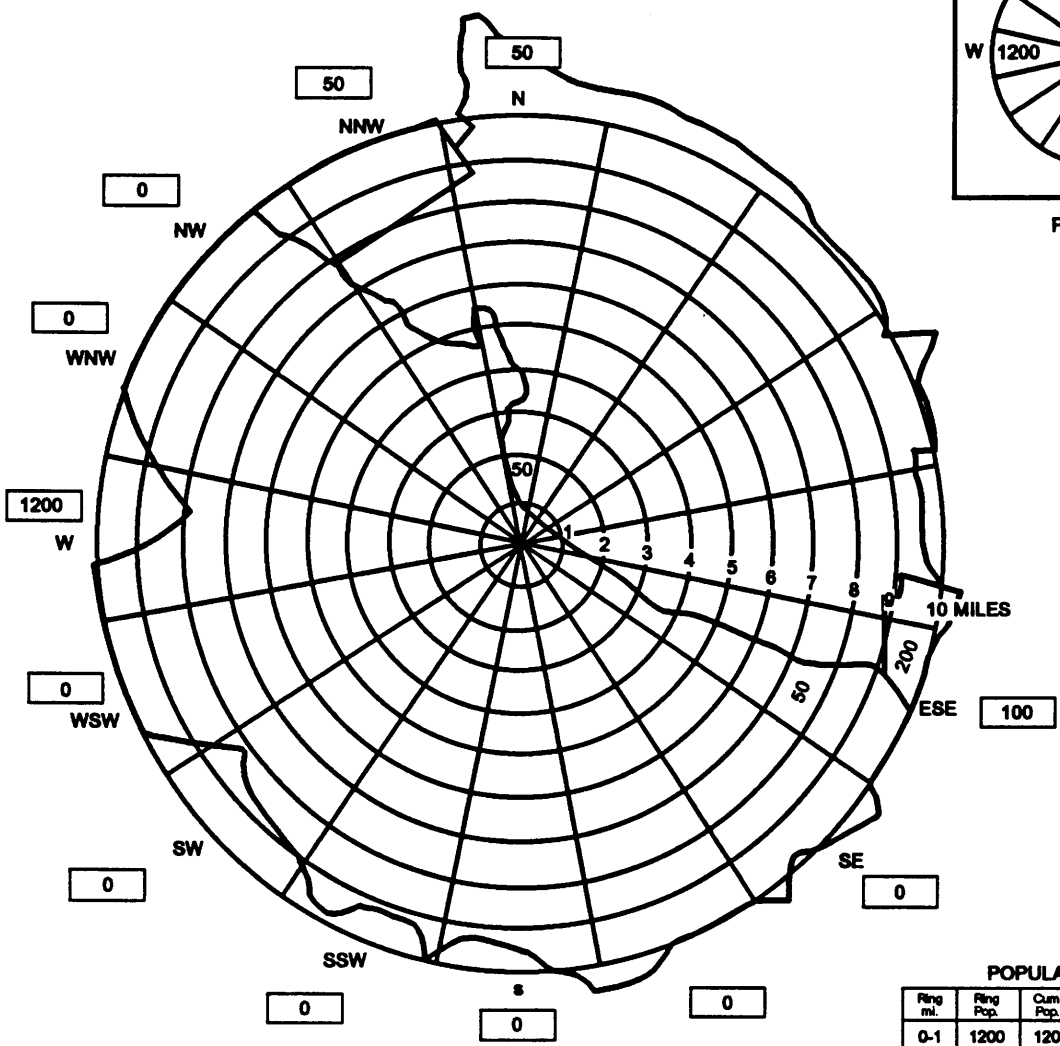


Ring mi.	Ring Pop.	Cum. Pop.	Ring mi.	Ring Pop.	Cum. Pop.
0-1	0	0	5-6	216	1349
1-2	517	517	6-7	331	1680
2-3	289	806	7-8	331	2011
3-4	117	923	8-9	251	2262
4-5	210	1133	9-10	252	2514

Vogtle Electric Generating Plant

1987 PERMANENT POPULATION WITHIN THE VOGTLE ELECTRIC GENERATING PLANT PLUME EXPOSURE EPZ

FIGURE v



POPULATION TOTALS

Ring mi.	Ring Pop.	Cum. Pop.	Ring mi.	Ring Pop.	Cum. Pop.
0-1	1200	1200	5-6	0	1300
1-2	50	1250	6-7	50	1350
2-3	0	1250	7-8	50	1400
3-4	50	1300	8-9	0	1400
4-5	0	1300	9-10	0	1400
			10+	200	1400

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Vogtle Electric Generating Plant	TRANSIENT AND SPECIAL FACILITY POPULATION (EMPLOYEES, VISITORS TO RECREATIONAL AREAS WITHIN THE VOGTLE ELECTRICGENERATING PLANT PLUME EXPOSURE EPZ)
	FIGURE vi

A. ASSIGNMENT OF RESPONSIBILITIES

In the event of a situation at the Vogtle Electric Generating Plant (VEGP) which requires activation of the emergency response organizations, various State, local, Federal, and private sector organizations may be required to contribute to the emergency response. This section describes the responsibilities of these organizations. Table A-1 lists primary response organizations and the emergency title of the individual in charge.

A.1 VOGTLE ELECTRIC GENERATING PLANT

Vogtle Electric Generating Plant (VEGP) accepts the responsibility of maintaining an effective Emergency Plan and maintaining proper preparedness through the maintenance of formal procedures for implementing the Plan as identified in appendix 9, the training of personnel in accordance with section O, the maintenance of necessary equipment, and continuing relationships with various governmental agencies and private organizations as identified in this section. The following tasks are part of VEGP's responsibility:

1. Recognize and declare the existence of an emergency condition.
2. Classify the event in accordance with the methodology described in section D of this Plan.
3. Notify appropriate VEGP personnel and offsite authorities.
4. Take corrective actions to mitigate the severity of the accident.
5. Request additional support as deemed necessary.
6. Establish and maintain effective communications within VEGP and with offsite response groups as described in section F.
7. Continuously assess the status of the accident and periodically communicate the status information to the appropriate response groups. This includes the collection and evaluation of onsite and offsite radiological monitoring data.
8. Take protective measures onsite and recommend protective measures to offsite authorities.
9. Monitor and control radiation exposures of all personnel responding to the emergency and under the direction of VEGP.

10. Provide emergency information to the public through periodic press briefings in conjunction with State and local officials.

The VEGP emergency response is carried out under the control of the emergency director. The onsite organization to support these activities is described in section B of this Plan.

A.2 STATE OF GEORGIA

Georgia has developed a Radiological Emergency Response Plan 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. It is a plan of action developed for use by local and State government officials in preparing for, responding to, and dealing with situations throughout the State.

In accordance with the Governor's Executive Order dated July, 1992, the Georgia Department of Natural Resources (DNR) has the lead agency responsibility for responding to all peacetime radiological emergency situations throughout Georgia. Under the Emergency Support Function (ESF) 10, Hazardous Materials of the GEOP, which was developed pursuant to the Governor's Executive Order, the DNR radiological emergency response team assesses the radiological conditions at the site of an incident and 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. Under the statutory authority granted to GEMA, the preestablished plans and procedures of eight State agencies and local government organizations are automatically activated and coordinated by the State Operations Center (SOC) in Atlanta or the GEMA Forward Emergency Operations Center (FEOC) in Waynesboro. In the event of a radiological emergency, GEMA has broad legal authority to take whatever actions are deemed necessary to protect the health and safety of Georgia citizens. This authority includes, but is not limited to, evacuation of people from private property, control of public and private transportation corridors, and utilization of all public facilities in support of efforts to protect life and property.

The fundamental legislation providing the basis for emergency response by civil authorities is the Georgia Emergency Management Act of 1981, as amended. This Act in part creates a State Emergency Management Agency; authorizes the creation of local organizations for emergency management; confers upon the Governor and upon the executive heads of governing bodies of the State certain emergency powers; and provides the rendering of mutual aid among the political subdivisions of the State, and with other states, and with the Federal Government.

Other documents providing bases for emergency response include:

1. Governor's Executive Order, August 25, 1981: Recognizes the Georgia Emergency Management Act of 1981, which redesignates the State Civil Defense Agency as the Georgia Emergency Management Agency.
2. Georgia Emergency Operations Plan: Contains the rules and regulations for operations, should an emergency or disaster occur in the State. The Plan is binding on all local governments authorized or directed to conduct emergency management operations and on all State departments or agencies.
3. Radiation Control Act, Georgia Code Annex 88-1301 et seq: Delegates emergency powers during radiation emergencies to the Department of Natural Resources, Division of Environmental Protection.
4. Georgia Water Quality Control Act of 1974, as amended, Act No. 870.
5. Georgia Air Quality Control Act of 1978, as amended, Act No. 794.
6. Georgia Transportation of Hazardous Materials Act of 1979, Act No. 487.

The duties and responsibilities of the principal and support agencies of the State of Georgia are summarized below. A detailed discussion of the State's response is contained in the Georgia Radiological Emergency Response Plan.

A.2.1 PRINCIPAL AGENCIES OF THE STATE OF GEORGIA

The following State agencies are assigned lead responsibility for radiation emergencies and for overall State preparedness, respectively:

1. GEORGIA EMERGENCY MANAGEMENT AGENCY
   a. GEMA is responsible for general State emergency planning and exercises overall direction and control of emergency or disaster operations as assigned by Executive order.
   b. The director of emergency management as the State disaster coordinator coordinates emergency activities of DNR with overall State response efforts.

c. During an emergency, the State of Georgia, acting through GEMA, and the State of South Carolina, acting through the South Carolina Emergency Preparedness Division, will coordinate their emergency response efforts including such matters as radiological dose assessment, protective action decisions, and activation of the prompt notification system for alerting the public.

d. On behalf of the Governor, activate all or portions of the GEOP to provide the necessary overall coordinated response.

e. Provide communications for the State Operations Center (SOC), as required, through 24-hour radio network, commercial telephone, National Warning System (NAWAS), or other communications systems. Communication links will be established in accordance with existing procedures with the SOC in Atlanta as well as with additional State and local emergency response personnel within the plume exposure pathway and ingestion EPZs. These functions will initially be handled from the SOC and will then be transferred to the Forward Emergency Operations Center (FEOC) once activated.

f. Establish the FEOC if necessary. The FEOC will be established at the Burke County Emergency Operations Center (EOC) Building, on the corner of Georgia Highway 24 and Perimeter Road in Waynesboro. Upon the decision of the GEMA director to activate the FEOC, the GEMA Mobile Communications Vehicle (MCV)may be dispatched to Burke County and arrive within driving time plus 30 min for mobilization. When dispatched, it may be used to transport certain State responders. The GEMA MCV will be located adjacent to the Burke County EOC and will provide support services to State agencies at the FEOC. The Burke County EOC has the necessary electrical hook-ups to provide long term electrical services to the vehicle. In addition to providing backup for the communications described in the preceding paragraph, the MCV provides backup communications for State agencies other than GEMA (Department of Transportation, the Georgia State Patrol, the Georgia Department of Natural Resources - Law Enforcement Section, and the Georgia Forestry Commission). In addition, the MCV has an on-board weather station that can provide wind speed and direction, barometric pressure and relative humidity. It also has micro down-link capabilities and a video camera system.

g. Maintain liaison with DNR radiation emergency coordinator (REC).

h. Activate public emergency warning and/or evacuation procedures, as needed, pursuant to the GEOP.

i. Assist radiological monitoring and provide instrumentation.

j. Provide radiological monitoring training assistance.

k. Assist in area security and control; request National Guard assistance if needed.

l. Provide for the coordination of land and air transportation for emergency personnel as requested.

m. Coordinate public information releases in cooperation with State and local agencies.

n. Communication links will be established with the state of South Carolina Emergency Preparedness Division and DOE-SRS to ensure efficient coordination of emergency response activities.

2. DEPARTMENT OF NATURAL RESOURCES

a. DNR is assigned primary responsibility by Executive Order for implementation and administration of the State radiological emergency response function.

DNR will:

(1) Dispatch radiation emergency teams as needed.

(2) Perform radiation survey and monitoring.

(3) Provide radiation safety training.

(4) Direct recovery/reentry operation and provide health physics control of contaminated areas.

b. A radiation emergency coordinator (REC) in the Environmental Protection Division (EPD) interacts with appropriate State, local, and Federal agencies and private organizations to direct all necessary radiation control actions. The REC is on call 24 h and will be notified by the GEMA duty officer.

c. In situations beyond local government control, DNR provides program assistance in the application of available personnel, equipment, and technical expertise as required.

d. DNR requests State support agency(s) and Federal assistance pursuant to the GEOP as required.

e. DNR will provide for health physics escort of media and other personnel within the plume exposure pathway emergency planning zone (EPZ) as conditions allow if access controls have been established.

A.2.2 State Support Agencies in Georgia

The following State agencies are prepared to provide related support of this function as indicated pursuant to the GEOP:

1. DEPARTMENT OF HUMAN RESOURCES

   Coordinate emergency health and social assistance pursuant to the GEOP.

2. DEPARTMENT OF PUBLIC SAFETY

   a. As applicable, assume control over the onsite situation until the arrival of radiation safety personnel.

   b. Maintain liaison with DNR REC.

   c. Provide communication linkage as required.

   d. Provide land or air transportation or escort as available for radiation safety personnel, other necessary personnel, or equipment.

   e. Assist in radiological monitoring as required.

   f. Provide law enforcement assistance for area security or recovery of lost or stolen radioactive material.

   g. Coordinate with DNR law enforcement and local police.

   h. Assist in public warning or evacuation as required.

3. DEPARTMENT OF AGRICULTURE

   a. Collect samples of food products, livestock, produce, and dairy products, as necessary.

   b. Restrict the sale, production, distribution, and warehousing of livestock, produce, dairy, and processed food products contaminated beyond safe consumption.

   c. Assist in disposal of contaminated products.

d. Coordinate these activities with United States Department of Agriculture (USDA) personnel.

e. Maintain liaison with DNR REC for assessing degree of contamination.

4. DEPARTMENT OF TRANSPORTATION

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

b. As requested, provide land, air, or water transportation for radiation safety personnel, other necessary personnel, or equipment.

c. Provide communications linkage as required.

d. Assist State Patrol and DNR law enforcement in security and radioactive material escort as requested.

e. Provide heavy equipment and personnel as required.

5. FORESTRY COMMISSION

a. Provide land or air transportation as requested for radiation safety personnel, other necessary personnel, or equipment.

b. Provide personnel and heavy equipment as required to assist in recovery operations.

c. Provide communication linkage as necessary.

6. DEPARTMENT OF ADMINISTRATIVE SERVICES

a. Provide for expeditious approval and purchase of equipment and supplies essential to emergency operations.

b. Provide land transportation vehicles for emergency personnel.

c. Provide emergency communications equipment and repair.

A.3 BURKE COUNTY, GEORGIA

All 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. Agencies within Burke County which have a primary role in radiological emergency planning and response include the Emergency Management Agency and the Sheriff's Department. A detailed discussion of the Burke County response is contained in Annex D to the Georgia Radiological Emergency Response Plan.

The chairman, Burke County Board of Commissioners, or his predesignated alternate (the vice chairman, any of three other commissioners, the county administrator, or the EMA director), may declare an emergency and implement offsite protective actions. However, upon the declaration of an emergency situation or the decision to implement protective actions the emergency management agency director is authorized to represent the chairman, Burke County Board of Commissioners.

A.3.1 Emergency Management Agency

Principal activities include the following:

1. Receive notification from VEGP and GEMA.
2. Maintain communications with VEGP on emergency situation status.
3. Provide information to other Burke County response elements, to the media, and to the public.
4. Activate the public notification system, if required.
6. Coordinate Burke County emergency response activities.
7. Activate and direct operations at the designated reception and care facility.
8. Implement protective action recommendations as requested by GEMA or the chairman of the Burke County Board of Commissioners or his predesignated designee.

A.3.2 Sheriff's Department

Principal activities include the following:

1. Provide backup public notification.
2. Control access to the plume exposure pathway EPZ.
3. Provide traffic control and law enforcement measures in the event of an evacuation.

A.3.3 Fire Support

VEGP has established an agreement with the Burke County EMA to provide, upon request, offsite fire support to the VEGP Fire Brigade. 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 and is included by reference in Appendix 2.

A.3.4 Others

Other county resources, including the Fire Department, Health Department, and Public Works Department, may be mobilized as described in Annex D to the Georgia Radiological Emergency Response Plan.

A.4 STATE OF SOUTH CAROLINA

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 provides for the radiological emergency response in the event of a radiological accident at a fixed nuclear facility located in the state or in states contiguous to South Carolina. 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. State radiological emergency response forces will be operational upon notification of a radiological emergency. The response functions of involved agencies are described in the SCORERP

and the South Carolina Technical Radiological Emergency Response Plan (SCTRERP). A VEGP Site Specific Radiological Emergency Response Plan (Part 5 to SCORERP) addresses those matters that pertain directly to VEGP.

Upon being advised by EMD that a radiological emergency exists, the Governor or his designated representative declares an emergency condition. Under the Governor's direction, the total and combined efforts of the state and local governments will be utilized to nullify or reduce the effects of offsite radiological hazards resulting from a nuclear plant accident. As deemed necessary, the Governor may transfer the direction, personnel, or functions of state agencies. All radiological emergency response organizations are prepared to react on a 24-h basis, and they are capable of continuous operations for a protracted period. Directors of state agencies, departments, and commissions are responsible for ensuring that their agencies' radiological emergency response responsibilities are accomplished. Designated county officials are responsible for emergency response within their jurisdictions.

The legal basis and authority for the emergency response of the State of South Carolina include:

1. South Carolina Constitution, Article IV, Annex 17, Appendix A
2. South Carolina Code of Laws ANN, 25-1-420 through 25-1-460
3. Regulation 58-1, Local Government Preparedness Standards; and Regulation 58-101, State Emergency Preparedness Standards, South Carolina Code of Regulations.
4. The South Carolina Emergency Operations Plan (SCEOP).
5. The South Carolina Operational Radiological Emergency Response Plan (SCORERP).
6. The South Carolina Technical Radiological Emergency Response Plan (SCTRERP).

The duties and responsibilities of the principal and support agencies of the State of South Carolina are summarized below.

A.4.1 Principal Agencies of the State of South Carolina

The following state agencies are assigned primary responsibilities for overall state radiological emergency management and response operations.

1. Office of the Governor

   a. Upon being advised that a radiological emergency exists, the Governor declares an emergency condition which results in the activation of EMD, DHEC, and other state agencies to deal with the situation, in accordance with their emergency response plans.

   b. The Governor's press secretary or authorized representative will direct and control public information service activities and serve as the Governor's official representative/spokesperson regarding the preparation and release of emergency information by state government.

2. Office of the Adjutant General

   Emergency Management Division

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

   b. The director of EMD is the principal advisor to the Governor for emergency response. He coordinates with DHEC the recommended protective measures based on DHEC evaluation and assessment of the radiological emergency at VEGP.

3. Department of Health and Environmental Control

   a. The Department of Health and Environmental Control (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-SRS and VEGP. DHEC will obtain and coordinate radiological assistance resources from the Federal Government, other states, and the nuclear industry as required.

   b. The Bureau of Solid and Hazardous Waste, Nuclear Emergency Planning (NEP) Section within DHEC has the direct responsibility to provide technical assistance and resources necessary to evaluate and assess the consequences of a radiological incident and to provide protective action guidance to State and local authorities. NEP is responsible for radiological surveying and monitoring of the environment, including the collection and analyses of samples of soil, air, water, milk, and crops.

   c. The Manager, Nuclear Emergency Planning Section is the individual responsible for implementing the SCTRERP; providing EMD with recommended protective actions as well as recovery and reentry guidelines. NEP has 24-h accident response capability with EMD.

A.4.2 State Support Agencies in South Carolina

The following state agencies are prepared to provide related support pursuant to SCEOP and SCORERP.

1. Department of Public Safety (Highway Patrol Division)

   a. Regulate and control traffic on the highways of the state.

   b. Have its Highway Patrol warning point serve as the backup means of notification from the VEGP.

   c. Provide for a 24-h communication system with VEGP, EMD, and DHEC.

   d. Support the State Law Enforcement Division in security and other law enforcement activities.

   e. Assist in transportation accident assessment and recovery operations.

f. As requested, provide transportation for radiation safety personnel, other emergency response personnel, or equipment.

g. Provide heavy equipment and personnel as requested.

2. State Law Enforcement Division (SLED)

a. Coordinate law enforcement activities, particularly during evacuation.

b. Assume control of areas suspected of contamination until the arrival of radiation safety personnel.

c. Assist in search and rescue.

d. Coordinate and assist in securing the SEOC,waterways and evacuated areas.

f. Augment communication system and warning points operation.

3. Forestry Commission

a. Provide land or air transportation as requested for emergency response personnel or equipment.

b. Provide fire control service.

c. Assist in decontamination, in coordination with DHEC.

d. Provide radio operators for the SEOC to operate permanently installed Forestry Commission radio equipment.

e. Maintain radio contact with all Forestry Commission elements in affected counties.

4. Department of Natural Resources

a. Coordinate search and rescue operations.

b. Provide air transportation in support of radiological monitoring operations.

c. Augment public warning operations and public information services.

d. Assist in law enforcement.

5. Department of Social Services

a. Coordinate shelter operations which includes registration of evacuees.

b. Coordinate all emergency welfare services to evacuees such as feeding, clothing, and information.

c. Administer and maintain individual and family assistance program.

d. Augment public information service to evacuees.

6. Clemson University Cooperative Extension Service

a. Maintain updated agricultural data required for radiological assessment in support of DHEC.

b. Assist in locating contaminated livestock, feed, milk, and other farm products for disposal or decontamination by DHEC.

7. Department of Agriculture

a. Restrict the sale, production, distribution, and warehousing of livestock, produce, dairy and processed food products contaminated beyond safe consumption.

b. Assist DHEC in disposal of contaminated products.

d. Coordinate these activities with the United States Department of Agriculture (USDA).

A.5 AIKEN, BARNWELL, AND ALLENDALE COUNTIES, SOUTH CAROLINA

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.

There are limited portions of Aiken, Barnwell, and Allendale counties which 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. It is the chairman's responsibility to initiate actions and provide direction and control at a level consistent with the specific incident.

Agencies within these counties which have a primary role in radiological emergency planning and response include the Emergency (Disaster) Preparedness Agency (EPA) and the Sheriff's Department. A detailed discussion of the county response is contained in Annex Q2 to each county's emergency operations plan.

The chairman of the county council, or his predesignated alternate (the vice chairman, county administrator, or EPA director) may declare an emergency within his respective county and implement offsite protective actions. The chairman or his designee is available 24 h per day.

The locations of the county EOCs are indicated in Table C-2. Principal emergency response activities include the following:

A.5.1 Aiken County Emergency Preparedness Division, Allendale County Emergency Preparedness Agency, Barnwell County Emergency Management Agency.

a. Maintain communications with South Carolina EMD and VEGP on emergency situation status.

b. Provide information to other county response elements.

c. Activate the county EOC.

d. Activate public notification system if required.

e. Coordinate county emergency response activities.

f. Activate and direct operations at the designated reception facility.

g. Implement protective actions as requested by South Carolina EMD or the chairman, county council, or his predesignated designee.

A.5.2 Sheriff's Department

a. In Barnwell and Aiken Counties, receive notification from VEGP and South Carolina EMD, as primary warning points. This function is performed by the Allendale County Central Dispatch.

b. Provide backup public notification.

c. Provide traffic control and law enforcement in the event of an evacuation.

d. Coordinate access to the plume exposure pathway EPZ.

e. Provide security at EOC.

Other county resources, including Fire Department, Public Works Department, Emergency Medical Services, and Department of Social Services, may be mobilized as described in the county emergency operations plan.

A.6 DEPARTMENT OF ENERGY - SAVANNAH RIVER SITE

A significant portion of the plume exposure pathway EPZ falls within the site boundary of the Savannah River Site (SRS). The United States Department of Energy - Savannah River Operations consists of lands owned or leased by the Federal government. As such, DOE-SR is responsible for the direction and control of all emergency response actions on the SRS. See memorandum of agreement between DOE - Savannah River Operations Office and Georgia Power Company, as assigned to SNC, (appendix 5).

A.7 MEDICAL SUPPORT

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. Agreements with Burke Medical Center in Waynesboro, Georgia, and Doctors Hospital in Augusta, Georgia, have also been established for treatment of injured and contaminated individuals. Support provided includes, but is not limited to, Emergency medical services, ambulances, and emergency medical technicians. Request for medical support will be made by the control room or site security to the Burke County EMAs of the Incident Command Post, as applicable, based on the nature and timing of the event. Copies of these agreements are maintained in the SNC document management system and are included in Appendix 2. For radiological medical emergency training, agreements have been established with Tetra Tech.

A.8 PRIVATE SECTOR ORGANIZATIONS

1. BECHTEL POWER CORPORATION

   GPC/SNC has established an agreement with Bechtel Power Corporation to obtain engineering and construction services which may be required following an accident. Bechtel's assistance will not be required during the early stages of the emergency response but is more likely to be requested during recovery activities.

2. WESTINGHOUSE

SNC has established an agreement with Westinghouse to obtain general services related to nuclear steam supply system (NSSS) operations during and following an accident situation. Westinghouse provides a capability to respond on a 24-hour-a-day basis.

3. VOLUNTARY ASSISTANCE GROUP

SNC 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. Copies of these agreements are included in the INPO Emergency Resources Manual.

A.9 FEDERAL GOVERNMENT SUPPORT

The resources of the Federal agencies appropriate to the emergency condition would be made available in accordance with the National Response Plan. The emergency director is specifically authorized to request Federal assistance on behalf of VEGP under the provisions of the National Response Plan. In addition to the NRC, other agencies which may become involved are the DOE, the Federal Emergency Management Agency, the Environmental Protection Agency, the Department of Health and Human Services, the Department of Transportation, and the Department of Agriculture.

A.10 CONCEPT OF OPERATIONS

The emergency preparedness program for VEGP requires the coordinated response of several organizations. The emergency organization for VEGP is described in detail in section B of this plan. The emergency director is the key individual in the VEGP emergency organization; one of his nondelegable responsibilities is the decision to notify the NRC and authorities responsible for offsite emergency measures. The interfaces among the emergency organizations are shown on figure A-1.

A.10.1 Continuous Communication Capability

The emergency director will initiate the activation of the emergency response organization by contacting the states of Georgia and South Carolina, counties within the plume exposure pathway EPZ, the SRS, and the NRC. All these organizations can be contacted 24 h a day. The state and local agencies have continuously manned communication links for the purpose of receiving notification of a radiological emergency. The SRS is a continuously operating facility and can be contacted at all times. The Federal agencies which may be requested by VEGP to provide assistance can be notified by contacting the NRC on a dedicated communication link, the Emergency Notification System (ENS) line.

A.10.2 State of Georgia and Burke County Operations

The State of Georgia and Burke County response is conducted in accordance with the following framework as presented in the Georgia Radiological Emergency Response Plan:

1. DNR is the lead State Agency for responding to peacetime radiation emergencies. The DNR radiation emergency coordinator (REC) is responsible for directing DNR's response. The response required may be of varying magnitudes depending upon the nature of the emergency.
2. In the case of occurrences of limited severity and complexity, direction and control of response and recovery operations will be assumed by the DNR REC; GEMA will be kept informed of conditions in order to facilitate GEMA response and EOP activation as deemed necessary.
3. When necessitated by the magnitude and severity of an occurrence, GEMA will activate the EOP and coordinate overall response and recovery operations, with the DNR REC coordinating radiation protection activities through the State disaster coordinator (GEMA).
4. The State is notified of an emergency at VEGP by the VEGP emergency director who has a plant communicator call the GEMA EOC communications center on the emergency notification network telephone. The GEMA EOC 24-h duty officer notifies the GEMA director and the DNR radiation emergency coordinator. Each of these individuals can cause the declaration of an emergency and activation of the EOC. The GEMA director has authority to activate directly; the REC may recommend activation to the

Governor or the GEMA director who makes the emergency declaration. In either case, the DNR radiation emergency coordinator is responsible for the technical direction of the offsite radiological response. If the EOC has been activated, he reports to the State disaster coordinator (GEMA).

Recommendations and decisions to declare a state of emergency are based upon DNR's ability to effectively protect the public with little assistance, or, in contrast, the need for a coordinated, multiagency effort.

5. As the designated agency to administer NRC Agreement State Programs, DNR will be the principal radiation emergency response support agency due to the probable requirements for special techniques, equipment, and expert personnel.
6. To the extent available, local resources, personnel authority, and emergency plans will be employed in response to radiation emergencies.
7. When requested to assist in response and recovery efforts to radiation emergencies, personnel from local and other State agencies will normally be expected to perform functions and activities in which they have expertise but may perform limited radiation safety functions under the guidance of the DNR REC.

The organizational structures for State and county operations are illustrated on figures A-2 and A-3, respectively. The Georgia Radiological Emergency Response Plan and Annex D to the Plan provide the bases for 24-h-per-day radiological emergency response capability for extended periods.

A.10.3 State of South Carolina and County Operations

The state of South Carolina and county response is conducted in accordance with the following framework as presented in the South Carolina Operational Radiological Emergency Response Plan:

1. The Emergency Management Division (EMD) is responsible for establishing and directing the State EOC; coordinating offsite support from state, federal, and other support agencies; determining and directing protective actions, and providing for a 24-h notification capability.

2. The Department of Health and Environmental Control (DHEC) is responsible for providing 24-h accident response capability, providing radiological technical support, conducting or coordinating offsite monitoring, and making recommendations to EMD for protective action.

3. The state and counties are notified of an emergency at VEGP by the VEGP emergency director who has a plant communicator call the South Carolina warning point and the county warning points (sheriff or central dispatchers) on the emergency notification network. The South Carolina warning point notifies EMD and DHEC 24-h duty officers by telephone or beeper. The EMD then contacts the counties to ensure warning messages have been received and contacts the governor's office for direction, control, and guidance. As necessary EMD alerts state response forces, activates the state EOC and dispatches representatives to the SNC EOF and ENC. DHEC verifies with VEGP the information received from the South Carolina warning point; confirms the information with EMD; and after an assessment of the emergency situation, recommends protective measures for the state of South Carolina and affected county/counties, through the EMD. The Governor or his designated representative (the Governor's executive assistant, the director of the Governor's Emergency Management Office, or the emergency management coordinator) can declare an emergency and order protective actions.

4. The SEOC will coordinate the offsite emergency response activities of State agencies, local governments, Federal agencies, and the State of Georgia. The director of EMD will be in charge of SEOC.

5. If the immediacy of the emergency is such that the SEOC is not yet operational, and there is insufficient time for DHEC to confirm the VEGP's assessment, local government will initiate those protective actions recommended by VEGP.

6. To the extent available, local resources will be employed in response to emergencies at VEGP. The State arranges for emergency response capabilities that are not available at the local government level.

7. The State and county governments will activate their radiological emergency response plans as warranted by the emergency action levels.

The organizational structure for State operations is illustrated on figure A-4. The emergency response organizations of each of the counties of Aiken, Barnwell, and Allendale are presented in figures A-5, A-6, and A-7, respectively.

A.10.4 Savannah River Site

The DOE-SR 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 on-plant response operations to protect the health and safety of SRS personnel. DOE will provide for emergency notification and, as needed, evacuation, monitoring, decontamination, and immediate life saving medical treatment of non SRS personnel on plant. DOE will also provide access control for SRS areas.

DOE will provide initial radiological monitoring and assessment support to the State of South Carolina under the DOE Radiological Assistance Program (RAP). This includes projected release dispersion information and offsite radiological monitoring and assessment assistance. SRS will also coordinate public affairs activities with the State of South Carolina, SNC and GPC.

By memorandum of agreement between DOE-SR and GPC, as assigned to SNC (see appendix 5), DOE will provide radiological monitoring within about 10 miles of VEGP in the State of South Carolina.

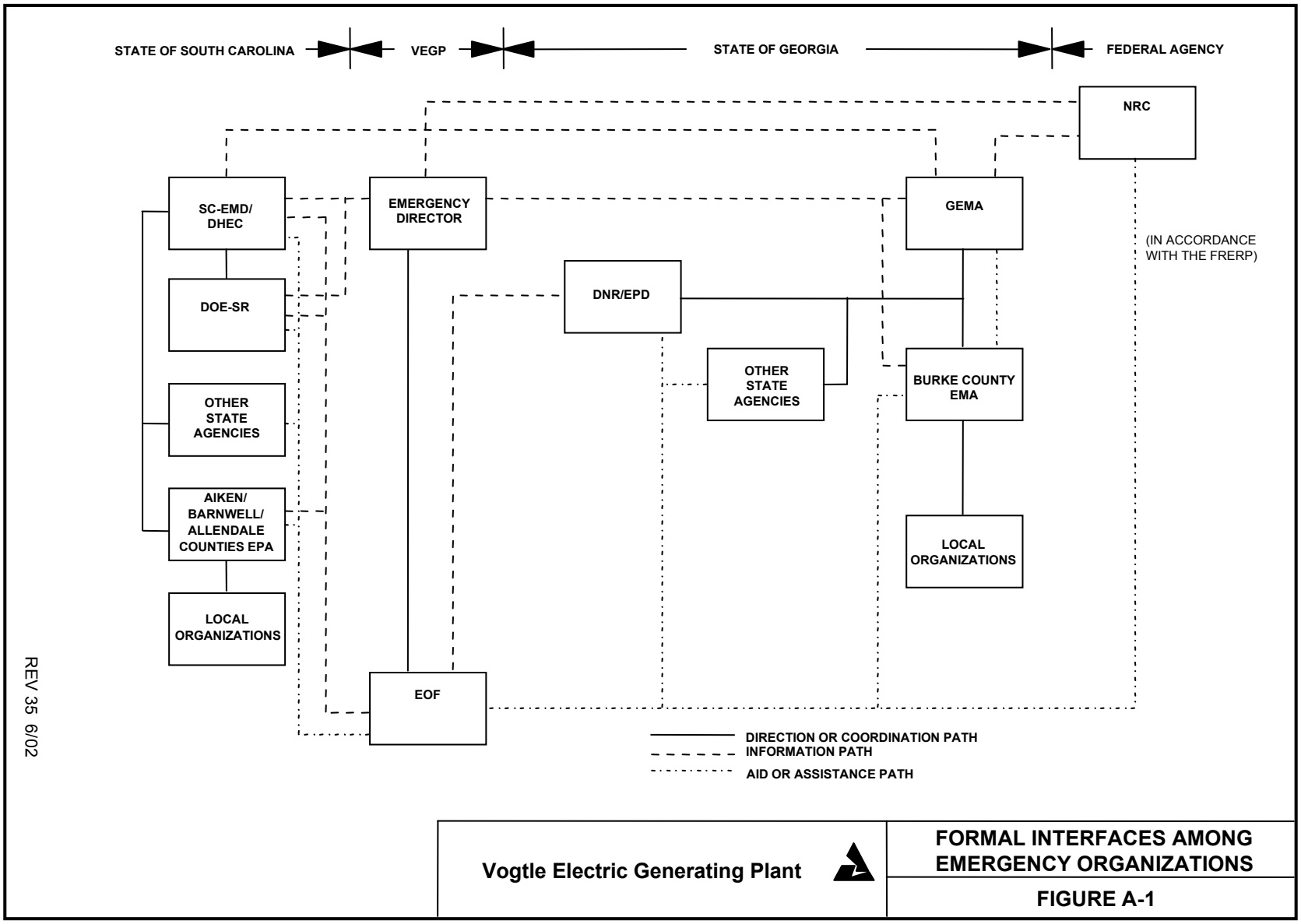
TABLE A-1 (SHEET 1 OF 2)

RESPONSIBLE INDIVIDUALS OF PRIMARY RESPONSE ORGANIZATIONS

Organization	Individual in Charge of Emergency Response
Vogtle Electric Generating Plant	Emergency director
State of Georgia	Governor
Georgia Emergency Management Agency	State disaster coordinator
Georgia Department of Natural Resources	Radiation emergency coordinator
Burke County, Georgia	Chairman, Burke County Board of Commissioners
Burke County Emergency Management Agency	Emergency Management Agency director
State of South Carolina	Governor
South Carolina Department of Health and Environmental Control	Manager, Nuclear Emergency Planning Section
South Carolina Office of the Adjutant General, Emergency Management Division	Emergency Management Division director
Aiken County, South Carolina	Chairman, Aiken County Council
Aiken County Emergency Preparedness Division	Emergency Preparedness Division coordinator
Aiken County Law Enforcement Communications Center	Sheriff
Barnwell County, South Carolina	Chairman, Barnwell County Council
Barnwell County Emergency Management Agency	Coordinator, Disaster Preparedness Agency
Barnwell County Sheriff's Office	Sheriff
Allendale County, South Carolina	Chairman, Allendale County Council

TABLE A-1 (SHEET 2 OF 2)

Organization	Individual in Charge of Emergency Response
Allendale County Emergency Preparedness Agency	Director, Emergency Preparedness Agency
Allendale County Sheriff's Office	Sheriff
Department of Energy, Savannah River	Manager, DOE-SR

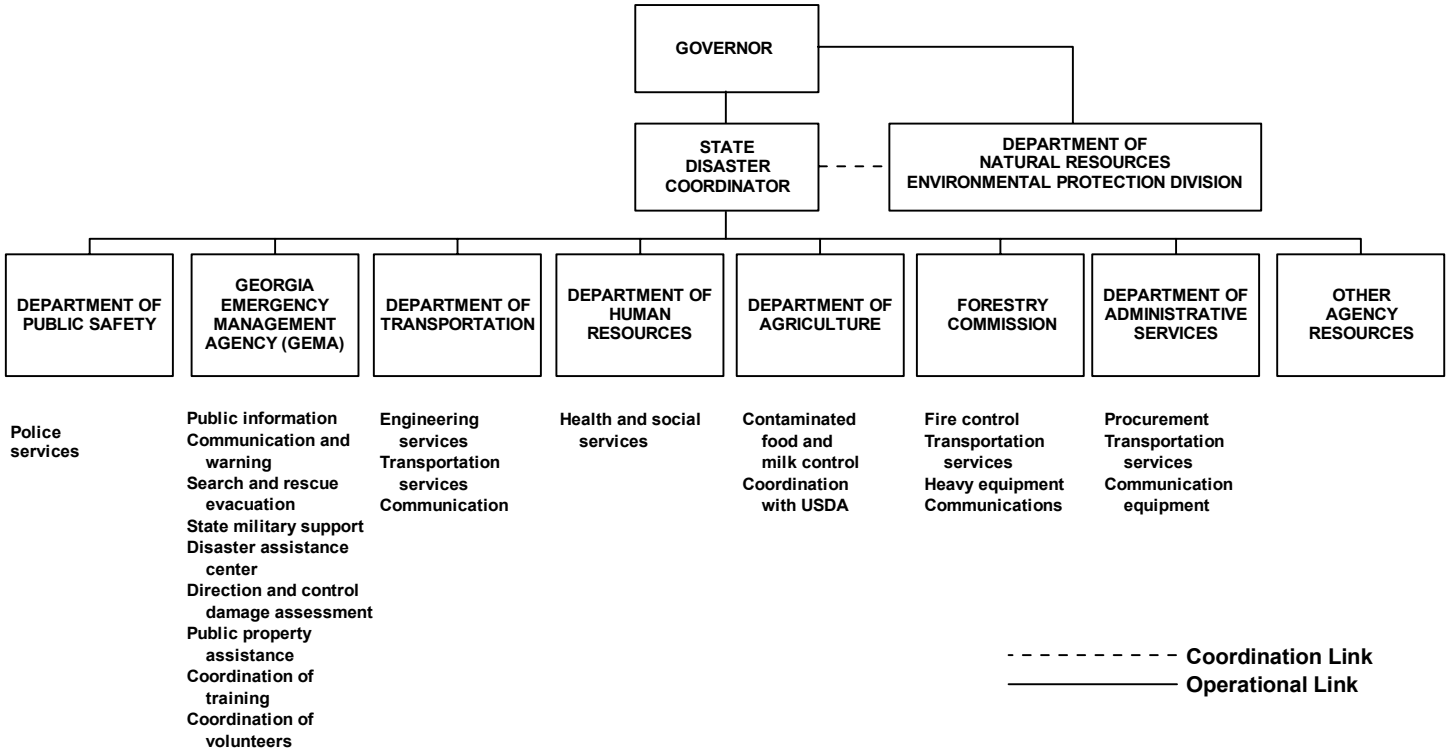


REV 35 6/02

Vogtle Electric Generating Plant

FORMAL INTERFACES AMONG EMERGENCY ORGANIZATIONS

FIGURE A-1

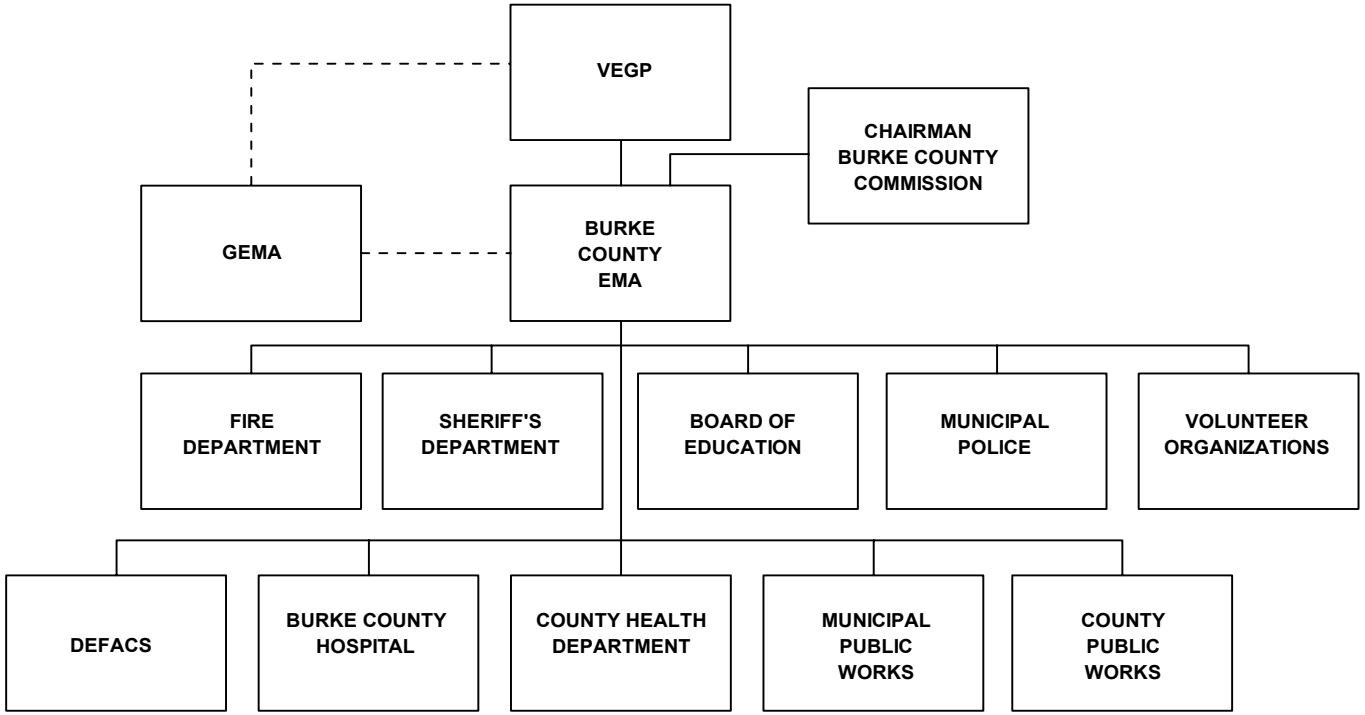


REV 22 5/95

Vogtle Electric Generating Plant

STATE OF GEORGIA OPERATING IN A DECLARED RADIOLOGICAL EMERGENCY

FIGURE A-2

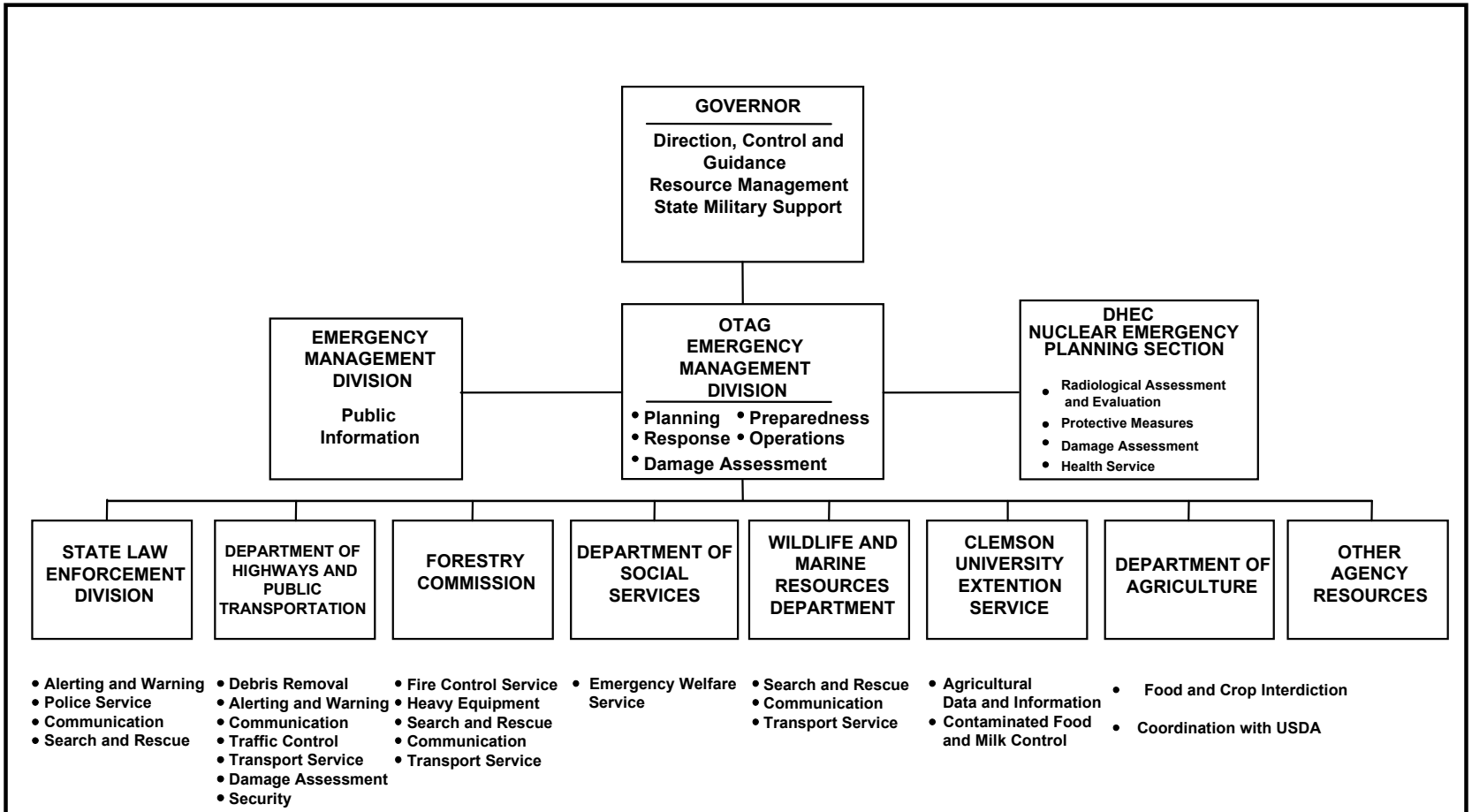


REV 2 11/85

Vogtle Electric Generating Plant

OPERATIONAL RELATIONSHIPS AMONG BURKE COUNTY RESPONSE ORGANIZATIONS

FIGURE A-3

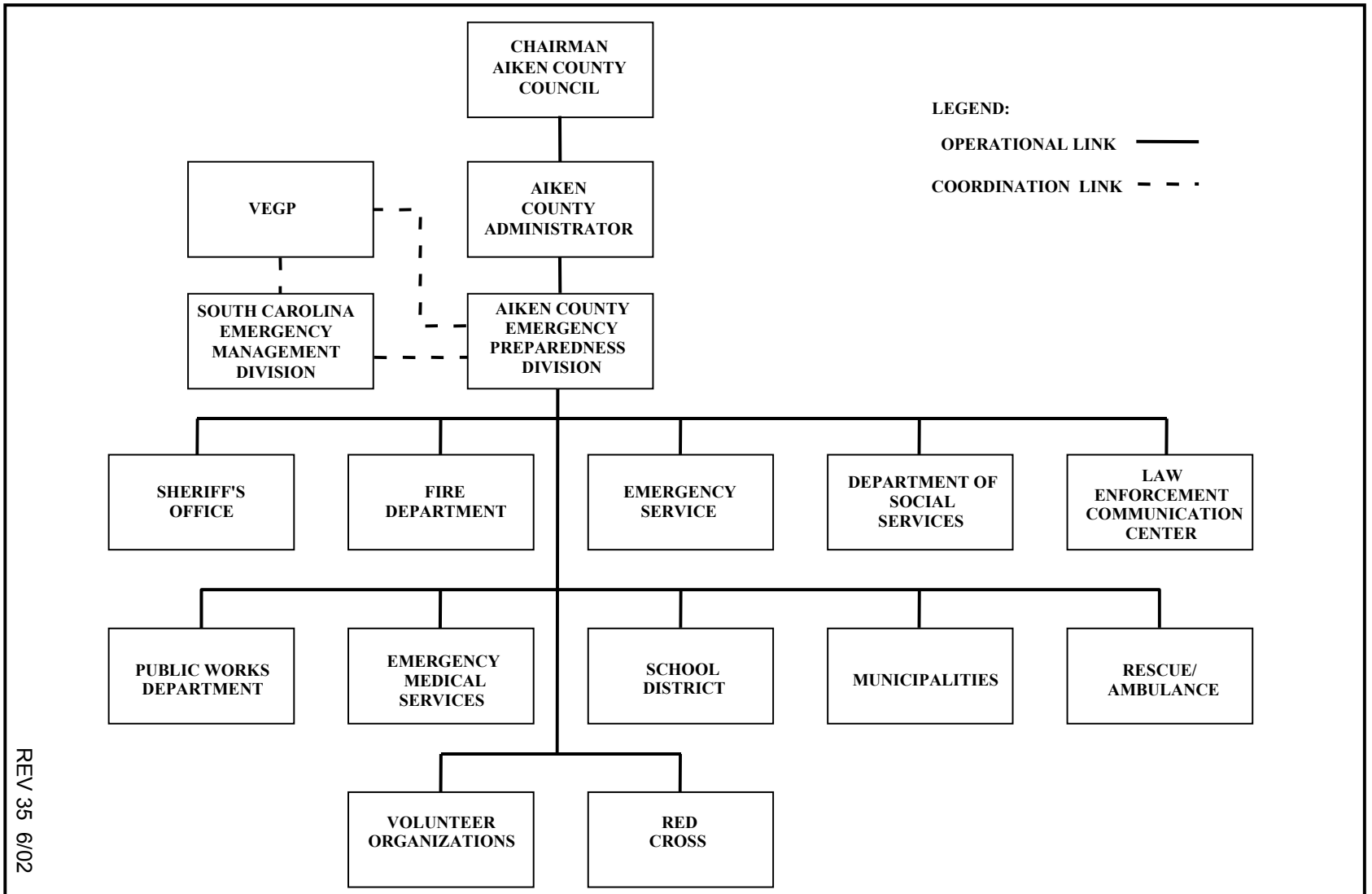


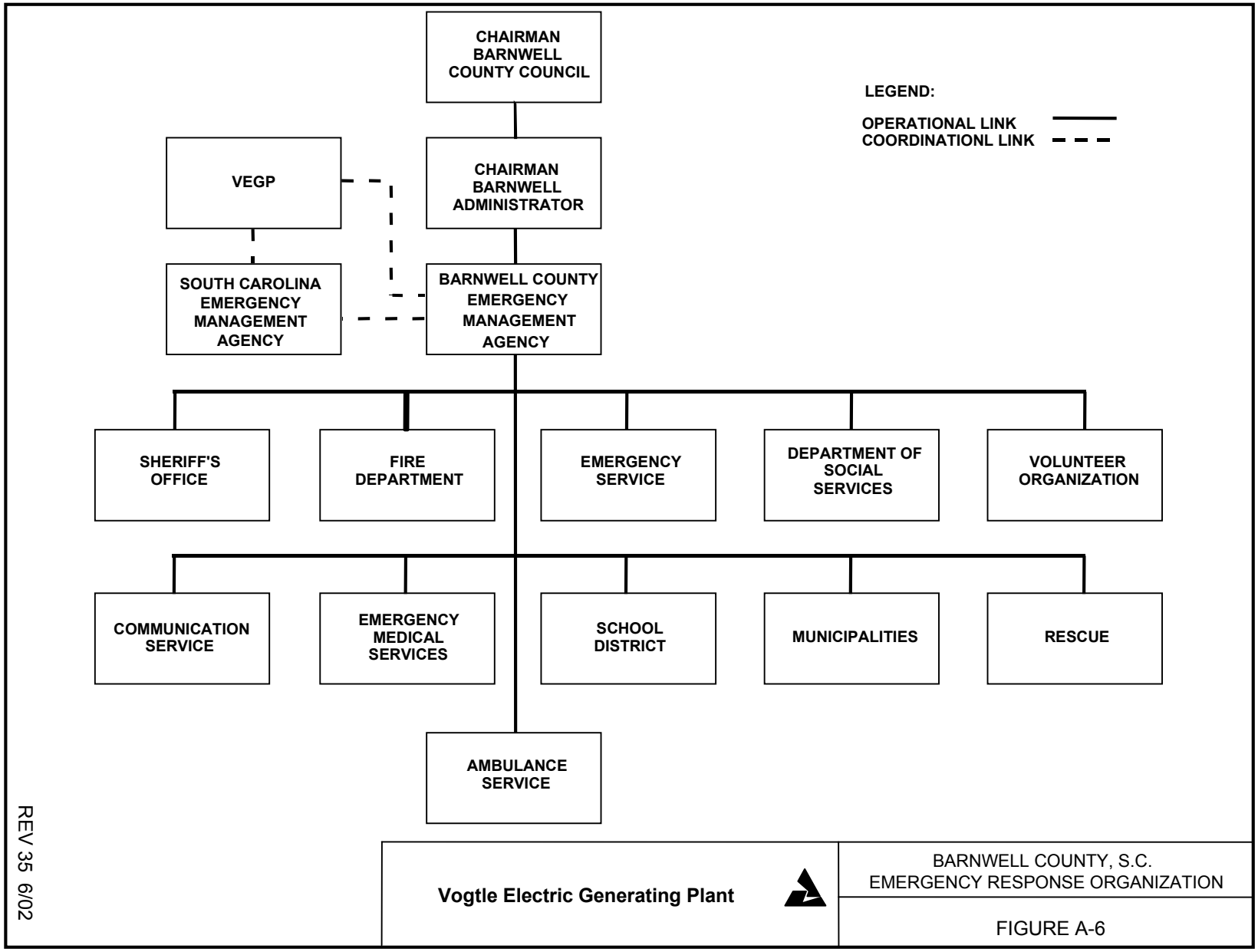
REV 35 6/02

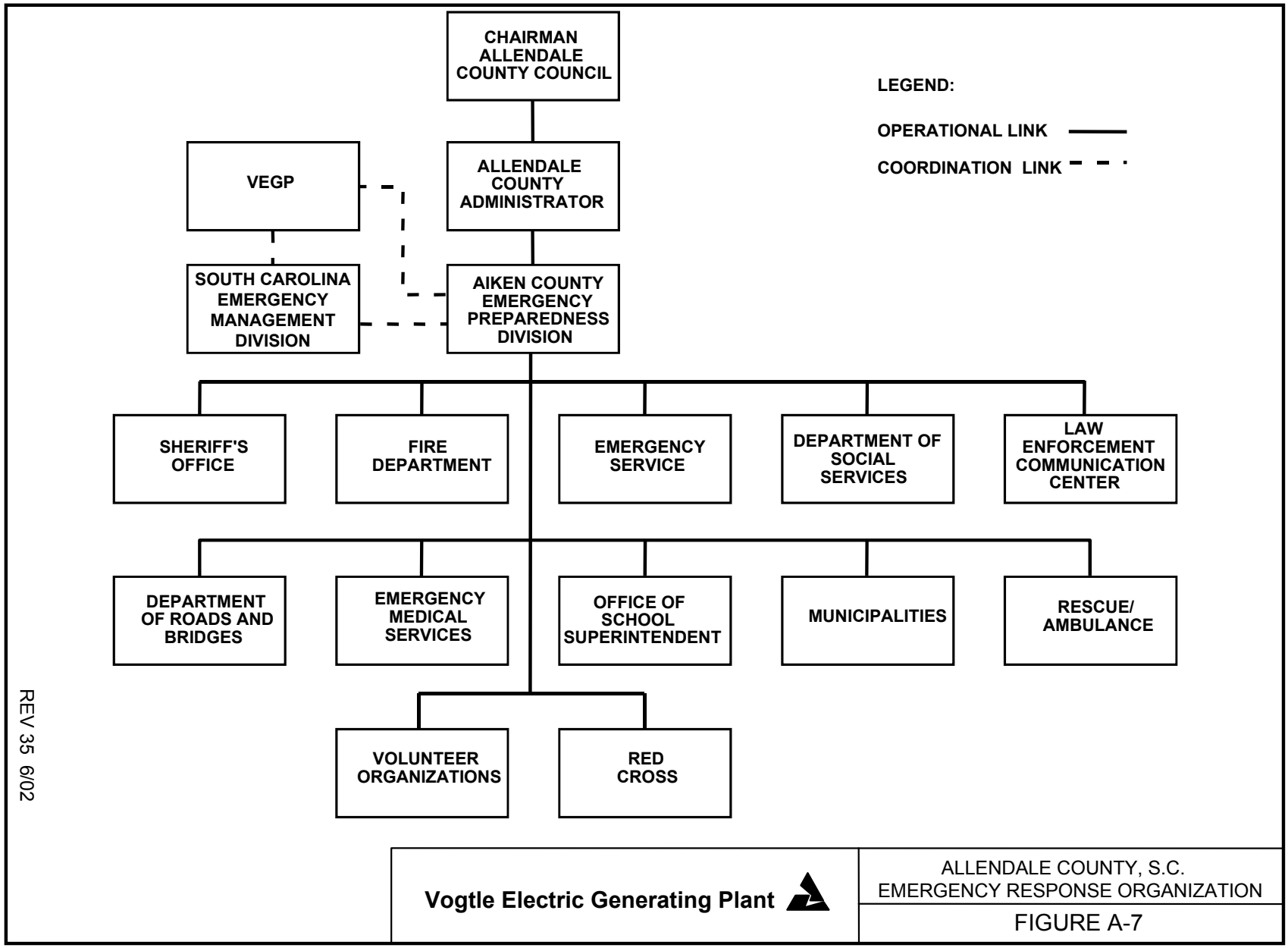
Vogtle Electric Generating Plant

STATE OF SOUTH CAROLINA OPERATING IN A DECLARED RADIOLOGICAL EMERGENCY

FIGURE A-4


CHAIRMAN
AIKEN COUNTY
COUNCIL
LEGEND:
OPERATIONAL LINK
COORDINATION LINK
VEGP
AIKEN
COUNTY
ADMINISTRATOR
SOUTH CAROLINA
EMERGENCY
MANAGEMENT
DIVISION
AIKEN COUNTY
EMERGENCY
PREPAREDNESS
DIVISION
SHERIFF'S
OFFICE
FIRE
DEPARTMENT
EMERGENCY
SERVICE
DEPARTMENT OF
SOCIAL
SERVICES
LAW
ENFORCEMENT
COMMUNICATION
CENTER
PUBLIC WORKS
DEPARTMENT
EMERGENCY
MEDICAL
SERVICES
SCHOOL
DISTRICT
MUNICIPALITIES
RESCUE/
AMBULANCE
VOLUNTEER
ORGANIZATIONS
RED
CROSS
REV 35 6/02
Vogtle Electric Generating Plant
AIKEN COUNTY, S.C.
EMERGENCY RESPONSE ORGANIZATION
FIGURE A-5


CHAIRMAN
BARNWELL
COUNTY COUNCIL
LEGEND:
OPERATIONAL LINK
COORDINATIONL LINK
VEGP
CHAIRMAN
BARNWELL
ADMINISTRATOR
SOUTH CAROLINA
EMERGENCY
MANAGEMENT
AGENCY
BARNWELL COUNTY
EMERGENCY
MANAGEMENT
AGENCY
SHERIFF'S
OFFICE
FIRE
DEPARTMENT
EMERGENCY
SERVICE
DEPARTMENT OF
SOCIAL
SERVICES
VOLUNTEER
ORGANIZATION
COMMUNICATION
SERVICE
EMERGENCY
MEDICAL
SERVICES
SCHOOL
DISTRICT
MUNICIPALITIES
RESCUE
AMBULANCE
SERVICE
REV 35 6/02
Vogtle Electric Generating Plant
BARNWELL COUNTY, S.C.
EMERGENCY RESPONSE ORGANIZATION
FIGURE A-6


CHAIRMAN ALLENDALE COUNTY COUNCIL
LEGEND:
OPERATIONAL LINK
COORDINATION LINK
VEGP
ALLENDALE COUNTY ADMINISTRATOR
SOUTH CAROLINA EMERGENCY MANAGEMENT DIVISION
AIKEN COUNTY EMERGENCY PREPAREDNESS DIVISION
SHERIFF'S OFFICE
FIRE DEPARTMENT
EMERGENCY SERVICE
DEPARTMENT OF SOCIAL SERVICES
LAW ENFORCEMENT COMMUNICATION CENTER
DEPARTMENT OF ROADS AND BRIDGES
EMERGENCY MEDICAL SERVICES
OFFICE OF SCHOOL SUPERINTENDENT
MUNICIPALITIES
RESCUE/ AMBULANCE
VOLUNTEER ORGANIZATIONS
RED CROSS
REV 35 6/02
Vogtle Electric Generating Plant
ALLENDALE COUNTY, S.C.
EMERGENCY RESPONSE ORGANIZATION
FIGURE A-7

B. VEGP EMERGENCY ORGANIZATION

Initial staffing of the onsite emergency organization will be provided from personnel normally employed at the site. For reference throughout this section, the organizational chart for the Vogtle Electric Generating Plant (VEGP) staff is presented in figure B-1. If the need arises, this staff will be augmented substantially by the addition of Southern Nuclear Operating Company (SNC) personnel and by personnel from other organizations. This section includes a description of the emergency duties of the normal shift complement, a discussion of the manner in which emergency assignments are to be made, a listing of additional support personnel on whom VEGP can rely, and a description of the relationships between onsite and offsite response activities.

B.1 NORMAL PLANT ORGANIZATION

The organizational structure shown on figure B-1 represents the pool of personnel available on site during normal working hours. Approximately 700 people are stationed at the site during the standard workday.

The normal operating crew for two units includes a shift supervisor, licensed plant operators, and non-licensed plant operators. A shift manager is also on shift during operation (as defined in the Technical Specifications). Personnel from the Chemistry and Health Physics, Maintenance, and Security Departments are also on site continuously. Refer to table B-1 of this section for minimum staffing requirements.

B.2 EMERGENCY ORGANIZATION

The emergency director has the responsibility to classify an event in accordance with the emergency classification system (described in section D). Classification of an event into one of the four emergency categories (Notification of Unusual Event (NUE), Alert, Site Area Emergency, or General Emergency) activates the VEGP emergency organization. The extent to which the emergency organization is activated depends on the severity of the situation. Table B-1 provides a summary of personnel available on shift and those who would be available within 60 min of notification. A copy of the On-Shift Staffing Analysis which forms the technical basis for Table B-1 Minimum Shift Staffing is maintained in the SNC document management system. Reference OSA-VEGP-001.

For an NUE, the emergency director assigns responsibility for making the appropriate notifications and directing the proper response; but no further activation of the emergency organization is required.

If the event is classified as an Alert, the technical support center (TSC), operations support center (OSC), and Emergency Operations Facility (EOF) will be activated.

For this classification, the emergency organization is structured as shown on figure B-2. The corporate resources and operation is presented in appendix 7, Emergency Operations Facility. Corporate personnel who report to the plant site will be integrated into the VEGP emergency organization.

For a Site Area Emergency or General Emergency, the emergency organization and EOF will be fully activated. The organization will be as shown in figure B-3.

During hostile action, ERO members would likely not have access to the onsite emergency response facilities. A security related emergency may delay the ordering of facility activation in order to protect plant personnel from the security threat. The decision to delay activation of the facilities will be made by the Emergency Director. In such cases offsite ERO personnel will be directed to an alternative facility to minimize delays in overall site response by permitting ERO assembly without exposing responders to the danger of hostile action.

Relationships among the VEGP emergency organization and other elements of emergency response are shown on figure A-1.

B.2.1 Emergency Organization Responsibilities

Following an Alert or higher emergency declaration, the positions shown on figures B-2 and B-3 will be filled by VEGP or SNC personnel as discussed below.

1. EMERGENCY DIRECTOR

Plant personnel that may be designated as emergency directors are listed in table B-2 of this plan. They will receive training as specified in table 0-2 of this plan prior to becoming qualified to fill this position. Their nonemergency positions provide them plant knowledge and supervisory skills necessary to fill the emergency director position.

The emergency director has the authority, management ability, and knowledge to assume the overall responsibility for directing VEGP staff in an emergency situation. Initially this position will be filled by the shift manager or the shift supervisor if the shift manager can not be located expeditiously. The responsibility for emergency direction will be transferred to qualified senior management personnel designated in procedure 91101-C after receiving an appropriate

briefing and becoming familiar with the current status of events.

Turnover with the accompanying briefing will include, but is not limited to, the following:

1. Review of logs and status boards.
2. Discussion with the incumbent including emergency classification, summary of events, offsite notifications, plant status, equipment status, outstanding orders, any noted deficiencies and completed checklist items.
3. Discussion with staff, as needed.

Following relief, announcement will be made to staff of the transfer of responsibility. (See Procedure 91102-C for specifics.) The primary and alternates for the position of emergency director are shown on table B-2.

The emergency director manages the following activities for the duration of the emergency:

- Notification and communication: directs the notification of VEGP, SNC and GPC personnel and notifies and maintains open communications with offsite authorities regarding all aspects of emergency response.
- Emergency response facilities: oversees the activation and staffing and requests additional assistance, as needed.
- Emergency operations: has authority over those actions taken to mitigate the emergency condition or reduce the threat to the safety of plant personnel or the public, including the recommendation of protective actions to offsite authorities.
- Emergency services: provides overall direction for management of procurement of site needed materials, equipment, and supplies; documentation; accountability; and security functions.
- Emergency operations planning: provides overall direction for the management of planning for procedure, equipment, and system development to support emergency operations.
- Discretionary authority: can modify emergency implementing procedures; may tailor the emergency organization to fit the specific staffing needs on a case by case basis.

The emergency director may not delegate the following responsibilities:

- The decision to notify offsite emergency response agencies.
- The decision to recommend protective actions to offsite authorities.
- Declaration of emergency classifications.
- Authorization for plant personnel to exceed 10 CFR 20 radiation exposure limits.
- The decision to terminate the emergency.
- Request for Federal assistance.
- The decision to order site dismissal of non-involved personnel from the site at an Alert classification level.
- The decision to order non-involved personnel to proceed to a reception center and receive radiological monitoring.

The emergency director may operate from the control room or TSC at his discretion. He may act as the TSC manager during the early phases of emergency response until the EOF is activated. It is the intent of SNC that the ED will be transferred from the Control Room as soon as practicable.

2. TSC STAFF

a. TSC Manager

The TSC manager performs the following activities:

- Coordination of inputs and recommendations from technical and corrective action advisors.
- Direction of onsite emergency personnel involved in restoration of the plant to a safe condition.
- Technical assistance and operations guidance to control room personnel.
- Direction of TSC staff in analysis of problems, design and planning for temporary modifications, and development of temporary emergency operating procedures.
- Recommendation of protective actions to the emergency director based on plant conditions.
- Providing recommendations on emergency classifications to the emergency director.

b. TSC Support Coordinator

The TSC support coordinator directs the clerical and logistic activities in the TSC. He ensures that support staff, including clerks, status board keepers, and communicators, are available in sufficient numbers and that office supplies, drawings, and other documents are available to TSC and OSC personnel. He is responsible for timely completion of offsite notification. He ensures that transportation and communication needs are satisfied. He arranges for additional offsite support personnel and equipment working in conjunction with the EOF support coordinator. (Designees are identified on table B-2).

c. Engineering Supervisor

The engineering supervisor directs a staff of engineers with expertise in reactor engineering, thermal and hydraulic analysis, instrumentation and control, and mechanical and electrical systems. He directs the analysis of plant problems, core damage, and provides recommendations for plant modifications to mitigate the effects of the accident.

d. Maintenance Supervisor

The maintenance supervisor manages the planning and coordination of repair, damage control, and plant modification activities. He works closely with the engineering supervisor in planning for plant modifications and repairs.

e. Operations Supervisor

The operations supervisor analyzes problems associated with systems operations and provides recommendations for procedures for mitigating the emergency situation.

f. Health Physics Supervisor

The health physics supervisor is responsible for onsite and in-plant radiological controls. He provides guidance to the maintenance supervisor related to radiological considerations associated with plant modification and repair and provides direction to the OSC manager related to the health physics controls for emergency teams. He performs offsite dose assessment prior to EOF activation and keeps the dose assessment supervisor in the EOF informed of the radiological status of the plant.

g. Chemistry Supervisor

The chemistry supervisor is responsible for directing and evaluating in-plant chemistry and analyses, directing and evaluating post accident sampling, and assisting in core damage assessment.

h. TSC Security Supervisor

The TSC security supervisor coordinates the security functions including accountability and site access control. He coordinates the processing of offsite personnel who require authorization to enter the site. When directed by the emergency director, will request assistance from civil law enforcement authorities, as required.

3. OSC STAFF

a. OSC Manager

The OSC manager receives direction from the TSC personnel to dispatch emergency teams (e.g., firefighting, search and rescue, first aid, repair, etc.) to prescribed areas of the plant or site. The OSC manager directs composition of the teams to ensure that appropriately qualified personnel are assigned. In particular, he will ensure that proper health physics coverage is provided. The OSC manager will provide specific instructions to the team leaders. He will also maintain communications with the teams that remain assigned to the OSC and monitor the status of their activities.

b. OSC Personnel

Selected emergency response personnel will report to the OSC as directed. Depending on the nature of the emergency, personnel from the Maintenance, Operations, Chemistry and Health Physics Departments will be directed to report to the OSC. The following emergency teams will be formed as necessary:

- Backup fire brigade.
- Search and rescue.
- First aid.
- Damage assessment.
- Damage control.

- Repair and modification.
- Field monitoring.

Each team will be headed by a designated team leader, who will maintain communications with the OSC, TSC, or EOF.

4. EOF STAFF

- The EOF staff is described in Appendix 7

5. ALTERNATIVE FACILITY STAFF

The ERO staff will be directed to report to the Alternative Facility during a security related event, or other events that preclude onsite access. This facility functions as a staging area for augmentation of emergency response staff and provides the capability for communication with the EOF, Control Room, and plant security. From this facility the ERO will support event response by performing engineering assessment activities, including damage control team planning and preparation for return to the site, the command and control function will remain with the ED in the control room until relieved by another onsite ED. Dose assessment and offsite notifications will be performed by the EOF.

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B.2.2 Emergency Organization Assignments

Table B-2 identifies by title the individuals who will fill the key emergency positions.

A sufficient number of people are identified to ensure that all emergency positions on table B-2 will be filled.

B.2.3 Other Support Services

1. CONTRACTOR SUPPORT

   Arrangements have been made to obtain support services from Bechtel Power Corporation and Westinghouse, if required. These organizations will initially be contacted by the EOF support coordinator to arrange for the required assistance.

2. MEDICAL ASSISTANCE

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

3. AGENCY SUPPORT

Assistance may be requested from Burke County, the State of Georgia, or Federal agencies. Section A of this Plan describes the assistance that may be requested. Any requests for aid will be made by the emergency director.

B.2.4 Interfaces Among Response Groups

Section A, figure A-1, illustrates the integrated organization for response to an emergency at VEGP.

TABLE B-1 (SHEET 1 OF 2)
MINIMUM STAFFING FOR POWER OPERATION

Major Functional Area	Major Tasks	Position Title or Expertise	On Shift	Augmen-tation in 60 min
Plant operations and assessment of operational aspects		Shift manager (SRO) Shift supervisor (SRO) Plant operator (RO) System operator Shift Support Supervisor (SSS)	1(a) 2(a) 4(a) 7[(a)(e)(f)] 1	- - - -
Emergency direction and control (emergency director)	Overall management of emergency organization	Shift supervisor; shift manager	1(b)	-
Notification/communication	Notification of VEGP, State, local, and Federal personnel	Shift trained personnel	2(b)	2
Radiological accident assessment and support of operational accident assessment	EOF direction Offsite dose assessment	Corporate Management; HP/Chemistry Shared foreman	- 1	1 -
	Offsite surveys onsite (out of plant)	Chemistry technicians, HP technicians, System operator or other trained personnel	2	3
	FMT Communicator	Maintenance Supervisor	1	-
	Chemistry/radiochemistry	Chemistry technicians or equivalent	1	1
Plant system engineering, repair and corrective actions	Technical support (including core/thermal hydraulics)	Shift technical advisor or engineer	1(c)	-
		Electrical Mechanical	- -	1 1
	Repair and corrective actions	Mechanical maintenance System operator Electrical maintenance Instrumentation and control technician	1 - 1 1	1 1 1 -
Protective actions (in plant)	Radiation protection: • Access control • HP coverage for repair, corrective actions, search and rescue, first aid and fire fighting • Personnel monitoring • Dosimetry • Decontamination • In-plant Survey	Health Physics technicians or other trained personnel	2	2

TABLE B-1 (SHEET 2 OF 2)

MINIMUM STAFFING FOR POWER OPERATION

Major Functional Area	Major Tasks	Position Title or Expertise	On Shift	Augmentation in 60 min
Firefighting			Fire brigade per FSAR	Local support
Rescue operations and first aid			2(b)	Local support
Site access control and personnel accountability	Security, firefighting communications, personnel accountability	Security personnel	Per Security Plan	
			Totals 24(d)	14

a. Refer to technical specifications for nonpower operation.

b. May be provided by shift personnel assigned other functions.

c. Required unless shift manager or the individual with a senior operator license meets the qualification for the STA as required by the NRC.

d. Does not include positions footnoted with a (b) or (c).

e. Four of the seven system operators may be assigned to the Fire Brigade.

f. One SO may be assigned to FMT.

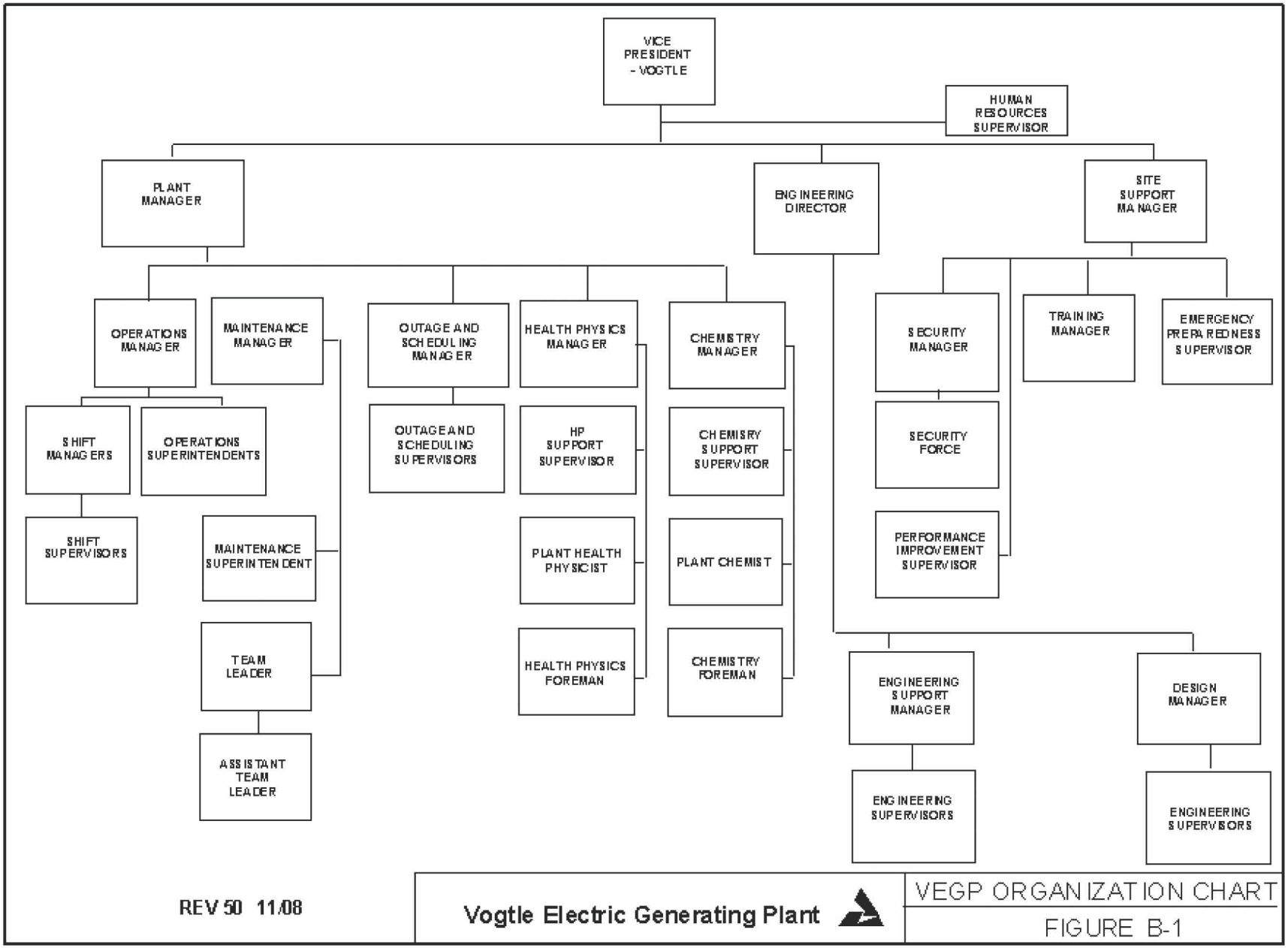
TABLE B-2 (SHEET 1 OF 2)

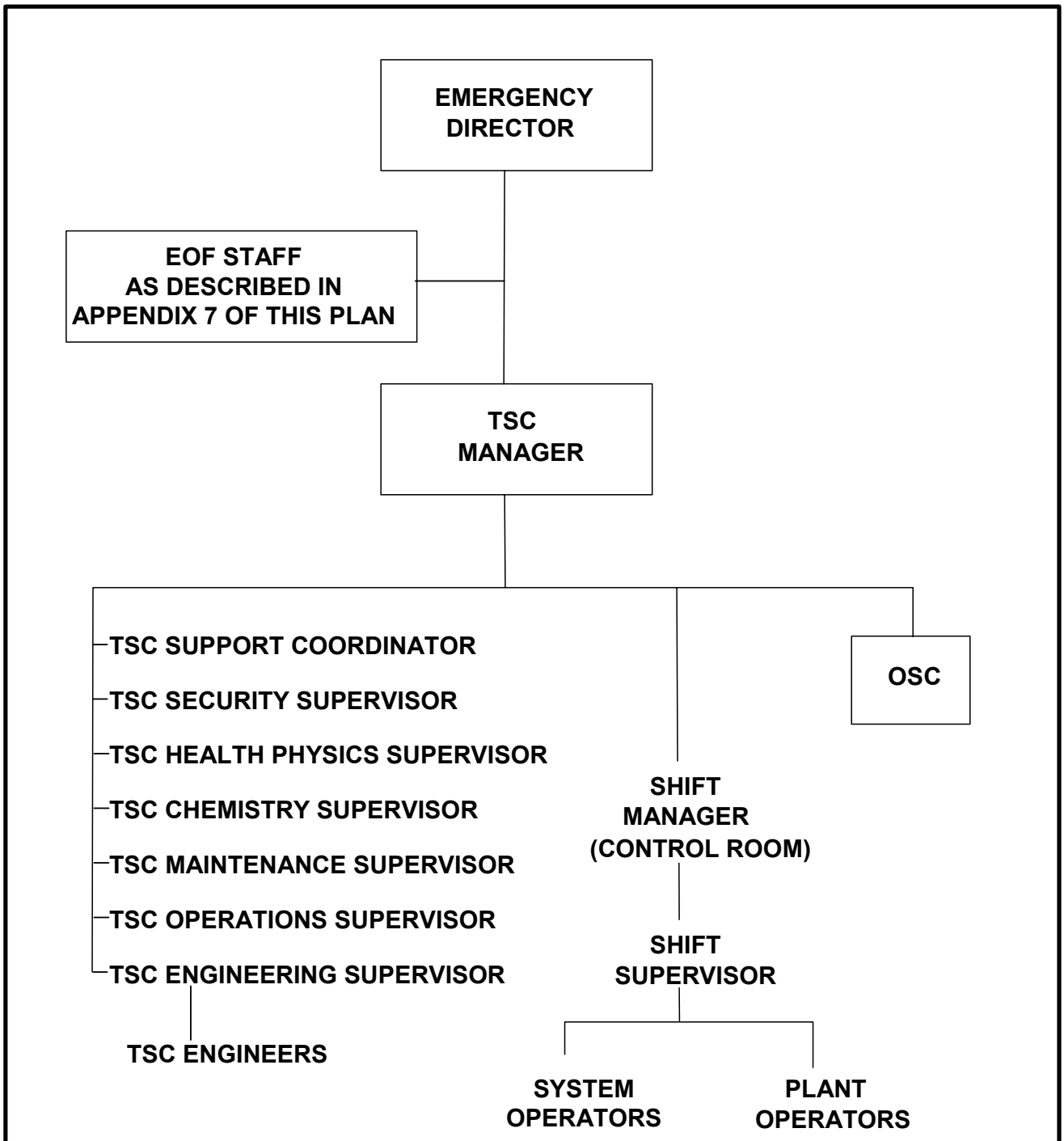
EMERGENCY ORGANIZATION ASSIGNMENTS

Emergency Position	Designees
Emergency Director	Operations Director; Maintenance Manager; Work Management Director; Engineering Director; Manager of Site Projects; Engineering Programs Manager or other qualified senior management personnel.
EOF Staff	Corporate Staff as defined in Appendix 7
TSC Manager	Supervision from onsite staff as designated in procedure 91101-C
TSC Support Coordinator	Onsite staff as designated in procedure 91101-C
TSC Engineering Supervisor	Supervision from onsite staff as designated in procedure 91101-C
TSC Maintenance Supervisor	Supervision from onsite staff as designated in procedure 91101-C
TSC Operations Supervisor	Supervision from onsite staff as designated in procedure 91101-C
TSC Health Physics Supervisor	Supervision from onsite staff as designated in procedure 91101-C
TSC Chemistry Supervisor	Supervision from onsite staff as designated in procedure 91101-C
Engineers	Plant engineers
TSC Security Supervisor	Supervision from onsite staff as designated in procedure 91101-C

TABLE B-2 (SHEET 2 OF 2)

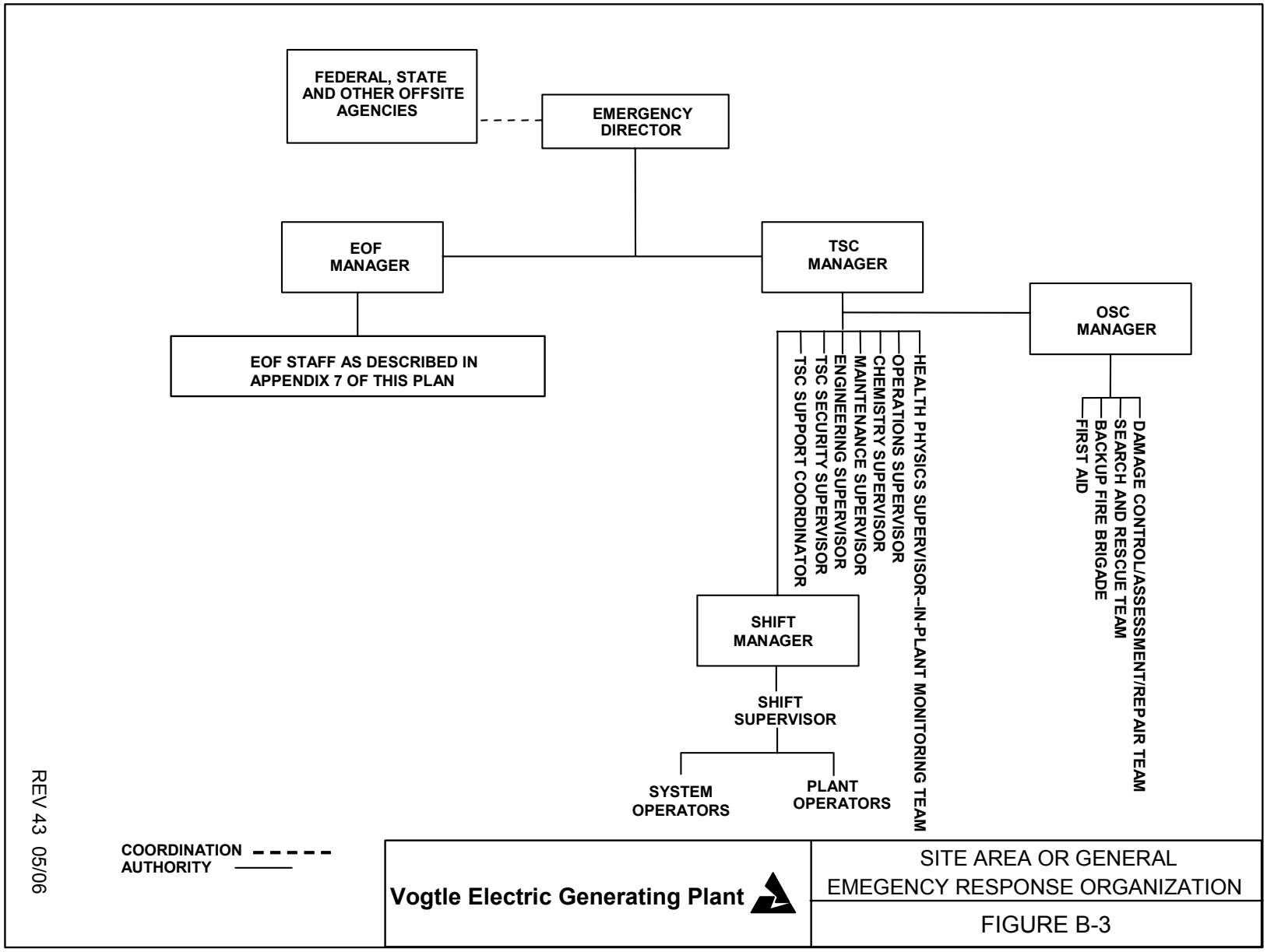
Emergency Position	Designees
OSC manager	Supervision from on-site staff as designated in procedure 91101-C
Dosimetry team	Qualified health physics personnel
Communicators (Offsite for Control Room, TSC and EOF)	Plant engineers; nuclear specialist; administrative assistants; operations personnel, corporate staff
Clerks	Administrative assistants
In-plant radiation monitoring team	Selected emergency response personnel
Post accident sampling team	Selected emergency response personnel
Damage control/assessment/ repair team	Selected emergency response personnel
Search and rescue team	Selected emergency response personnel
Backup fire brigade	Selected emergency response personnel
First aid team	Selected emergency response personnel
Field monitoring team	Selected emergency response personnel
Shift supervisor Plant operators Plant system operators	Normal operating shift personnel


VICE PRESIDENT - VOGTLE
HUMAN RESOURCES SUPERVISOR
PLANT MANAGER
ENGINEERING DIRECTOR
SITE SUPPORT MANAGER
OPERATIONS MANAGER
MAINTENANCE MANAGER
OUTAGE AND SCHEDULING MANAGER
HEALTH PHYSICS MANAGER
CHEMISTRY MANAGER
SECURITY MANAGER
TRAINING MANAGER
EMERGENCY PREPAREDNESS SUPERVISOR
SHIFT MANAGERS
OPERATIONS SUPERINTENDENTS
OUTAGE AND SCHEDULING SUPERVISORS
HP SUPPORT SUPERVISOR
CHEMISRY SUPPORT SUPERVISOR
SECURITY FORCE
SHIFT SUPERVISORS
MAINTENANCE SUPERINTENDENT
PLANT HEALTH PHYSICIST
PLANT CHEMIST
PERFORMANCE IMPROVEMENT SUPERVISOR
TEAM LEADER
HEALTH PHYSICS FOREMAN
CHEMISTRY FOREMAN
ENGINEERING SUPPORT MANAGER
DESIGN MANAGER
ASSISTANT TEAM LEADER
ENGINEERING SUPERVISORS
ENGINEERING SUPERVISORS
REV 50 11/08
Vogtle Electric Generating Plant
VEGP ORGANIZATION CHART
FIGURE B-1



REV 43 05/06

Vogtle Electric Generating Plant	RESPONSE ORGANIZATION FOR ALERT
	FIGURE B-2


FEDERAL, STATE AND OTHER OFFSITE AGENCIES
EMERGENCY DIRECTOR
EOF MANAGER
TSC MANAGER
OSC MANAGER
EOF STAFF AS DESCRIBED IN APPENDIX 7 OF THIS PLAN
TSC SUPPORT COORDINATOR
TSC SECURITY SUPERVISOR
ENGINEERING SUPERVISOR
MAINTENANCE SUPERVISOR
CHEMISTRY SUPERVISOR
OPERATIONS SUPERVISOR
HEALTH PHYSICS SUPERVISOR–IN-PLANT MONITORING TEAM
DAMAGE CONTROL/ASSESSMENT/REPAIR TEAM
SEARCH AND RESCUE TEAM
BACKUP FIRE BRIGADE
FIRST AID
SHIFT MANAGER
SHIFT SUPERVISOR
SYSTEM OPERATORS
PLANT OPERATORS
COORDINATION
AUTHORITY
Vogtle Electric Generating Plant
SITE AREA OR GENERAL
EMEGENCY RESPONSE ORGANIZATION
FIGURE B-3
REV 43 05/06

C. EMERGENCY RESPONSE SUPPORT AND RESOURCES

C.1 STATE AND LOCAL GOVERNMENTAL SUPPORT

The State of Georgia through the Georgia Emergency Management Agency (GEMA) has the lead agency responsibility for responding to emergency situations throughout Georgia. Under the procedure established by the Georgia Emergency Operations Plan (EOP), which was developed pursuant to the Governor's Executive Order, the Department of Natural Resources (DNR) radiological emergency response team in coordination with GEMA assesses the radiological conditions at the site of an incident and determines whether a state of emergency should be declared. The Governor of the State of Georgia or GEMA can declare an emergency based upon the assessment made by GEMA and/or DNR.

The South Carolina agencies responsible for responding to a radiological emergency are the Office of the Adjutant General, Emergency Management Division (EMD) and the Department of Health and Environmental Control (DHEC). The Nuclear Emergency Planning Section within DHEC is given the primary role in responding to the technical aspects of a nuclear accident: assessment of the radiological consequences and provision of protective action guidelines to state and local authorities, through the EMD. The EMD is assigned primary responsibility for the planning effort and for coordinating the state response operations. Jointly with DHEC, EMD determines whether a state of emergency should be declared. Upon EMD's advising the Governor of South Carolina that a radiological emergency exists, the Governor declares an emergency.

Agreements are in place with the State of Georgia, Burke County, Georgia, and 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 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 the Burke County 911 Center or through the Incident Command Post as applicable based on the nature and timing of the event. Copies of these agreements are maintained in the SNC document management system and are included by reference in Appendix 2.

The concept of the operations for which the State and local governments are responsible, together with a discussion of responsibilities assigned to various state/county governmental agencies are contained in the respective Radiological Emergency Response Plan. For a complete discussion of authority, assigned responsibilities,

capabilities, and activation and communication arrangements, refer to these plans.

Representatives from the states of Georgia and South Carolina will be dispatched to the emergency operations facility (EOF) and the Joint Information Center (JIC). As requested, Vogtle Electric Generating Plant (VEGP) will send representatives to the offsite government centers. Table C-2 lists the state and county EOCs with their addresses.

C.2 FEDERAL GOVERNMENTAL SUPPORT

In addition to coordination with State/county governmental entities in an emergency situation, VEGP may require assistance from certain Federal agencies in the areas of communications, radiological monitoring and laboratory analysis, transportation, and disaster relief. Requests for Federal assistance are directed as needed by the emergency director, and usually these requests are channeled through GEMA. The exceptions to this procedure are direct contacts between the VEGP Emergency Organization, the Nuclear Regulatory Commission (NRC), and Department of Energy, Savannah River (DOE-SR).

In the event of an incident in which Federal assistance is needed to supplement county and State emergency response capabilities, principal points of contact for State government are as follows:

- The Federal Emergency Management Agency (FEMA), Region Headquarters in Atlanta.
- The Department of Energy (DOE), Region Operations Office in Aiken, South Carolina.
- The Environmental Protection Agency (EPA), Region Headquarters in Atlanta.

FEMA is assigned lead responsibility for Federal offsite nuclear emergency planning and response (per Title 44 CFR 351). FEMA is also delegated responsibility for development and promulgation of the Federal Radiological Emergency Response Plan (FRERP). The FRERP assumes that states will be responsible for overall management of offsite emergency response. The Federal government's role consists of providing technical and/or logistical resource support at the request of State emergency management.

Federal emergency response consists of technical and nontechnical components. The NRC and FEMA jointly coordinate federal emergency response actions. The NRC coordinates technical aspects, and FEMA coordinates nontechnical aspects of Federal response.

The NRC and FEMA have stated that they each expect to have representatives at the Vogtle Electric Generating Plant (VEGP) within about 3 h after receiving notification. DOE can give assistance within about 2 h.

GEMA has the overall responsibility for making arrangements to support the Federal offsite response. County emergency management directors in whose area Federal government response personnel are to be housed or whose county is otherwise affected by the Federal response will cooperate with the Federal government and GEMA in planning for and making the necessary support arrangements.

Suitable quarters for lodging Federal government personnel include commercially available hotel/motel accommodations, dormitory, military billets, or similar accommodations. Such facilities exist in the greater Augusta area. Twenty-four hour food service is also available in the area. Commercial auto rentals are available at Bush Field and in the Augusta area.

Within several hours of notification, Federal response personnel will begin arriving at or near VEGP. A Federal Response Center (FRC) will be established for the coordination and exchange of information among various Federal agencies during an emergency at VEGP. The Federal Radiological Monitoring and Assessment Center (FRMAC) will be established for the coordination of Federal monitoring and assessment assistance with State and local governments.

Upon activation of the Federal Radiological Emergency Response Plan (per 44 CFR 351), DOE is tasked with providing telecommunications support to Federal agencies assisting in offsite radiological monitoring. The DOE has a communications pod which has telephone, VHF radio, microwave, and video receiving and transmission capability. Up to 20 telephone lines may be initially installed. The pod has radio-to-telephone patch capability and microwave capability for about 60 miles. The DOE has written agreements with all telephone companies to provide additional telephone communications, including satellite capability, within 24 to 48 hs. This capability will be used to supplement communications among the FRC, FRMAC, EOF, and States of Georgia EOC/FEOC and South Carolina EOC.

Airfields in the plant vicinity that may be used to support the Federal response, as well as that of other response groups, include a commercial airport with scheduled service and nearby municipal airports that can accommodate small aircraft.

Characteristics of four selected airports in the vicinity of VEGP are presented in Table C-1. Bush Field (Augusta, Georgia) is the closest major airport capable of providing services for large aircraft. The field is a scheduled commercial air carrier facility capable of handling large

multiengine jet aircraft. It is also a military air headquarters for the U.S. Army operating out of Ft. Gordon, Georgia.

Daniel Field (Augusta, Georgia) and Aiken Municipal (Aiken, South Carolina) are air fields capable of servicing and maintaining medium-size jet and propeller aircraft. The Burke County Airport (Waynesboro, Georgia) is the nearest airport to the VEGP and is used only by small general aviation aircraft.

C.3 VEGP SUPPORT

VEGP provides space, telephone communications, and administrative services for NRC and FEMA personnel at the TSC and EOF. Up to five NRC representatives can be accommodated at the TSC. In the EOF, space is provided for nine NRC personnel and one FEMA representative. NRC representatives may also be present in the control room. Emergency notification system (ENS) telephones and commercial telephones are available in the control room, TSC, and EOF. Health physics network (HPN) telephones are available in the TSC and the EOF.

C.4 OTHER SUPPORT

The onsite laboratory is equipped to analyze all normal in-plant samples. The equipment includes an ion chromatograph, gas chromatograph, gamma spectrometer, and other analytical support equipment.

Field samples will be taken by VEGP field monitoring teams. These teams will take direct radiation readings and will collect air samples, soil samples, vegetation samples, and water samples as directed by the dose assessment manager. The samples will be scanned with field instrumentation and will then be taken to VEGP for laboratory analyses. If necessary, samples will be transported to the Georgia Power Company (GPC) Environmental Laboratory located in Smyrna, Georgia, or to Plant Hatch for more refined analyses.

Environmental samples will be collected by corporate personnel. These samples will be obtained from the current fixed environmental program which is described in section I. Environmental samples will be sent to Plant Hatch or the GPC environmental laboratory.

In-plant samples such as effluent and air samples will be analyzed using a gamma spectrometer located in the counting room. Post-accident sampling is described in section I of the plan.

Private organizations that supply engineering, health physics, and general emergency support are listed below.

- Southern Nuclear Operating Company (SNC), Birmingham, Alabama.
- Southern Company Services, Inc., (SCS) Birmingham, Alabama.
- Westinghouse, Pittsburgh, Pennsylvania.
- Institute of Nuclear Power Operations (INPO), Atlanta, Georgia.

SNC serves as the primary engineering and design organization for the plant. The nuclear steam supply systems for the plant were purchased from Westinghouse. Westinghouse continues to provide operations support to the company in plant modifications, licensing, and engineering.

As a member of INPO, SNC is provided with INPO's emergency response manual. This manual identifies the quantity of personnel that various organizations (utilities, service companies, and reactor vendors) could reasonably be expected to make available in response to a request for emergency support.

As referenced throughout this Plan, some offsite GPC and SNC departments may be involved in the emergency response effort. These departments have, where appropriate, developed separate nuclear emergency response plans and procedures governing their emergency functions. Coordination of these plans to ensure a consistent integrated response is the responsibility of the Corporate Emergency Planning Section. These specific plans include:

- Corporate Emergency Plan, controlled by the SNC Corporate Emergency Planning Section.
- Emergency Communication Plan, controlled by the GPC Corporate Communications Department.
- VEGP Security Plan, controlled by the manager nuclear security.
- VEGP Fire Protection Plan, controlled by engineering support.

TABLE C-1 AIRPORT CHARACTERISTICS (SHEET 1 OF 2)

	Bush Field Augusta, Georgia	Daniel Field Augusta, Georgia	Aiken Municipal Aiken, South Carolina	Burke Co. Airport Waynesboro, Georgia
Runway length and type	(Runway 17-35) 8,001 ft x 150 ft; asphalt	(Runway 05-23) 3,877 ft x 150 ft; asphalt	(Runway 06-24) 5,000 ft x 100 ft; asphalt	(Runway 07-25) 3,200 ft x 75 ft; asphalt
	(Runway 08-26) 6,001 ft x 150 ft; asphalt	(Runway 10-28) 3,773 ft x 150 ft; asphalt	(Runway 18-36) 3,800 ft x 75 ft; asphalt	
Runway bearing[a] Capacity (1000's lbs.)	(Runway 17-35) 130(S) 166(D) 358(DT)	Unknown	(Runway 06-24) 22(s) 40(D)	(Runway 07-25) 29(S)
	Runway 08-26) 52(S) 71(D) 126(DT)		(Runway 18-36) 22(s)	
Approach systems[b]	ILS, VOR, NDB, (R)	VOR, RNA	NDB	VFR
Fuel	Aviation gas, 100 LL Jet A	Aviation gas, 100 LL Jet A1	Aviation gas, 100 LL Jet A	Aviation gas, 100 LL
Hours	Attended continuously	Attended daylight hours	Attended continuously	Attended Monday-Saturday daylight hours; attended Sunday noon to dusk
Runway lighting intensity	High	Medium	Medium	Low
Maintenance and facilities	Major airframe and major power plant repairs; hangars; electrical hookups; tiedowns. One hangar is leased by the U.S. Army and has electrical hookups. One or more large travel-trailers (e.g., "Air Stream") can be accommodated by this hangar.	Major airframe and major power plant repairs; two hangars; electrical hook-ups; tiedowns. Each hangar can accommodate one or more large travel trailers (e.g., "Air Stream").	Major airframe and major power plant repairs; five hangars(small aircraft); electrical hook-ups; tiedowns; 1 telephone in office, 1 in a hangar (both extensions of the same line).	No repairs No hangars No space left for tiedowns; electrical hook-ups; one telephone in office

TABLE C-1 AIRPORT CHARACTERISTICS (SHEET 2 OF 2)

	Bush Field Augusta, Georgia	Daniel Field Augusta, Georgia	Aiken Municipal Aiken, South Carolina	Burke Co. Airport Waynesboro, Georgia
Communications	In the U.S. Army hangar; four phone lines (1 commercial, 1 autovon, 2 dedicated lines to Ft. Gordon); two radios (VHF-all frequencies, FM with tactical military frequencies).	Three telephones(1 in airport office, 1 in each of 2 hangars-all extensions of the same line).	One telephone in office, 1 in a hangar, (both extensions of the same line).	One telephone in office
Accommodations	One motel at airport; two restaurants, 24-h day in the area; rental cars available	Motel 3 mi. from airport; one restaurant; taxi	One restaurant 1/4 MI from airport; rental cars (must radio ahead)	None at airport; no taxi; managers vehicle may be available; no rental cars; several motels in Waynesboro; no restaurant at airport
Remarks	Commercial scheduled service; Military Air Headquarters U.S. Army, Ft. Gordon		Possible runway extension of 700 ft; date unknown	Possible runway extension of 1000 to 1,300 ft; possible construction at aircraft shelters (date unknown)
Distance from Plant Vogtle (MI)				
Air:	17	23	35	16
Road:	26	35	50	18

a. (S) Single-wheel type gear (DC-3).
(D) Dual-wheel type gear (DC-6).
(DT) Dual-tandem type gear (707).

b. ILS Instrument landing system.
VOR VHF navigation facility, omnidirectional.
NDB Nondirectional beacon.
RNA Random area navigation.
VFR Visual flight rules.
(R) Radar.

Source: Airport Facility Directory, U.S. Department of Commerce, September 26, 1985 and facility manager

TABLE C-2

STATE AND COUNTY EMERGENCY OPERATION CENTERS (EOC)

Organization	EOC Location
Georgia State EOC(SEOC)	935 E. Confederate Ave. Atlanta, GA
Georgia Forward EOC	Burke County EMA Building 277 GA Hwy 24 and Perimeter Road Waynesboro, GA
Burke County EOC	Burke County EMA Building 277 GA Hwy 24 and Perimeter Road Waynesboro, GA
South Carolina SEOC	1100 Fish Hatchery Road West Columbia, SC 29172
Aiken County EOC	420 Hampton Ave, NE Aiken County Sheriff's Department Building Aiken, SC 29801
Allendale County EOC	292 Barnwell HWY Allendale, SC 29810
Barnwell County EOC	Barnwell County Office 57 Wall Street Barnwell, SC

D. EMERGENCY CLASSIFICATION SYSTEM

D.1 SUMMARY OF EMERGENCY CLASSIFICATION LOGIC

The classification system for the Emergency Plan for the Vogtle Electric Generating Plant (VEGP) is based on four emergency classes. The classes determine initial steps to be taken by VEGP on site and by corporate emergency response elements and the actions which are taken by the offsite support organizations. An emergency classification is indicative of the status of the plant. Inputs to the emergency classification system include the status of various plant systems, radiation levels in and around plant areas, and the rate of release of radioactivity from the plant.

The emergency classes are used by offsite authorities to determine which of the preplanned actions to be taken by their emergency organizations. Protective actions taken on behalf of members of the public are the responsibility of local and State governments. Subsequent actions by these authorities are based on projected or potential radiation exposures to individuals in the population. The actions recommended by these authorities have been identified as part of their emergency planning efforts. The projected or potential exposures are based on predictions made by VEGP from parameters such as status of reactor core and core cooling systems, effluent release rates, effluent radioactivity levels, containment radiation levels, containment pressure, actual meteorological conditions, or measurements of offsite levels of radioactivity made by VEGP and/or State radiological response teams.

The described emergency classes and the emergency action levels which determine them are agreed on by VEGP and State and local authorities. The emergency action levels will be reviewed by these parties annually.

D.2 EMERGENCY CLASS DESCRIPTION AND RESPONSE

EMERGENCY CLASS: One of a minimum set of names or titles, established by the Nuclear Regulatory Commission (NRC), for grouping off-normal nuclear power plant conditions according to (1) their relative radiological seriousness, and (2) the time-sensitive onsite and off-site radiological emergency preparedness actions necessary to respond to such conditions. The existing radiological emergency classes, in ascending order of seriousness, are called:

- Notification of Unusual Event (NUE).

- Alert.
- Site Area Emergency.
- General Emergency.

The NUE and Alert classes give early notification of minor events that could lead to more serious consequences or that might indicate more serious conditions which have not yet fully developed. A Site Area Emergency reflects conditions where some significant releases are likely or are occurring but where core melt is not likely to occur. In this situation, onsite and offsite VEGP emergency personnel and monitoring teams are fully mobilized. A General Emergency involves actual or imminent substantial core degradation or melting with the potential for loss of containment. The immediate action for this class is to recommend evacuation.

Emergency class descriptions are provided below. Also included are the actions to be carried out by VEGP.

D.2.1 NOTIFICATION OF UNUSUAL EVENT

1. CLASS DESCRIPTION

   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 offsite response or monitoring are expected unless further degradation of safety systems occurs.

2. VEGP ACTIONS

   a. Inform State and local offsite authorities of the nature of the unusual event within 15 min. of classifying the emergency. Notify the Nuclear Regulatory Commission (NRC) as soon as possible (ASAP) but no later than 1 h following classification of the emergency.

   b. Augment on-shift resources, as needed.

   c. Assess and respond to the event.

   d. Escalate to a more severe class, if appropriate, or close out with a verbal summary to offsite authorities followed by a written summary within 24 h.

D.2.2 ALERT

1. CLASS DESCRIPTION

   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 U.S. Environmental Protection Agency (EPA) Protective Action Guideline (PAG) exposure levels.

2. VEGP ACTIONS

   a. Within 15 min. of classification, inform State and local offsite authorities of Alert Emergency and reasons for emergency. Notify the NRC ASAP but no later than 1 h following classification of the emergency.

   b. Augment resources and activate the emergency response facilities (e.g. Technical Support Center (TSC), Operational Support Center (OSC), and the emergency operating facility (EOF). These actions may be delayed for security based events at the discretion of the emergency director.

   c. Assess and respond to the emergency.

   d. Mobilize, and dispatch if necessary, onsite survey teams.

   e. Provide periodic plant status updates to offsite authorities.

   f. Provide periodic meteorological assessments to offsite authorities and, if any emergency releases are occurring, field monitoring team readings or dose estimates for actual releases.

   g. Activate the Emergency Response Data System for the affected unit within 1 h following declaration of the Alert.

   h. Escalate to a more severe class, if appropriate, or close out emergency class by verbal summary to offsite authorities followed by written summary within 8 h of closeout.

D.2.3 Site Area Emergency

1. CLASS DESCRIPTION

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 exceed EPA PAG exposure levels except near the site boundary.

2. VEGP ACTIONS

a. Within 15 min. of classification, inform State and local offsite authorities of Site Area Emergency and reasons for emergency. Notify the NRC ASAP but no later than 1 h following classification of the emergency.

b. If necessary, provide protective action recommendations to State and local authorities.

c. Augment resources and activate the emergency response facilities (e.g. Technical Support Center (TSC), Operational Support Center (OSC), and the Emergency Operating Facility (EOF. These actions may be delayed for security based events at the discretion of the emergency director.

d. Assess and respond to the emergency.

e. Dispatch as necessary onsite and offsite survey teams.

f. Dedicate individuals for plant status updates to offsite authorities and periodic press briefings.

g. On a periodic basis, make senior technical and management staff available for consultation with the NRC and State officials.

h. Provide meteorological data and field monitoring team readings or dose estimates to offsite authorities.

i. Provide release and dose projections based on available plant condition information and foreseeable contingencies.

j. Activate the Emergency Response Data System for the affected unit within 1 h following declaration of the Site Area Emergency.

k. Escalate to General Emergency, if appropriate, or close out emergency class by briefing of offsite authorities followed by written summary within 8 h of closeout or class reduction.

D.2.4 General Emergency

1. CLASS DESCRIPTION

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. Release can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.

2. VEGP ACTIONS

a. Within 15 min. of classification, inform State and local offsite authorities of General Emergency and reason for emergency. Notify the NRC ASAP but no later than 1 h following classification of the emergency.

b. Provide protective action recommendations to State and local authorities based upon plant conditions and/or actual or projected releases of radioactive material.

c. Augment resources and activate the emergency response facilities (e.g. Technical Support Center (TSC), Operational Support Center (OSC), and the Emergency Operating Facility (EOF)). These actions may be delayed for security based events at the discretion of the emergency director.

d. Assess and respond to the emergency.

e. Dispatch onsite and offsite survey teams.

f. Dedicate an individual for plant status updates to offsite authorities and periodic press briefings.

g. On a periodic basis, make senior technical and management staff available for consultation with the NRC and State officials.

h. Provide meteorological data and field monitoring team readings or dose estimates to offsite authorities for actual releases.

i. Provide release and dose projections based on plant condition and foreseeable contingencies.

j. Activate the Emergency Response Data System for the affected unit within 1 h following declaration of the General Emergency.

k. Close out emergency class by briefing of offsite authorities followed by written summary within 8 h of closeout or class reduction.

D.3 CLASSIFICATION PROCESS

The procedure by which the plant operational staff classifies emergencies is NMP-EP-110, "Emergency Classification Determination and Initial Actions." This procedure is used to classify the emergency condition upon recognition of an off-normal condition as determined by: direction from another procedure; instrument readings/alarms; a critical safety function status on the safety parameters display system; direct observation; or reported events. Plant procedures which direct reference to this procedure include control room annunciator response procedures, abnormal and emergency operating procedures that reflect directly on Emergency Action Levels (EAL), as well as chemistry and health physics procedures that are used in the conduct of shift activities. The Critical Safety Functions Status Trees (CSFSTs) contained in Emergency Operating Procedure 19200-C are an integral part of the EAL scheme and form the bases for numerous EALs. The instrument readings, alarms, conditions, and event(s) which may result in an emergency classification are as specified in the EALs themselves or in the off-normal procedures directing the operator to the Emergency Plan implementing procedures.

EMERGENCY ACTION LEVEL (EAL): A pre-determined, site-specific, observable threshold for a plant Initiating Condition that places the plant in a given emergency class. An EAL can be: an instrument reading; an equipment status indicator; a measurable parameter (onsite or offsite); a discrete, observable event; results of analyses; entry into specific emergency operating procedures; or another phenomenon which, if it occurs, indicates entry into a particular emergency class.

INITIATING CONDITION (IC): An emergency condition which sets it apart from the broad class of conditions that may or may not have the potential to escalate into a radiological emergency. It can be a continuous,

measurable function that is outside technical specifications, such as elevated RCS temperature or falling reactor coolant level (a symptom). It also encompasses occurrences such as FIRE (an event) or reactor coolant pipe failure (an event or a barrier breach).

Recognition Categories

ICs and EALs can be grouped in one of several schemes. This generic classification scheme incorporates symptom-based, event-based, and barrier-based ICs and EALs.

The symptom-based category for ICs and EALs refers to those indicators that are measurable over some continuous spectrum, such as core temperature, coolant levels, containment pressure, etc. When one or more of these indicators begin to show off-normal readings, reactor operators are trained to identify the probable causes and potential consequences of these "symptoms" and take corrective action. The level of seriousness indicated by these symptoms depends on the degree to which they have exceeded technical specifications, the other symptoms or events that are occurring contemporaneously, and the capability of the licensed operators to gain control and bring the indicator back to safe levels.

Event-based EALs and ICs refer to occurrences with potential safety significance, such as the failure of a high-pressure safety injection pump, a safety valve failure, or a loss of electric power to some part of the plant. The range of seriousness of these "events" is dependent on the location, number of contemporaneous events, remaining plant safety margin, etc.

Barrier-based EALs and ICs refer to the level of challenge to principal barriers used to assure containment of radioactive materials contained within a nuclear power plant. For radioactive materials that are contained within the reactor core, these barriers are: fuel cladding, reactor coolant system pressure boundary, and containment. The level of challenge to these barriers encompasses the extent of damage (loss or potential loss) and the number of barriers concurrently under challenge. In reality, barrier-based EALs are a subset of symptom-based EALs that deal with symptoms indicating fission product barrier challenges. These barrier-based EALs are primarily derived from Emergency Operating Procedure (EOP) Critical Safety Function (CSF) Status Tree Monitoring (or their equivalent). Challenge to one or more barriers generally is initially identified through instrument readings and periodic sampling. Under present barrier-based EALs, deterioration of the reactor coolant system pressure boundary or the fuel clad barrier usually indicates an "Alert" condition, two barriers under

challenge a Site Area Emergency, and loss of two barriers with the third barrier under challenge is a General Emergency. The fission product barrier matrix described in Section 5-F is a hybrid approach that recognizes that some events may represent a challenge to more than one barrier, and that the containment barrier is weighted less than the reactor coolant system pressure boundary and the fuel clad barriers.

Symptom-based ICs and EALs are most easily identified when the plant is in a normal startup, operating or hot shutdown mode of operation, with all of the barriers in place and the plant's instrumentation and emergency safeguards features fully operational as required by technical specifications. It is under these circumstances that the operations staff has the most direct information of the plant's systems, displayed in the main control room. As the plant moves through the decay heat removal process toward cold shutdown and refueling, barriers to fission products are reduced (i.e., reactor coolant system pressure boundary may be open) and fewer of the safety systems required for power operation are required to be fully operational. Under these plant operating modes, the identification of an IC in the plant's operating and safety systems becomes more event-based, as the instrumentation to detect symptoms of a developing problem may not be fully effective; and engineered safeguards systems, such as the Emergency Core Cooling System (ECCS), are partially disabled as permitted by the plant's Technical Specifications.

Barrier-based ICs and EALs also are heavily dependent on the ability to monitor instruments that indicate the condition of plant operating and safety systems. Fuel cladding integrity and reactor coolant levels can be monitored through several indicators when the plant is in a normal operating mode, but this capability is much more limited when the plant is in a refueling mode, when many of these indicators are disconnected or off-scale. The need for this instrumentation is lessened, however, and alternate instrumentation is placed in service when the plant is shut down.

It is important to note that in some operating modes there may not be definitive and unambiguous indicators of containment integrity available to control room personnel. For this reason, barrier-based EALs should not place undue reliance on assessments of containment integrity in all operating modes. Generally, Technical Specifications relax maintaining containment integrity requirements in modes 5 and 6 in order to provide flexibility in performance of specific tasks during shutdown conditions. Containment pressure and temperature indications may not increase if there is a pre-existing breach of containment integrity. At

most plants, a large portion of the containment's exterior cannot be monitored for leakage by radiation monitors.

Several categories of emergencies have no instrumentation to indicate a developing problem, or the event may be identified before any other indications are recognized. A reactor coolant pipe could break; FIRE alarms could sound; radioactive materials could be released; and any number of other events can occur that would place the plant in an emergency condition with little warning. For emergencies related to the reactor system and safety systems, the ICs shift to an event based scheme as the plant mode moves toward cold shutdown and refueling modes. For non-radiological events, such as FIRE, floods, wind loads, etc., as described in NUREG-0654 Appendix 1, event-based ICs are the norm.

In many cases, a combination of symptom-, event- and barrier-based ICs will be present as an emergency develops. In a loss of coolant accident (LOCA), for example:

- Coolant level is lowering; (symptom)
- There is a leak of some magnitude in the system (pipe break, safety valve stuck open) that exceeds plant capabilities to make up the loss; (barrier breach or event)
- Core (coolant) temperature is rising; (symptom) and
- At some level, fuel failure begins with indicators such as high off-gas, high coolant activity samples, etc. (barrier breach or symptom)

There are three considerations related to emergency classes. These are:

(1) The potential impact on radiological safety, either as now known or as can be reasonably projected;
(2) How far the plant is beyond its predefined design, safety, and operating envelopes; and
(3) Whether or not conditions that threaten health are expected to be confined to within the site boundary.

The ICs deal explicitly with radiological safety impact by escalating from levels corresponding to releases within regulatory limits to releases beyond EPA Protective Action Guideline (PAG) plume exposure levels. In addition, the "Discussion" sections below include offsite dose consequence considerations which were not included in NUREG-0654 Appendix 1.

Threshold Values

The most common bases for establishing these boundaries are the technical specifications and setpoints for each plant

that have been developed in the design basis calculations and the Final Safety Analysis Report (FSAR).

For those conditions that are easily measurable and instrumented, the boundary is likely to be the EAL (observable by plant staff, instrument reading, alarm setpoint, etc.) that indicates entry into a particular emergency class. For example, the main steam line radiation monitor may detect high radiation that triggers an alarm. That radiation level also may be the setpoint that closes the main steam isolation valves (MSIV) and initiates the reactor scram. This same radiation level threshold, depending on plant-specific parameters, also may be the appropriate EAL for a direct entry into an emergency class.

In addition to the continuously measurable indicators, such as coolant temperature, coolant levels, leak rates, containment pressure, etc., the FSAR provides indications of the consequences associated with design basis events. Examples would include steam pipe breaks, MSIV malfunctions, and other anticipated events that, upon occurrence, place the plant immediately into an emergency class.

Another approach for defining these boundaries is the use of a plant-specific probabilistic safety assessment (PSA - also known as probabilistic risk analysis, PRA). PSAs have been completed for all individual plants. PSAs can be used as a good first approximation of the relevant ICs and risk associated with emergency conditions for existing plants. Each plant has an Individual Plant Evaluation (IPE) and an Individual Plant Evaluation for External Events (IPEEE). Generic insights from a PSA/PRA, the IPE, IPEEE and related severe accident assessments which apply to EALs and emergency class determinations are:

1. Core damage frequency at many BWRs is dominated by sequences involving prolonged loss of all AC power. In addition, prolonged loss of all AC power events are extremely important at PWRs. This would indicate that should this occur, and AC power is not restored within 15 minutes, entry into the emergency class at no lower than a Site Area Emergency, when the plant was initially at power, would be appropriate. This implies that precursors to loss of all AC power events should appropriately be included in the EAL structure.

2. For severe core damage events, uncertainties exist in phenomena important to accident progressions leading to containment failure. Because of these uncertainties, predicting containment integrity may be difficult in these conditions. This is why maintaining containment integrity alone following sequences leading to severe core damage may be an insufficient basis for not escalating to a General Emergency.

3. PRAs show that leading contributors to latent fatalities were containment bypass, large LOCA with early containment failure, station blackout greater than 6 hours (e.g., LOCA consequences of Station Blackout), and reactor coolant pump seal failure. This indicates that generic EAL methodology must be sufficiently rigorous to cover these sequences in a timely fashion.

Another critical element of the analysis to arrive at these threshold (boundary) conditions is the time that the plant might stay in that condition before moving to a higher emergency class. In particular, station blackout coping analyses performed in response to 10 CFR 50.63 and Regulatory Guide 1.155, "Station Blackout," may be used to determine whether a specific plant enters a Site Area Emergency or a General Emergency directly, and when escalation to General Emergency is indicated. The time dimension is critical to the EAL since the purpose of the emergency class for state and local officials is to notify them of the level of mobilization that may be necessary to handle the emergency. This is particularly true when a "Site Area Emergency" or "General Emergency" is imminent. Establishing EALs for such conditions must take estimated evacuation time into consideration to minimize the potential for the plume to pass while evacuation is underway.

Regardless of whether or not containment integrity is challenged, it is possible for significant radioactive inventory within containment to result in EPA PAG plume exposure levels being exceeded even assuming containment is within technical specification allowable leakage rates. With or without containment challenge, however, a major release of radioactivity requiring offsite protection 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. NUREG-1228, "Source Estimations During Incident Response to Severe Nuclear Power Plant Accidents," indicates that such conditions do not exist when the amount of clad damage is less than 20%.

Emergency Action Levels

With the emergency classes defined, the Initiating Conditions and Threshold Values 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.

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 offsite 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. Of course, security events must reflect potential for increasing security threat levels.

Plant emergency operating procedures (EOPs) are designed to maintain and/or restore a set of CSFs which are listed in the order of priority for restoration efforts during accident conditions. While the actual nomenclature of the CSFs may vary among plants, generally the PWR CSF set includes:

- Subcriticality
- Core cooling
- Heat sink
- Pressure-temperature-stress (RCS integrity)
- Containment
- RCS inventory

There are diverse and redundant plant systems to support each CSF. By monitoring the CSFs instead of the individual system component status, the impact of multiple events is inherently addressed, e.g., the number of operable components available to maintain the critical safety function.

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

As an example, consider that the Westinghouse Owner's Group (WOG) Emergency Response Guidelines (ERGs) classify

challenges as YELLOW, ORANGE, and RED paths. If the core exit thermocouples exceed 1200 degrees F or 711 degrees F with low reactor vessel water level, a RED path condition exists. The ERG considers a RED path as "... an extreme challenge to a plant function necessary for the protection of the public ..." This is almost identical to the present NRC NUREG-0654 description of a site area emergency "... actual or likely failures of plant functions needed for the protection of the public ..." It reasonably follows that if any CSF enters a RED path, a site area emergency exists. A general emergency could be considered to exist if core cooling CSF is in a RED path and the EOP function restoration procedures have not been successful in restoring core cooling.

Although the majority of the EALs provide very specific thresholds, the Emergency Director must remain alert to events or conditions that lead to the conclusion that exceeding the EAL threshold is imminent. If, in the judgment of the Emergency Director, an imminent situation is at hand, the classification should be made as if the thresholds 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.

Multiple Events and Emergency Class Upgrading

The SNC Classification procedures are written to classify events based on meeting the Initiating Condition (IC) and a Threshold Value (TV) for an EAL considering each Unit independently. Two IC Matrices are used, one for Hot ICs and one for Cold ICs. The temperature criteria of the Cold Shutdown Mode determines if the unit should use the Hot or Cold Matrix.

The IC Matrices are human factored to read from top to bottom General Emergency to Notification of Unusual Event within a category or subcategory to eliminate the higher classifications before reaching a lower classification. This arrangement lessens the possibility of under-classifying a condition.

During events, the ICs and TVs are monitored and if conditions meet another higher EAL, that higher emergency classification is declared and appropriate notifications made. Notifications are made on a site basis. If both units are in concurrent classifications, the highest classification would be used for the notification and the other unit classification noted on the notification form.

There are six EALs which specifically state that if the condition cannot be mitigated and is imminent, the Emergency

Director should not wait for the time to elapse and should classify immediately (RG1, RS1, RA1, RU1, CA4, CU4). These six EALs are conditions which indicate a loss of control of radioactive materials, or could lead to a significant radioactive release or core damage situation and therefore, by making the anticipatory classification, onsite and offsite protective actions associated with the emergency classification level can then be initiated as quickly as possible.

At all times, when conditions present themselves that are not explicitly provided in the EAL scheme the Emergency Director has discretion to declare an event based on his knowledge of the emergency classes and judgment of the situation or condition. Specific EALs (HU5, HA6, HS3, HG2) are provided within the scheme to allow these discretionary classifications.

Classification Timeliness

The emergency declaration process starts with information being available to plant operators to recognize an off-normal plant condition via indications on plant instrumentation including alarms, or via reports from other plant personnel (e.g., reports of fire) or from persons outside of the plant (e.g., severe weather warnings). The plant operators assess the validity of these indications or reports by checking instruments, comparing indications on redundant instruments, or dispatching personnel to confirm reports. After validating the indication or report, the plant operators then compare the off-normal condition to the EAL thresholds in the emergency classification scheme. Not all off-normal conditions are immediately obvious, and not all indications are unambiguous. While some conditions can be classified upon recognition, others require further assessment.

The capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an EAL has been exceeded has been established and is outlined in applicable procedures. Emergency conditions are classified promptly upon identification that an emergency action leve3l (EAL) threshold has been exceeded.

The 15-minute period encompasses all assessment, classification, and declaration actions associated with making an emergency declaration form the first availability of a plant indication or receipt of a report of an off-normal condition by plant operators up to and including the declaration of the emergency. If classifications and declarations are performed away from the CR, all delays incurred in transferring information from the CR (where the alarms, indications, and reports are first received) to the

ERF (at which declarations are made) are included within the 15-minute criterion.

Classification Downgrading

The SNC policy is that once an emergency classification is made, it cannot be downgraded to a lower classification. Termination criteria contained in the Emergency Plan Implementing Procedures shall be completed for an event to be terminated. At termination, on an event specific basis, the site can either enter normal operating conditions or enter a recovery condition with a recovery organization established for turnover from the ERO.

Transient Events

The NEI 99-01 EAL development philosophy stated in Section 3.6 "…The approach taken in the development of these EALs is based on risk assessment to set the boundaries of the emergency classes and assure that all EALs that trigger that emergency class are in the same range of relative risk. Precursor conditions of more serious emergencies also represent a potential risk to the public and must be appropriately classified."

Using this philosophy, if an IC and TV are met, the threat associated with the emergency class is present and should therefore be classified. If a condition existed for a short period of time, but is no longer present, the associated threat is no longer applicable. Therefore, classification of these events is not appropriate in that the actions taken associated with the threat level are no longer needed. To that end, the condition should be reported using the guidance of NUREG 1022, Rev 1, Section 3.1.1 which states in part:

"Occasionally, a licensee may discover that an event or condition had existed which met the emergency plan criteria but that no emergency had been declared and the basis for the emergency class no longer exists at the time of this discovery. This may be due to a rapidly concluded event or an oversight in the emergency classification made during the event or it may be determined during a post-event review. Frequently, in cases of this nature, which were discovered after the fact, licensees have declared the emergency class, immediately terminated the emergency class and then made the appropriate notifications. However, the staff does not consider actual declaration of the emergency class to be necessary in these circumstances; an ENS notification (or an ENS update if the event was previously reported but misclassified) within one hour of the discovery of the undeclared (or misclassified) event will provide an acceptable alternative. Notification of the State and local emergency response organizations should be made in

accordance with the arrangements made between the licensee and offsite organizations."

Many of the Threshold Values associated with EALs are based on a time period for their condition to be met. Generally these are 15 minutes, but 30 and 60 minutes are also used. The time provided in these Threshold Values is to allow actions to be taken to reduce or eliminate the threat presented by the condition. With time criteria associated with the Threshold Values, most of the transient conditions have been addressed and bounded within the EALs.

D.4 DEFINITIONS

D.4.1 HOSTILE ACTION

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

D.4.2 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.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

RU1

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Any UNPLANNED Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds Two Times the Radiological Effluent Technical Specifications for 60 Minutes or Longer.

Operating Mode Applicability: All

Threshold Values: (1 **OR** 2)

Note: *The Emergency Director should not wait until 60 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 60 minutes.*

1. VALID reading on any of the following effluent monitor that exceeds two times the alarm setpoint established by a current radioactivity discharge permit for 60 minutes **OR** longer.

Liquid Radwaste Effluent Line (RE-0018)
SG Blowdown Effluent Line (RE-0021)
Turbine Bldg Effluent Line (RE-0848)
Gaseous Radwaste (ARE-0014)
Turbine Bldg Vent, SJAE (RE-12839)
Plant Vent (RE-12442C or RE-12444C)

2. Confirmed sample analyses for gaseous **OR** liquid releases indicates concentrations **OR** release rates, with a release duration of 60 minutes **OR** longer, in excess of two times Technical Specification 5.5.4, as confirmed by the ODCM.

Basis:

UNPLANNED, as used in this context, includes any release for which a radioactivity discharge permit was not prepared, or a release that exceeds the conditions (e.g., minimum dilution flow, maximum discharge flow, alarm setpoints, etc.) on the applicable permit. The Emergency Director should not wait until 60 minutes has elapsed, but should declare the event as soon as

it is determined that the release duration has or will likely exceed 60 minutes. Also, if an ongoing release is detected and the starting time for that release is unknown, the Emergency Director should, in the absence of data to the contrary, assume that the release has exceeded 60 minutes.

This IC addresses a potential or actual decline in the level of safety of the plant as indicated by a radiological release that exceeds regulatory commitments for an extended period of time. Nuclear power plants incorporate features intended to control the release of radioactive effluents to the environment. Further, there are administrative controls established to prevent unintentional releases, or control and monitor intentional releases. These controls are located in the Offsite Dose Calculation Manual (ODCM). The occurrence of extended, uncontrolled radioactive releases to the environment is indicative of a degradation in these features and/or controls.

Threshold Value #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. This alarm setpoint may be associated with a planned batch release, or a continuous release path. In either case, the setpoint is established by the ODCM to warn of a release that is not in compliance with the TS 5.5.4. Indexing the Threshold Value to the ODCM setpoints in this manner ensures that the Threshold Value will never be less than the setpoint established by a specific discharge permit.

Threshold Value #2 is intended for effluent monitoring on non-routine release pathways for which a discharge permit would not normally be prepared. The ODCM establishes a methodology for determining effluent radiation monitor setpoints. The ODCM specifies default source terms and, for gaseous releases, prescribes the use of pre-determined annual average meteorology in the most limiting downwind sector for showing compliance with the regulatory commitments. These monitor reading Threshold Values are determined using this methodology.

Threshold Value #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

RU2

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Unexpected Rise in Plant Radiation.

Operating Mode Applicability: All

Threshold Values: (1 **OR** 2)

1. a. VALID indication of uncontrolled water level lowering in the reactor refueling cavity, as indicated by spent fuel pool, **OR** fuel transfer canal with all irradiated fuel assemblies remaining covered by water by any of the following:

Personnel report of low water level
LSHL-0625 offscale low (ALB05 E02)
Personnel report of cavitation **OR** low discharge pressure for SFP (1/2-1213-P6-002 **OR** -005) **AND/OR** RHR (1/2-1205-P6-001 **OR** -002) Pumps

AND

b. UNPLANNED VALID Direct Area Radiation Monitor readings rise on any of the following:

RE-0008 in the fuel building
RE-0002, -0003, -0004 in containment
RE-0011 at the seal table
RE-0005, -0006 in containment

2. UNPLANNED VALID Direct Area Radiation Monitor readings 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:

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

VALID: an indication, report, or condition, is considered to be VALID when it is verified by (1) an instrument channel check, or (2) indications on related or redundant indicators, or (3) by direct observation by plant personnel, such that doubt related to the indicator's operability, the

condition's existence, or the report's accuracy is removed. Implicit in this definition is the need for timely assessment.

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

In light of Reactor Cavity Seal failure incidents at two different PWRs and loss of water in the Spent Fuel Pit/Fuel Transfer Canal at a BWR, explicit coverage of these types of events via Threshold Value #1 is appropriate given their potential for raised doses to plant staff. Classification as a NOUE is warranted as a precursor to a more serious event. Indications include instrumentation such as water level and local area radiation monitors, equipment parameters and personnel (e.g., refueling crew) reports. If available, video cameras may allow remote observation. Depending on available level instrumentation, the declaration threshold may need to be based on indications of water makeup rate or lowering in refueling water storage tank level.

Threshold Value 1a primary indicator is visual observation.

Threshold Value 1b limits: The dose above the fuel in the core or storage racks is 1.27×10^4 mR/hr with eight feet of water shielding and a reduction of $1.27 \times 10^4 / 6.38 \times 10^2 \approx 20$ per two feet of water. . These monitors do not directly see the fuel, but see the dose reflected from the fuel building ceiling or containment dome. A conservative reduction on reflection is 1.14×10^{-2}.

For the containment monitors, the distance from the approximate midline of the dome to the operating deck is 140 ft, so the just covered dose for RE-0005 and -0006 would be

$$1.8 \times 10^6 \text{ R/hr} \times 0.0114 \times \pi (13.7/2)^2 \text{ ft}^2 / 140^2 \text{ ft}^2 \approx 162 \text{ R/hr.}$$

To remain on-scale, RE-0002, -0003 (range of 5.4×10^3 mR/hr,) equivalent reading at the pool surface would be $5.4 \times 10^3 \times (1.8 \times 10^6/162) \approx 6.0 \times 10^4$ R/hr. This requires a dose reduction of $1.8 \times 10^6 / 6.0 \times 10^4 \approx 30$ or $24 \times (\ln 30 / \ln 20) \approx 27$" water cover, and RE-0004 (range of 1×10^4 mR/hr,) requires about 22" of water cover.

For the seal table monitor on level A, RE-0011, the operating deck at elevation 220' is 2.75 feet thick, which is approximately equivalent to 2.75 ft x 2.16 g/cc / 1.0 g/cc = 6 ft of water or a dose reduction factor of $20^{6/2} = 8 \times 10^3$ yielding a dose of:

$$1.8 \times 10^6 \text{ R/hr} \times 0.0114 \times \pi (13.7/2)^2 \text{ ft}^2 / (140+20)^2 \text{ ft}^2 / 8 \times 10^3 \approx 15 \text{ mR/hr.}$$

In the fuel handling building, the rack dose will be reflected from the ceiling at elevation 261'-8" or about 40 ft from the floor yielding a just covered dose rate of

$$1.8 \times 10^6 \text{ R/hr} \times 0.0114 \times \pi (13.7/2)^2 \text{ ft}^2 / (40)^2 \text{ ft}^2 \approx 1.9 \times 10^3 \text{ R /hr.}$$

This will require a dose reduction of $1.9 \times 10^6 / 1 \times 10^4 \approx 189$ or $24 \times (\ln 189 / \ln 20) \approx 42$" water cover to stay on scale.

The dose at RE-0008 would be

$$1.45 \times 2.5 \text{ mR/hr} \times 20^{10/2} \times 0.0114 \times \pi (6.5)^2 \text{ ft}^2 / 40^2 \text{ ft}^2 = 1.1 \times 10^4 \text{ mR/hr.}$$

To remain on-scale, RE-0008 requires $24 \times \ln (1.1 \times 10^4 / 1.0 \times 10^4) / \ln 20 \approx 1$" water.

While other radiation monitors 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 example, the reading on an area radiation monitor located on the refueling bridge may raise due to planned evolutions such as head lift, or even a fuel assembly being raised in the manipulator mast. Generally, raised radiation monitor indications will need to be combined with another indicator (or personnel report) of water loss. For refueling events where the water level drops below the RPV flange classification would be via CU2. This event escalates to an Alert per IC AA2 if irradiated fuel outside the reactor vessel is uncovered. For events involving irradiated fuel in the reactor vessel, escalation would be via the Fission Product Barrier Matrix for events in operating modes 1-4.

Threshold Value #2 addresses UNPLANNED rises in in-plant radiation levels that represent a degradation in the control of radioactive material, and represent a potential degradation in the level of safety of the plant. 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

RA1

Initiating Condition -- ALERT

Any UNPLANNED Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds 200 Times the Radiological Effluent Technical Specifications for 15 Minutes or Longer.

Operating Mode Applicability: All

Threshold Values: (1 **OR** 2)

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

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

Monitor
Liquid Radwaste Effluent Line (RE-0018)
SG Blowdown Effluent Line (RE-0021)
Turbine Bldg Effluent Line (RE-0848)
Gaseous Radwaste (ARE-0014)
Turbine Bldg Vent, SJAE (RE-12839)D-22
Plant Vent (RE-12444C or RE-12442C)

2. Confirmed sample analyses for gaseous or liquid releases indicates concentrations **OR** release rates in excess of 200 times Technical Specification 5.5.4 as confirmed by the ODCM , with a release duration of 15 minutes **OR** longer.

Basis:

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

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

This IC addresses a potential or actual decline in the level of safety of the plant as indicated by a radiological release that exceeds regulatory commitments for an extended period of time. Nuclear power plants incorporate features intended to control the release of radioactive effluents to the environment. Further, there are administrative controls established to prevent unintentional releases, or control and monitor intentional releases. These controls are located in the Offsite Dose Calculation Manual (ODCM). The occurrence of extended, uncontrolled radioactive releases to the environment is indicative of a degradation in these features and/or controls.

The Radiological Effluent Control Plan (RECP) multiples are specified in ICs RU1 and RA1 only to distinguish between non-emergency conditions, and from each other. While these multiples obviously correspond to an offsite 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. Releases should not be prorated or averaged.

UNPLANNED, as used in this context, includes any release for which a radioactivity discharge permit was not prepared, or a release that exceeds the conditions (e.g., minimum dilution flow, maximum discharge flow, alarm setpoints, etc.) on the applicable permit. The Emergency Director should not wait until 15 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 15 minutes. Also, if an ongoing release is detected and the starting time for that release is unknown, the Emergency Director should, in the absence of data to the contrary, assume that the release has exceeded 15 minutes.

Threshold Value #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. In either case, the setpoint is established by the ODCM to warn of a release that is not in compliance with the RECP. Indexing the Threshold Value threshold to the ODCM setpoints in this manner ensures that the Threshold Value threshold will never be less than the setpoint established by a specific discharge permit. Setpoints are 100 times those of RU1 or the maximum range of the monitor.

Threshold Value #2 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.

Threshold Value #1 directly correlates with the IC since annual average meteorology is required to be used in showing compliance with the RECP and is used in calculating the alarm setpoints. Thus, there will likely be a numerical inconsistency. However, the fundamental basis of this IC is NOT a dose or dose rate, but rather the degradation in the level of safety of the plant implied by the uncontrolled release.

Due to the uncertainty associated with meteorology, emergency implementing procedures should call for the timely performance of dose assessments using actual (real-time) meteorology in the event of a gaseous radioactivity release of this magnitude. The results of these assessments should be compared to the ICs RS1 and RG1 to determine if the event classification should be escalated.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

RA2

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

Threshold Values: (1 **OR** 2)

1. UNPLANNED VALID alert alarm on any of the following radiation monitors:

Fuel Handling Building RE-008
CNMT BLDG Low Range** RE-002/003 **Mode 6 only during fuel transfer
Fuel Handling BLDG EFFL. ARE-2532 A/B
Fuel Handling BLDG EFFL. ARE-2533 A/B

2. Loss of water level that has or will result in the uncovering of irradiated fuel outside the Reactor Vessel as indicated by ANY of the following:

Personnel report during fuel assembly movements.	
Spent Fuel Pool Storage	Less than El 193'-5"
Transfer Canal Transit Elevation	Less than El 187'-2"
Reactor Core Elevation	Less than El 181'-10" (63% on Full Range RVLIS)

Basis:

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

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

This IC addresses specific events that have resulted, or may result, in unexpected rises 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 a degradation in the level of safety of the plant. These events escalate from IC RU2 in that fuel activity has been released, or is anticipated due to fuel heatup. This IC applies to

spent fuel requiring water coverage and is not intended to address spent fuel which is licensed for dry storage.

Threshold Value #1 addresses radiation monitor indications of fuel uncovery and/or fuel damage. Raised 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. 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 example, the monitor could in fact be properly responding to a known event involving transfer or relocation of a source, stored in or near the fuel pool or responding to a planned evolution such as removal of the reactor head. Application of these Initiating Conditions requires understanding of the actual radiological conditions present in the vicinity of the monitor. Information Notice No. 90-08, *"KR-85 Hazards from Decayed Fuel"* should be considered in establishing radiation monitor Threshold Values.

In Threshold Value #2, indications include water level and personnel reports. Visual observation will be the primary indicator for spent fuel pool and fuel movement activities. Personnel report of personnel during fuel assembly movements is included to ensure that reports of actual or potential fuel uncovery is classified. If available, video cameras may allow remote observation. Depending on available level indication, the declaration threshold may need to be based on indications of water makeup rate or lowering in refueling water storage tank level.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

RA3

Initiating Condition -- ALERT

Release of Radioactive Material or Rises 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

Threshold Values: (1 **OR** 2)

1. VALID radiation monitor readings greater than 15 mR/hr in areas requiring continuous occupancy to maintain plant safety functions:

Control Room radiation monitor RE-001
Central Alarm Station (by survey)

2. VALID radiation readings greater than 1 R/hr values in areas requiring infrequent access to maintain plant safety functions.

Turbine Building	South & North Main Steam Valve Rooms
Control Building	Fire Pump House
Aux Feed Water Pump House	Low Voltage Switchyard
Diesel Generator Buildings	NSCW Towers

Basis:

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

This IC addresses raised radiation levels that impede necessary access to operating stations, or other areas containing equipment that must be operated manually or that requires local monitoring, in order to maintain safe operation or perform a safe shutdown. It is this impaired ability to operate the plant that results in the actual or potential substantial degradation of the level of safety of the plant. The cause and/or magnitude of the rise in radiation levels is not a concern of this IC. The Emergency Director must consider the source or cause of the raised radiation levels and determine if any other IC may be involved. For example, a dose rate of 15 mR/hr in the control room may be a problem in itself. However, the rise may also be indicative of high dose rates in the containment due to a LOCA. In this latter case, an SAE or GE may be indicated by the fission product barrier matrix ICs.

At multiple-unit sites, the Threshold Values could result in declaration of an Alert at one unit due to a radioactivity release or radiation shine resulting from a major accident at the other unit. This is appropriate if the rise impairs operations at the operating unit.

This IC is not meant to apply to raises in the containment dome radiation monitors as these are events which are addressed in the fission product barrier matrix ICs. Nor is it intended to apply to anticipated temporary rises due to planned events (e.g., incore detector movement, radwaste container movement, depleted resin transfers, etc.)

Areas requiring continuous occupancy includes the control room and the central alarm station. The value of 15mR/hr is derived from the GDC 19 value of 5 rem in 30 days with adjustment for expected occupancy times. Although Section III.D.3 of NUREG-0737, *"Clarification of TMI Action Plan Requirements"*, provides that the 15 mR/hr value can be averaged over the 30 days, the value is used here without averaging, as a 30 day duration implies an event potentially more significant than an Alert.

For areas requiring infrequent access, the 1 R/hr (Locked High Rad Area) is be based on radiation levels which result in exposure control measures intended to maintain doses within normal occupational exposure guidelines and limits (i.e., 10 CFR 20), and in doing so, will impede necessary access. As used here, *impede,* includes hindering or interfering provided that the interference or delay is sufficient to significantly threaten the safe operation of the plant.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

RS1

Initiating Condition -- SITE AREA EMERGENCY

Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 100 mR TEDE **OR** 500 mR Thyroid CDE for the Actual or Projected Duration of the Release.

Operating Mode Applicability: All

Threshold Values: (1 **OR** 2 **OR** 3)

Note: *If dose assessment results are available at the time of declaration, the classification should be based on Threshold Value #2 instead of Threshold Value #1.While necessary declarations should not be delayed awaiting results, the dose assessment should be initiated / completed in order to determine if the classification should be subsequently escalated.*

Note: *The Emergency Director should not wait until 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.*

1. VALID reading on any of the following radiation monitors that exceeds **OR** is expected to exceed the reading shown for 15 minutes **OR** longer:

RE-12839E	5 µCi/cc
RE-12444E	1 x 10^2 µCi/cc

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

3. Field survey results indicate closed window dose rates exceeding 100 mR/hr expected to continue for more than one hour; **OR** analyses of field survey samples indicate thyroid CDE of 500 mR for one hour of inhalation, at **OR** beyond the site boundary.

Basis:

VALID: an indication, report, or condition, is considered to be VALID when it is verified by (1) an instrument channel check, or (2) indications on related or redundant indicators, or (3) by direct observation by plant personnel, such that doubt related to the indicator's operability, the

condition's existence, or the report's accuracy is removed. Implicit in this definition is the need for timely assessment.

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. While these failures are addressed by other ICs, this IC provides appropriate diversity and addresses events which may not be able to be classified on the basis of plant status alone, *e.g.*, fuel handling accident in spent fuel building.

The TEDE dose is set at 10% of the EPA PAG, while the 500 mR thyroid CDE was established in consideration of the 1:5 ratio of the EPA PAG for TEDE and thyroid CDE.

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

The site specific monitor list in Threshold Value #1 includes monitors on all potential release pathways.

The monitor reading Threshold Values are determined using a dose assessment method that back calculates from the dose values specified in the IC. The meteorology and source term (noble gases, particulates, and halogens) used is the same as those used for determining the monitor reading Threshold Values in ICs RU1 and RA1. This protocol maintains intervals between the Threshold Values for the four classifications. Since doses are generally not monitored in real-time, a release duration of one hour is assumed, and that the Threshold Values be based on a site boundary (or beyond) dose of 100 mR/hour whole body or 500 mR/hour thyroid, whichever is more limiting (as was done for Threshold Value #3).

The release rates which result in site boundary doses of 100 mR TEDE are in excess of the range of the monitors listed in RU1 and RA1.

Since dose assessment is based on actual meteorology, whereas the monitor reading Threshold Values are not, the results from these assessments may indicate that the classification is not warranted, or may indicate that a higher classification is warranted. For this reason, emergency implementing procedures should call for the timely performance of dose assessments using actual meteorology and release information. If the results of these dose assessments are available when the classification is made (*e.g.*, initiated at a lower classification level), the dose assessment results override the monitor reading Threshold Values. Classification should not be delayed pending the results of these dose assessments.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

RG1

Initiating Condition -- GENERAL EMERGENCY

Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 1000 mR TEDE **OR** 5000 mR Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology.

Operating Mode Applicability: All

Threshold Values: (1 **OR** 2 **OR** 3)

Note: *If dose assessment results are available at the time of declaration, the classification should be based on Threshold Value #2 instead of Threshold Value #1.While necessary declarations should not be delayed awaiting results, the dose assessment should be initiated / completed in order to determine if the classification should be subsequently escalated.*

Note: *The Emergency Director should not wait until 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.*

1. VALID reading on any of the following radiation monitors that exceeds **OR** expected to exceed the reading shown for 15 minutes **OR** longer:

RE-12839E	50 µCi/cc
RE-12444E	2.1×10^3 µCi/cc

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

3. Field survey results indicate closed window dose rates exceeding 1000 mR/hr expected to continue for more than one hour; **OR** analyses of field survey samples indicate thyroid CDE of 5000 mR for one hour of inhalation, at **OR** beyond site boundary.

Basis:

VALID: an indication, report, or condition, is considered to be VALID when it is verified by (1) an instrument channel check, or (2) indications on related or redundant indicators, or (3) by direct observation by plant personnel, such that doubt related to the indicator's operability, the

condition's existence, or the report's accuracy is removed. Implicit in this definition is the need for timely assessment.

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. While these failures are addressed by other ICs, this IC provides appropriate diversity and addresses events which may not be able to be classified on the basis of plant status alone. It is important to note that, for the more severe accidents, the release may be unmonitored or there may be large uncertainties associated with the source term and/or meteorology.

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

The site specific monitor list in Threshold Value #1 includes monitors on all potential release pathways.

The monitor reading Threshold Values are determined using a dose assessment method that back calculates from the dose values specified in the IC. The meteorology and source term (noble gases, particulates, and halogens) used are the same as those used for determining the monitor reading Threshold Values in ICs RU1 and RA1. This protocol will maintain intervals between the Threshold Values for the four classifications. Since doses are generally not monitored in real-time, a release duration of one hour is assumed, and that the Threshold Values are based on a site boundary (or beyond) dose of 1000 mR/hour whole body or 5000 mR/hour thyroid, whichever is more limiting.

Since dose assessment is based on actual meteorology, whereas the monitor reading Threshold Values are not, the results from these assessments may indicate that the classification is not warranted, or may indicate that a higher classification is warranted. For this reason, emergency implementing procedures call for the timely performance of dose assessments using actual meteorology and release information. If the results of these dose assessments are available when the classification is made (*e.g.*, initiated at a lower classification level), the dose assessment results override the monitor reading Threshold Values. Classification should not be delayed pending the results of these dose assessments.

SYSTEM MALFUNCTION

CU1

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

RCS Leakage.

Operating Mode Applicability: Cold Shutdown

Threshold Values:

1. Unable to establish or maintain pressurizer level greater than 17%.

Basis:

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

The difference between CU1 and CU2 deals with the RCS conditions that exist between cold shutdown and refueling mode applicability. In cold shutdown the RCS will normally be intact and RCS inventory and level monitoring means such as Pressurizer level indication and makeup volume control tank levels are normally available. In the refueling mode the RCS is not intact and RPV level and inventory are monitored by different means.

SYSTEM MALFUNCTION

CU2

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

UNPLANNED Loss of RCS Inventory with Irradiated Fuel in the RPV.

Operating Mode Applicability: Refueling

Threshold Values: (1 **OR** 2)

1. UNPLANNED RCS level lowering below 194' (RPV flange) for greater than or equal to 15 minutes

2. a. RPV level **CANNOT** be monitored

   AND

   b. A loss of RCS inventory may be occurring as indicated by unexplained level rise in ANY of the following:

Containment sump
Reactor Coolant Drain Tank (RCDT)
Waste Holdup Tank (WHT)

Basis:

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

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 lower 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 any 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 CA2 (Loss of RPV Inventory with Irradiated Fuel in the RPV) or CA4 (Inability to Maintain Plant in Cold Shutdown with Irradiated Fuel in the RPV).

The difference between CU1 and CU2 deals with the RCS conditions that exist between cold shutdown and refueling modes. In cold shutdown the RCS will normally be intact and standard RCS inventory and level monitoring means are available. In the refueling mode the RCS is not intact and RPV level and inventory are monitored by different means.

In the refueling mode, normal means of core temperature indication and RCS level indication may not be available. Redundant means of RPV level indication will normally be installed

(including the ability to monitor level visually) to assure that the ability to monitor level will not be interrupted. However, if all level indication were to be lost during a loss of RCS inventory event, the operators would need to determine that RPV inventory loss was occurring by observing sump and tank level changes. Sump and tank level rises must be evaluated against other potential sources of leakage such as cooling water sources inside the containment to ensure they are indicative of RCS leakage. Escalation to Alert would be via either CA2 or RCS heatup via CA4.

Threshold Value 1 involves a lowering in RCS level below the top of the RPV flange that continues for 15 minutes due to an UNPLANNED event. This Threshold Value is not applicable to lowering levels in flooded reactor cavity level (covered by RU2 Threshold Value1) until such time as the level lowers to the level of the vessel flange. Drawing AX4DR023 provides the RPV flange level at 194' 1½" rounded to 194' for the threshold Value. If RPV level continues to lower and reaches the Bottom ID of the RCS Loop then escalation to CA2 would be appropriate. Note that the Bottom ID of the RCS Loop Setpoint should be the level equal to the bottom of the RPV loop penetration (not the low point of the loop).

SYSTEM MALFUNCTION

CU3

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Loss of All Offsite Power to Essential Busses for Greater Than 15 Minutes.

Operating Mode Applicability: Cold Shutdown
Refueling

Threshold Value:

1. a. Loss of power to **OR** from transformers 1(2)NXRA **AND** 1(2)NXRB resulting in loss of all off-site electrical power to **BOTH** 1(2)AA02 **AND** 1(2)BA03 for greater than 15 minutes.

   AND

   b. At least one emergency diesel generator supplying power to **EITHER** AA02 **OR** BA03.

Basis:

Prolonged loss of AC power reduces required redundancy and potentially degrades the level of safety of the plant by rendering the plant more vulnerable to a complete Loss of AC Power (e.g., Station Blackout). Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

Capability to cross-tie AC power from a companion unit may take credit for the redundant power source in the associated Threshold Value for this IC. Inability to effect the cross-tie within 15 minutes warrants declaring a NOUE.

SYSTEM MALFUNCTION

CU4

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

UNPLANNED Loss of Decay Heat Removal Capability with Irradiated Fuel in the RPV.

Operating Mode Applicability: Cold Shutdown
Refueling

Threshold Values: (1 **OR** 2)

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

1. An UNPLANNED event results in RCS temperature exceeding 200°F.

2. Loss of all RCS temperature **AND** RPV level indication for greater than 15 minutes.

Basis:

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

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. In cold shutdown the ability to remove decay heat relies primarily on forced cooling flow. Operation of the systems that provide this forced cooling may be jeopardized due to the unlikely loss of electrical power or RCS inventory. Since the RCS usually remains intact in the cold shutdown mode a large inventory of water is available to keep the core covered. In cold shutdown the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the refueling mode. Entry into cold shutdown conditions may be attained within hours of operating at power. Entry into the refueling mode procedurally may not occur for typically 100 hours or longer after the reactor has been shutdown. Thus the heatup threat and therefore the threat to damaging the fuel clad may be lower for events that occur in the refueling mode with irradiated fuel in the RPV (note that the heatup threat could be lower for cold shutdown conditions if the entry into cold shutdown was following a refueling). In addition, the operators should be able to monitor RCS temperature and RPV level so that escalation to the alert level via CA4 or CA1 will occur if required.

During refueling the level in the RPV will normally be maintained above the RPV flange. Refueling evolutions that lower water level below the RPV flange are carefully planned and procedurally controlled. Loss of forced decay heat removal at reduced inventory may result in more rapid rises in RCS/RPV temperatures depending on the time since shutdown. Escalation to the Alert level via CA4 is provided should an UNPLANNED event result in RCS temperature exceeding the Technical Specification cold shutdown temperature limit with CONTAINMENT CLOSURE not established.

Unlike the cold shutdown mode, normal means of core temperature indication and RCS level indication may not be available in the refueling mode. Redundant means of RPV level indication are therefore procedurally installed to assure that the ability to monitor level will not be interrupted. However, if all level and temperature indication were to be lost in either the cold shutdown of refueling modes, Threshold Value 2 would result in declaration of a NOUE if either temperature or level indication cannot be restored within 15 minutes from the loss of both means of indication. Escalation to Alert would be via CA2 based on an inventory loss or CA4 based on exceeding its temperature criteria.

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

SYSTEM MALFUNCTION

CU6

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

UNPLANNED Loss of All Onsite **OR** Offsite Communications Capabilities.

Operating Mode Applicability: Cold Shutdown
Refueling

Threshold Values: (1 **OR** 2)

1. UNPLANNED loss of ALL of the following on-site communications capability affecting the ability to perform routine operations:

In plant telephones
Public address system
Plant radio systems

2. UNPLANNED loss of ALL of the following off-site communications capability:

ENN (Emergency Notification Network)
ENS (Emergency Notification System)
Commercial phones (Radio, PBX, Satellite, Wireless)
VOIP (Voice Over Internet Protocol)
OPX (Off Premise Extension)

Basis:

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

The purpose of this IC and its associated Threshold Values 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 offsite authorities. The loss of offsite communications ability is expected to be significantly more comprehensive than the condition addressed by 10 CFR 50.72.

The availability of one method of ordinary offsite communications is sufficient to inform state and local authorities of plant problems. This Threshold Value is intended to be used only when extraordinary means (e.g., relaying of information from radio transmissions, individuals being sent to offsite locations, etc.) are being utilized to make communications possible.

The list of onsite communications loss encompasses the loss of all means of routine communications.

The list of offsite communications loss encompasses the loss of all means of communications with offsite authorities.

SYSTEM MALFUNCTION

CU7

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

UNPLANNED Loss of Required DC Power for Greater Than 15 Minutes.

Operating Mode Applicability: Cold Shutdown
Refueling

Threshold Value:

1. a. UNPLANNED loss of Vital DC power to 125 VDC Buses AD1, BD1, CD1, **AND** DD1 indicated by bus voltage indications less than 105 VDC

   AND

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

Basis:

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

The purpose of this IC and its associated Threshold Values is to recognize a loss of DC power compromising the ability to monitor and control the removal of decay heat during Cold Shutdown or Refueling operations. This Threshold Value is intended to be anticipatory in as much as the operating crew may not have necessary indication and control of equipment needed to respond to the loss.

UNPLANNED is included in this IC and Threshold Value to preclude the declaration of an emergency as a result of planned maintenance activities. Routinely plants will perform maintenance on a Train related basis during shutdown periods. It is intended that the loss of the operating (operable) train is to be considered. If this loss results in the inability to maintain cold shutdown, the escalation to an Alert will be per CA4 "Inability to Maintain Plant in Cold Shutdown with Irradiated Fuel in the RPV."

105 VDC bus voltage is based on the minimum bus voltage necessary for the operation of safety related equipment. This voltage value incorporates a margin of at least 15 minutes of operation before the onset of inability to operate those loads.

SYSTEM MALFUNCTION

CU8

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Inadvertent Criticality.

Operating Mode Applicability: Cold Shutdown
Refueling

Threshold Values:

1. An UNPLANNED sustained positive startup rate observed on nuclear instrumentation.

Basis:

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

This IC addresses criticality events that occur in Cold Shutdown or Refueling modes (NUREG 1449, Shutdown and Low-Power Operation at Commercial Nuclear Power Plants in the United States) such as fuel mis-loading events and inadvertent dilution 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 (e.g., criticality earlier than estimated) which are addressed in the companion IC SU8.

The term “sustained” is used in order to allow exclusion of expected short term positive startup rates from planned fuel bundle or control rod movements during core alterations. These short term positive startup rates are the result of the rise in neutron population due to subcritical multiplication.

SYSTEM MALFUNCTION

CA1

Initiating Condition -- ALERT

Loss of RCS Inventory.

Operating Mode Applicability: Cold Shutdown

Threshold Values: (1 **OR** 2)

1. Loss of RCS inventory as indicated by RPV level less than elevation 185'-10" (73% on Full Range RVLIS)

2. a. RCS level **CANNOT** be monitored for greater than 15 minutes

   AND

   b. A loss of RCS inventory may be occurring as indicated by unexplained level rise in ANY of the following:

Containment sump
Reactor Coolant Drain Tank (RCDT)
Waste Holdup Tank (WHT)

Basis:

These Threshold Values 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 Bottom ID of the RCS Loop Setpoint was chosen because at this level remote RCS level indication may be lost and loss of suction to decay heat removal systems has occurred. The inability to restore and maintain level after reaching this setpoint would therefore be indicative of a failure of the RCS barrier.

In cold shutdown the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the refueling mode. Entry into cold shutdown conditions may be attained within hours of operating at power or hours after refueling is completed. Entry into the refueling mode procedurally may not occur for typically 100 hours or longer after the reactor has been shutdown. Thus the heatup threat and therefore the threat to damaging the fuel clad may be lower for events that occur in the refueling mode with irradiated fuel in the RPV (note that the heatup threat could be lower for cold shutdown conditions if the entry into cold shutdown was following a refueling). The above forms the basis for needing both a cold shutdown specific IC (CA1) and a refueling specific IC (CA2)

In the cold shutdown mode, normal RCS level and RPV level instrumentation systems will normally be available. However, 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 and tank level changes. Sump and tank level rises 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. The 15-minute duration for the loss of level indication was chosen because it is half of the CS1 Site Area Emergency Threshold Value duration. The 15-minute duration allows CA1 to be an effective precursor to CS1. Significant fuel damage is not expected to occur until the core has been uncovered for greater than 1 hour per the analysis referenced in the CG1 basis. Therefore this Threshold Value meets the definition for an Alert.

The difference between CA1 and CA2 deals with the RCS conditions that exist between cold shutdown and refueling mode applicability. In cold shutdown the RCS will normally be intact and standard RCS inventory and level monitoring means are available. In the refueling mode the RCS is not intact and RPV level and inventory are monitored by different means.

If RPV level continues to lower then escalation to Site Area will be via CS1 (Loss of Inventory Affecting Core Decay Heat Removal Capability with Irradiated Fuel in the RPV)

SYSTEM MALFUNCTION

CA2

Initiating Condition -- ALERT

Loss of RPV Inventory with Irradiated Fuel in the RPV.

Operating Mode Applicability: Refueling

Threshold Values: (1 **OR** 2)

1. Loss of inventory as indicated by RPV level less than 185'-10" (73% on Full Range RVLIS)

2. a. RPV level **CANNOT** be monitored for greater than 15 minutes

   AND

   b. A loss of RCS inventory may be occurring as indicated by unexplained level rise in ANY of the following:

Containment sump
Reactor Coolant Drain Tank (RCDT)
Waste Holdup Tank (WHT)

Basis:

These Threshold Values serve as precursors to a loss of heat removal. 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 Bottom ID of the RCS Loop Setpoint was chosen because at this level remote RCS level indication may be lost and loss of suction to decay heat removal systems may occur. The inability to restore and maintain level after reaching this setpoint would therefore be indicative of a failure of the RCS barrier.

In cold shutdown the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the refueling mode. Entry into cold shutdown conditions may be attained within hours of operating at power or hours after refueling is completed. Entry into the refueling mode procedurally may not occur for typically 100 hours {site-specific} or longer after the reactor has been shutdown. Thus the heatup threat and therefore the threat to damaging the fuel clad may be lower for events that occur in the refueling mode with irradiated fuel in the RPV (note that the heatup threat could be lower for cold shutdown conditions if the entry into cold shutdown was following a refueling). The above forms the basis for needing both a cold shutdown specific IC (CA1) and a refueling specific IC (CA2).
In the refueling mode, normal means of RPV level indication may not be available. Redundant means of RPV level indication will be normally installed (including the ability to monitor level visually) to assure that the ability to monitor level will not be interrupted. However, if all level

indication were to be lost during a loss of RCS inventory event, the operators would need to determine that RPV inventory loss was occurring by observing sump and tank level changes. Sump and tank level rises 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. The 15-minute duration for the loss of level indication was chosen because it is half of the CS2 Site Area Emergency Threshold Value duration. The 15-minute duration allows CA2 to be an effective precursor to CS2. Significant fuel damage is not expected to occur until the core has been uncovered for greater than 1 hour per the analysis referenced in the CG1 basis. Therefore this Threshold Value meets the definition for an Alert.

The difference between CA1 and CA2 deals with the RCS conditions that exist between cold shutdown and refueling mode applicability. In cold shutdown the RCS will normally be intact and standard RCS inventory and level monitoring means are available. In the refueling mode the RCS is not intact and RPV level and inventory are monitored by different means.

SYSTEM MALFUNCTION

CA3

Initiating Condition -- ALERT

Loss of All Offsite Power **AND** Loss of All Onsite AC Power to Essential Busses.

Operating Mode Applicability: Cold Shutdown
Refueling
Defueled

Threshold Value:

1. a. Loss of power to **OR** from transformers 1(2)NXRA **AND** 1(2)NXRB resulting in loss of all off-site electrical power to **BOTH** 1(2)AA02 **AND** 1(2)BA03.

   AND

   b. Failure of emergency diesel generators to supply power to emergency busses.

   AND

   c. Failure to restore power to at least one emergency bus within 15 minutes from the time of loss of both offsite and onsite AC power.

Basis:

Loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, Containment Heat Removal, Spent Fuel Heat Removal and the Ultimate Heat Sink. When in cold shutdown, refueling, or defueled mode the event can be classified as an Alert, because of the significantly reduced decay heat, lower temperature and pressure, increasing the time to restore one of the emergency busses, relative to that specified for the Site Area Emergency Threshold Value. Escalating to Site Area Emergency IC SS1, if appropriate, is by Abnormal Rad Levels / Radiological Effluent, or Emergency Director Judgment ICs. Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

Consideration should be given to operable loads necessary to remove decay heat or provide Reactor Vessel makeup capability when evaluating loss of AC power to essential busses. Even though an essential bus may be energized, if necessary loads (i.e., loads that if lost would inhibit decay heat removal capability or Reactor Vessel makeup capability) are not operable on the energized bus then the bus should not be considered operable.

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

Threshold Values: (1 **OR** 2 **OR** 3)

1. An UNPLANNED event results in RCS temperature exceeding 200°F with:

   a. CONTAINMENT CLOSURE **NOT** established

   AND

   b. RCS integrity **NOT** established

Note 1 *The Emergency Director should not wait until the indicated time of Threshold Values 2 or 3 has elapsed, but should declare the event as soon as it is determined that the duration has or will likely be exceeded.*

Note 2 *If an RCS heat removal system is in operation within this time frame and RCS temperature is being reduced then Threshold Values 2 and 3 are not applicable.*

2. An UNPLANNED event results in RCS temperature exceeding 200°F for greater than 20 minutes (Note) with:

   a. CONTAINMENT CLOSURE established

   AND

   b. RCS integrity **NOT** established

   OR

   c. RCS inventory reduced.

3. An UNPLANNED event results in:

   a. RCS temperature exceeding 200°F for greater than 60 minutes (Note)

   OR

   b. RCS pressure increasing greater than 10 psig

Basis:

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

CONTAINMENT CLOSURE: Per Operating Procedure 14210-1/2, Containment Building Penetrations Verification – Refueling.

Threshold Value 1 addresses complete loss of functions required for core cooling during refueling and cold shutdown modes when neither CONTAINMENT CLOSURE nor RCS integrity are established. RCS integrity is in place when the RCS pressure boundary is in its normal condition for the cold shutdown mode of operation (e.g., no freeze seals or nozzle dams). No delay time is allowed for Threshold Value1 because the evaporated reactor coolant that may be released into the Containment during this heatup condition could also be directly released to the environment.

Threshold Value 2 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 or RCS inventory is reduced (e.g., mid loop operation in PWRs). As in Threshold Value 1, RCS integrity should be assumed to be in place when the RCS pressure boundary is in its normal condition for the cold shutdown mode of operation (e.g., no freeze seals or nozzle dams). The allowed 20 minute time frame was included to allow operator action to restore the heat removal function, if possible.

Threshold Value 3 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. As in Threshold Value 1 and 2, RCS integrity should be considered to be in place when the RCS pressure boundary is in its normal condition for the cold shutdown mode of operation. The status of CONTAINMENT CLOSURE in this Threshold Value is immaterial given that the RCS is providing a high pressure barrier to fission product release to the environment. The 60 minute time frame should allow sufficient time to restore cooling without there being a substantial degradation in plant safety. The 10 psig pressure rise 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 is 10 psig and can be read on Control Board instrumentation. The Note indicates that Threshold Value 3 is not applicable if actions are successful in restoring an RCS heat removal system to operation and RCS temperature is being reduced within the 60 minute time frame assuming that the RCS pressure rise has remained less than the site specific pressure value.

A loss of Technical Specification components alone is not intended to constitute an Alert. The same is true of a momentary UNPLANNED excursion above 200°F when the heat removal function is available.

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

SYSTEM MALFUNCTION

CS1

Initiating Condition -- SITE AREA EMERGENCY

Loss of RPV Inventory Affecting Core Decay Heat Removal Capability.

Operating Mode Applicability: Cold Shutdown

Threshold Values: (1 **OR** 2)

1. Loss of Reactor Pressure Vessel (RPV) inventory affecting core decay heat removal capability with CONTAINMENT CLOSURE **NOT** established as indicated by:

   a. RPV level less than 185'-4" [6" below Bottom ID of loop] (72% on Full Range RVLIS)

   OR

   b. RPV level **CANNOT** be monitored for greater than 30 minutes with a possible loss of RPV inventory as indicated by unexplained level rise in ANY of the following:

Containment sump
Reactor Coolant Drain Tank (RCDT)
Waste Holdup Tank (WHT)

2. Loss of RPV inventory affecting core decay heat removal capability with CONTAINMENT CLOSURE established as indicated by:

   a. RPV level less than 181'-10" [TOAF] (63% on Full Range RVLIS)

   OR

   b. RPV level **CANNOT** be monitored for greater than 30 minutes with a possible loss of RPV inventory as indicated by **EITHER** of the following:

Unexplained Containment sump level rise.
Erratic Source Range Monitor Indication

Basis:

CONTAINMENT CLOSURE: Per Operating Procedure 14210-1, Containment Building Penetrations Verification – Refueling.

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.

In cold shutdown the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the refueling mode. Entry into cold

shutdown conditions may be attained within hours of operating at power or hours after refueling is completed. Entry into the refueling mode procedurally may not occur for typically 100 hours or longer after the reactor has been shutdown. Thus the heatup threat and therefore the threat to damaging the fuel clad may be lower for events that occur in the refueling mode with irradiated fuel in the RPV (note that the heatup threat could be lower for cold shutdown conditions if the entry into cold shutdown was following a refueling). The above forms the basis for needing both a cold shutdown specific IC (CS1) and a refueling specific IC (CS2).

In the cold shutdown mode, normal RCS level and reactor vessel level indication systems (RVLIS) will normally be available. However, 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 and tank level changes. Sump and tank level rises 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.

If a RVLIS is not available such that the PWR Threshold Value setpoint cannot be determined, then Threshold Value 1.b should be used to determine if the IC has been met.

The 30 minute duration allows sufficient time for actions to be performed to recover needed cooling equipment. For PWRs the effluent release path is not expected with closure established. For BWRs releases would be monitored and escalation would be via Category A ICs if required.

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 RG1 (Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 1000 mR TEDE or 5000 mR Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology).

SYSTEM MALFUNCTION

CS2

Initiating Condition -- SITE AREA EMERGENCY

Loss of RPV Inventory Affecting Core Decay Heat Removal Capability with Irradiated Fuel in the RPV.

Operating Mode Applicability: Refueling

Threshold Values: (1 **OR** 2)

1. **WITH** CONTAINMENT CLOSURE **NOT** established:

   a. RPV level less than elevation 185'-4" [6" below Bottom ID of loop] (72% on Full Range RVLIS)

   OR

   b. RPV level **CANNOT** be monitored **WITH** indication of core uncovery as evidenced by ANY of the following:

RE-005 OR 006 ≥ 40 R/hr
RE-0011 ≥ 3 mR/hr
Erratic Source Range Monitor Indication

2. **WITH** CONTAINMENT CLOSURE established

   a. RPV level less than elevation 181'-10" [TOAF] (63% on Full Range RVLIS)

   OR

   b. RPV level **CANNOT** be monitored **WITH** Indication of core uncovery as evidenced by ANY of the following:

RE-005 **OR** 006 ≥ 40 R/hr
RE-0011 ≥ 3 mR/hr
Erratic Source Range Monitor Indication

Basis:

CONTAINMENT CLOSURE: Per Operating Procedure 14210-1, Containment Building Penetrations Verification – Refueling.

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 or continued boiling in the RPV.

In cold shutdown the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the refueling mode Entry into cold shutdown conditions may be attained within hours of operating at power or hours after refueling is completed. Entry into the refueling mode procedurally may not occur for typically 100 hours or longer after the reactor has been shutdown. Thus the heatup threat and therefore the threat to damaging the fuel clad may be lower for events that occur in the refueling mode with irradiated fuel in the RPV (note that the heatup threat could be lower for cold shutdown conditions if the entry into cold shutdown was following a refueling). The above forms the basis for needing both a cold shutdown specific IC (CS1) and a refueling specific IC (CS2).

If a RVLIS is not available such that the PWR Threshold Value setpoint cannot be determined, then Threshold Value 1.b should be used to determine if the IC has been met.

For Threshold Value 2 in the refueling mode, normal means of RPV level indication may not be available. Redundant means of RPV level indication will be normally installed (including the ability to monitor level visually) to assure that the ability to monitor level will not be interrupted.

This effluent release is not expected with closure established.

SYSTEM MALFUNCTION

CG1

Initiating Condition -- GENERAL EMERGENCY

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

Operating Mode Applicability: Cold Shutdown
Refueling

Threshold Values: (1 **AND** 2 **AND** 3)

1. Loss of RPV inventory as indicated by unexplained level rise in ANY of the following:

Containment sump
Reactor Coolant Drain Tank (RCDT)
Waste Holdup Tank (WHT)

.

AND

2. RPV Level:

a. Less than elevation 181'-10" [TOAF] (63% on Full Range RVLIS) for greater than 30 minutes

OR

b. RPV level **CANNOT** be monitored **WITH** indication of core uncovery for greater than 30 minutes as evidenced by ANY of the following:

RE-005 **OR** 006	≥ 40 R/hr
RE-0011	≥ 3 mR/hr
Erratic Source Range Monitor Indication	

AND

3. Containment challenged as indicated by ANY of the following:

Explosive mixture inside containment	greater than **OR** equal to 6% H_2
Containment Pressure	greater than **OR** equal to 13 psig **WITH** CONTAINMENT CLOSURE established
	greater than **OR** equal to 52 psig **WITH** Tech Spec containment integrity intact
CONTAINMENT CLOSURE **NOT** established	

Basis:

CONTAINMENT CLOSURE: Per Operating Procedure 14210-1, Containment Building Penetrations Verification – Refueling.

For Threshold Value 1 in the cold shutdown mode, normal RCS level and RPV level instrumentation systems will normally be available. However, 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 and tank level changes. Sump and tank level rises 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.

For Threshold Value 1 in the refueling mode, normal means of RPV level indication may not be available. Redundant means of RPV level indication will be normally installed (including the ability to monitor level visually) to assure that the ability to monitor level will not be interrupted. However, if all level indication were to be lost during a loss of RCS inventory event, the operators would need to determine that RPV inventory loss was occurring by observing sump and tank level changes. For both cold shutdown and refueling modes sump and tank level rises 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.

Threshold Value 2 represents 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.

As water level in the RPV lowers, the dose rate above the core will rise. The dose rate due to this core shine should result in up-scaled Containment High Range Monitor indication and possible alarm. Post-TMI studies indicated that the installed nuclear instrumentation will operate erratically when the core is uncovered and that this should be used as a tool for making such determinations.

Threshold Values 2a and 2b values are included in the CS2 basis above.

The GE is declared on the occurrence of the loss or imminent loss of function of <u>all three</u> barriers. Based on the above discussion, 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 GE.

In the context of Threshold Value 3, CONTAINMENT CLOSURE is the action taken to secure containment and its associated structures, systems, and components as a functional barrier to fission product release under existing plant conditions. CONTAINMENT CLOSURE should not be confused with refueling containment integrity as defined in technical specifications. Site shutdown contingency plans typically provide for re-establishing CONTAINMENT CLOSURE following a loss of heat removal or RCS inventory functions. If the closure is re-established prior to exceeding the temperature or level thresholds of the RCS Barrier and Fuel Clad Barrier Threshold Values, escalation to GE would not occur.

The site-specific pressure at which CONTAINMENT is considered challenged may change based on the condition of the CONTAINMENT. If the Unit is in the cold shutdown mode and the CONTAINMENT is fully intact then the site-specific setpoint is the CONTAINMENT design pressure (52 psig). This is consistent with typical owner's groups Emergency Response Procedures. With CONTAINMENT CLOSURE established intentionally by the plant staff in preparations for inspection, maintenance, or refueling the setpoint is based on the penetration seals design of 3 psig.

Vogtle Electric Generating Plant

HOT INITIATING CONDITION EMERGENCY ACTION LEVEL MATRIX - MODES 1, 2, 3, and 4 ONLY

	RADIOLOGICAL		FISSION PRODUCT	SYSTEM MALFUNCTIONS			HAZARDS					
	EFFLUENTS	RAD LEVELS	BARRIERS	AC/DC POWER	RX and CORE	ALARMS / COMMUNICATIONS	NATURAL / DESTRUCTIVE	FIRE / EXPLOSION	TOXIC / FLAMMABLE	SECURITY	CR EVACUATION	ED DISCRETION
GENERAL EMERGENCY	**RG1**- Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 1000 mR TEDE **OR** 5000 mR Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology.		**FG1** - Loss of ANY Two Barriers **AND** Loss or Potential Loss of Third Barrier See Fission Product Barrier Matrix	**SG1** - Prolonged Loss of All Offsite Power **AND** Prolonged Loss of All Onsite AC Power to essential buses	**SG2** - Failure of the RPS to complete an Automatic Trip and Manual Trip was NOT successful **AND** there is Indication of an Extreme Challenge to the ability to Cool the Core **Modes 1, 2 Only**					**HG1 – HOSTILE ACTION** resulting in loss of physical control of the facility		**HG2** - Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of General Emergency
SITE AREA EMERGENCY	**RS1** - Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 100 mR TEDE **OR** 500 mR Thyroid CDE for the Actual or Projected Duration of the Release.		**FS1** - Loss or Potential Loss of ANY Two Barriers See Fission Product Barrier Matrix	**SS1** - Loss of All Offsite Power **AND** Loss of All Onsite AC Power to Essential Busses **SS3** - Loss of All Vital DC Power	**SS2** - Failure of RPS Instrumentation to complete or Initiate an Automatic Reactor Trip Once a RPS Setpoint Has Been Exceeded **AND** Manual Trip Was NOT Successful. **Modes 1, 2 Only** **SS4** - Complete Loss of Heat Removal Capability	**SS6** - Inability to Monitor a SIGNIFICANT TRANSIENT in Progress				**HS4** – HOSTILE ACTION within the PROTECTED AREA	**HS2** - Control Room Evacuation Has Been Initiated **AND** Plant Control Cannot Be Established	**HS3** - Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of Site Area Emergency
ALERT EMERGENCY	**RA1** - Any UNPLANNED Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds 200 Times the Radiological Effluent Technical Specifications for 15 Minutes or Longer.	**RA2** - Damage to Irradiated Fuel **OR** Loss of Water Level that Has or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel **RA3** Release of Radioactive Material or Rises in Radiation Levels Within the Facility That Impedes Operation of Systems Required to Maintain Safe Operations or to Establish or Maintain Cold Shutdown	**FA1** - ANY Loss or ANY Potential Loss of **EITHER** Fuel Clad Barrier **OR** RCS Barrier See Fission Product Barrier Matrix	**SA5** - AC power to essential busses reduced to a single power source for greater than 15 minutes.	**SA2** - Failure of RPS Instrumentation to Complete or Initiate an Automatic Reactor Trip Once a RPS System Setpoint Has Been Exceeded **AND** Manual Trip was Successful. Modes 1, 2, 3 Only	**SA4** - UNPLANNED Loss of Most or All Annunciation or Indication With **EITHER** a SIGNIFICANT TRANSIENT in Progress, **OR** Compensatory Non-Alarming Indicators are Unavailable	**HA1** - Natural and Destructive Phenomena Affecting the Plant VITAL AREA	**HA2** - FIRE **OR** EXPLOSION Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe Shutdown	**HA3** - Release of Toxic, Asphyxiant, or Flammable Gases Within or contiguous to a VITAL AREA Which Jeopardizes Operation of Systems Required to Maintain Safe Operations or Establish or Maintain Safe Shutdown	**HA4** – HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat.	**HA5** - Control Room Evacuation Has Been Initiated.	**HA6** - Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of an Alert.
NOTIFICATION OF UNUSUAL EVENT	**RU1** – Any UNPLANNED Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds Two Times the Radiological Effluent Technical Specifications for 60 Minutes or Longer.	**RU2** – Unexpected Rise in Plant Radiation	**FU1** - ANY Loss **OR** ANY Potential Loss of Containment Barrier See Fission Product Barrier Matrix	**SU1** - Loss of All Offsite Power to Essential Busses for GREATER THAN 15 Minutes	**SU2** - Inability to Reach Required Shutdown Within Technical Specification Limits **SU5** - RCS Leakage **SU4** - Fuel Clad Degradation **SU8** - Inadvertent Criticality Modes 3, 4 Only	**SU3** - UNPLANNED Loss of Most or All Safety System Annunciation or Indication in The Control Room for Greater Than 15 Minutes **SU6** - UNPLANNED Loss of All Onsite **OR** Offsite Communications Capabilities	**HU1** - Natural and Destructive Phenomena Affecting the PROTECTED AREA **E-HU1** - Damage to a loaded cask CONFINEMENT BOUNDARY	**HU2** - FIRE Within PROTECTED AREA Boundary Not Extinguished Within 15 Minutes of Detection	**HU3** - Release of Toxic, Asphyxiant, **OR** Flammable Gases Deemed Detrimental to Normal Operation of the Plant	**HU4** - Confirmed SECURITY CONDITION or threat which indicates a potential degradation in the level of safety of the plant		**HU5** - Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of a NOUE.

Vogtle Electric Generating Plant

COLD INITIATING CONDITION EMERGENCY ACTION LEVEL MATRIX - MODES 5, 6 AND DEFUELED ONLY

	RADIOLOGICAL		System Malfunctions				HAZARDS					
	EFFLUENTS	RAD LEVELS	AC / DC POWER	RX and CORE	HEAT REMOVAL	COMMUNICATIONS	NATURAL / DESTRUCTIVE	FIRE / EXPLOSION	TOXIC / FLAMMABLE	SECURITY	CR EVACUATION	ED DISCRETION
GENERAL EMERGENCY	**RG1**- Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 1000 mR TEDE **OR** 5000 mR Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology.			**CG1** - Loss of RPV Inventory Affecting Fuel Clad Integrity with Containment Challenged with Irradiated Fuel in the RPV. **Modes 5 and 6 Only.**						**HG1** – HOSTILE ACTION resulting in loss of physical control of the facility		**HG2** - Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of General Emergency
SITE AREA EMERGENCY	**RS1** - Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 100 mR TEDE **OR** 500 mR Thyroid CDE for the Actual or Projected Duration of the Release.			**CS1** - Loss of RPV Inventory Affecting Core Decay Heat Removal Capability **Mode 5 Only**	**CS2** - Loss of RPV Inventory Affecting Core Decay Heat Removal Capability with Irradiated Fuel in the RPV. **Mode 6 Only**					**HS4** – HOSTILE ACTION within the PROTECTED AREA	**HS2**-Control Room evacuation has been initiated AND Plant Control Cannot Be Established	**HS3** – Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of Site Area Emergency
ALERT EMERGENCY	**RA1** - Any UNPLANNED Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds 200 Times the Radiological Effluent Technical Specifications for 15 Minutes or Longer.	**RA2** - Damage to Irradiated Fuel **OR** Loss of Water Level that Has or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel. **RA3** Release of Radioactive Material or Rises in Radiation Levels Within the Facility That Impedes Operation of Systems Required to Maintain Safe Operations or to Establish or Maintain Cold Shutdown	**CA3** - Loss of All Offsite Power **AND** Loss of All Onsite AC Power to Essential Busses.	**CA1** - Loss of RCS Inventory. **Mode 5 Only** **CA2** - Loss of RPV Inventory with Irradiated Fuel in the RPV. **Mode 6 Only**	**CA4** - Inability to Maintain Plant in Cold Shutdown with Irradiated Fuel in the RPV. **Modes 5 and 6 Only.**		**HA1** - Natural and Destructive Phenomena Affecting the Plant VITAL AREA	**HA2** - FIRE **OR** EXPLOSION Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe Shutdown	**HA3** - Release of Toxic, Asphyxiant, or Flammable Gases Within or Contiguous to a VITAL AREA Which Jeopardizes Operation of Systems Required to Maintain Safe Operations or Establish or Maintain Safe Shutdown.	**HA4** – HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat.	**HA5** - Control Room Evacuation Has Been Initiated.	**HA6** - Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of an Alert.
NOTIFICATION OF UNUSUAL EVENT	**RU1** – Any UNPLANNED Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds Two Times the Radiological Effluent Technical Specifications for 60 Minutes or Longer.	**RU2** – Unexpected Rise in Plant Radiation	**CU3** - Loss of All Offsite Power to Essential Busses for GREATER THAN 15 Minutes. **CU7** - UNPLANNED Loss of Required DC Power for Greater Than 15 Minutes. **Modes 5 and 6 Only.**	**CU8** - Inadvertent Criticality **Modes 5 and 6 Only**. **CU1** - RCS Leakage **Mode 5 Only.** **CU2** - Unplanned Loss of RCS Inventory with Irradiated Fuel in the RPV **Mode 6 Only**	**CU4** - Unplanned Loss of Decay Heat Removal Capability with Irradiated Fuel in the RPV. **Modes 5 and 6 Only.**	**CU6** - UNPLANNED Loss of All Onsite **OR** Offsite Communications Capabilities	**HU1** - Natural and Destructive Phenomena Affecting the PROTECTED AREA **E-HU1** - Damage to a loaded cask CONFINEMENT BOUNDARY	**HU2** - FIRE Within PROTECTED AREA Boundary Not Extinguished Within 15 Minutes of Detection.	**HU3** - Release of Toxic, Asphyxiant, or Flammable Gases Deemed Detrimental to Normal Operation of the Plant.	**HU4** - Confirmed SECURITY CONDITION or threat which indicates a potential degradation in the level of safety of the plant.		**HU5** - Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of a NOUE.

Fission Product Barrier Degradation

	NOUE		ALERT		SITE AREA EMERGENCY		GENERAL EMERGENCY
FU1	ANY Loss or ANY Potential Loss of Containment *Op. Modes: Power Operation, Hot Standby, Startup, Hot Shutdown*	**FA1**	ANY Loss or ANY Potential Loss of **EITHER** Fuel Clad **OR** RCS *Op. Modes: Power Operation, Hot Standby, Startup, Hot Shutdown*	**FS1**	Loss or Potential Loss of ANY Two Barriers *Op. Modes: Power Operation, Hot Standby, Startup, Hot Shutdown*	**FG1**	Loss of ANY Two Barriers **AND** Loss or Potential Loss of Third Barrier *Op. Modes: Power Operation, Hot Standby, Startup, Hot 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. 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" Threshold Values existed, that, in addition to offsite dose assessments, would require continual assessments of radioactive inventory and containment integrity. Alternatively, if both Fuel Clad and RCS Barrier "Potential Loss" Threshold Values existed, the Emergency Director would have more assurance that there was no immediate need to escalate to a General Emergency.

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

Vogtle Fission Product Barrier Evaluation

General Emergency	Site Area Emergency	Alert	Unusual Event
FG1 Loss of ANY Two Barriers **AND** Loss or Potential Loss of Third Barrier	**FS1** Loss or Potential Loss of ANY Two Barriers	**FA1** ANY Loss or ANY Potential Loss of **EITHER** Fuel Clad **OR** RCS	**FU1** ANY Loss or ANY Potential Loss of Containment

Fuel Clad Barrier	
Loss	**Potential Loss**
1. Critical Safety Function Status Core-Cooling RED	**1. Critical Safety Function Status** Core Cooling-ORANGE **OR** Heat Sink-RED
2. Primary Coolant Activity Level Indications of RCS Coolant Activity greater than 300 µCi/gm Dose Equivalent I-131	2. Primary Coolant Activity Level Not Applicable
3. Core Exit Thermocouple Readings Core Exit TCs greater than 1200°F	**3. Core Exit Thermocouple Readings** Core Exit TCs greater than 711°F
4. Reactor Vessel Water Level Not Applicable	**4. Reactor Vessel Water Level** RVLS LEVEL less than 63%
5. Containment Radiation Monitoring Containment Radiation Monitor RE-005 **OR** 006 ≥ 2 6E+5 mR/hr	5. Containment Radiation Monitoring Not Applicable
6. Other Indications Not applicable	6. Other Indications Not applicable
7. Emergency Director Judgment Judgment by the ED that the Fuel Clad Barrier is lost. Consider conditions not addressed and inability to determine the status of the Fuel Clad Barrier	**7. Emergency Director Judgment** Judgment by the ED that the Fuel Clad Barrier is potentially lost. Consider conditions not addressed and inability to determine the status of the Fuel Clad Barrier.

RCS Barrier	
Loss	**Potential Loss**
1. Critical Safety Function Status Not Applicable	**1. Critical Safety Function Status** RCS Integrity-RED **OR** Heat Sink-RED
2. RCS Leak Rate RCS subcooling less than 24°F {less than 38° F Adverse} due to an RCS leak greater than Charging / RHR capacity	**2. RCS Leak Rate** Non-isolable RCS leak (including SG tube Leakage) greater than 120 gpm
3. SG Tube Rupture SGTR resulting in an SI actuation	3. SG Tube Rupture Not Applicable
4. Containment Radiation Monitoring CTMT Rad Monitor RE-005 **OR** 006 ≥ 8.7E+2 mR/hr	4. Containment Radiation Monitoring Not Applicable
5. Other Indications Not applicable	**5. Other Indications** Unexplained level rise in ANY of the following: Containment sump Reactor Coolant Drain Tank (RCDT) Waste Holdup Tank (WHT)
6. Emergency Director Judgment Judgment by the ED that the RCS Barrier is lost. Consider conditions not addressed and inability to determine the status of the RCS Barrier	**6. Emergency Director Judgment** Judgment by the ED that the RCS Barrier is potentially lost. Consider conditions not addressed and inability to determine the status of the RCS Barrier.

Containment Barrier	
Loss	**Potential Loss**
1. Critical Safety Function Status Not Applicable	**1. Critical Safety Function Status** Containment-RED
2. Containment Pressure Rapid unexplained CTMT pressure lowering following initial pressure rise **OR** Intersystem LOCA indicated by CTMT pressure or sump level response not consistent with a loss of primary or secondary coolant	**2. Containment Pressure** CTMT pressure greater than 52 psig **OR** CTMT hydrogen concentration greater than 6% **OR** CTMT pressure greater than 21.5 psig **AND** Less than the following minimum operable equipment: Four CTMT fan coolers **AND** One train of CTMT spray
3. Core Exit Thermocouple Reading Not applicable	**3. Core Exit Thermocouple Reading** CORE COOLING CSF - RED for greater than 15min **OR** CORE COOLING CSF - ORANGE for greater than 15min **AND** RVLS LEVEL less than 63%
4. SG Secondary Side Release with Primary to Secondary Leakage RUPTURED S/G is also FAULTED outside of containment **OR** Primary-to-Secondary leakrate greater than 10 gpm with nonisolable steam release from affected S/G to the environment	4. SG Secondary Side Release with P-to-S Leakage Not applicable
5. CNMT Isolation Valves Status After CNMT Isolation CTMT isolation valve(s) **OR** damper(s) are **NOT** closed resulting in a direct pathway to the environment after containment isolation is required	5. CNMT Isolation Valves Status After CNMT Isolation Not Applicable
6. Significant Radioactive Inventory in Containment Not Applicable	**6. Significant Radioactive Inventory in Containment** CTMT Rad monitor RE-005 **OR** 006 ≥ 1.3E+7 mR/hr
7. Other Indications Pathway to the environment exists based on VALID RE-2562C Alarm **AND** RE-12444C **OR** RE-12442C Alarms	7. Other Indications Not applicable
8. Emergency Director Judgment Judgment by the ED that the CTMT Barrier is lost. Consider conditions not addressed and inability to determine the status of the CTMT Barrier	**8. Emergency Director Judgment** Judgment by the ED that the CTMT Barrier is potentially lost. Consider conditions not addressed and inability to determine the status of the CTMT Barrier

FUEL CLAD BARRIER Threshold Values:

The Fuel Clad Barrier is the zircalloy or stainless steel tubes that contain the fuel pellets.

1. Critical Safety Function Status

NOTE

Heat Sink CSF should not be considered –RED if total AFW flow is less than 570 gpm due to operator action.

RED path indicates an extreme challenge to the safety function. ORANGE path indicates a severe challenge to the safety function.

Core Cooling - ORANGE indicates subcooling has been lost and that some clad damage may occur. Heat Sink - RED indicates the ultimate heat sink function is under extreme challenge and thus these two items indicate potential loss of the Fuel Clad Barrier.

Core Cooling - RED indicates significant superheating and core uncovery and is considered to indicate loss of the Fuel Clad Barrier.

2. Primary Coolant Activity Level

Assessment by the NUMARC EAL Task Force indicates that this amount of coolant activity is well above that expected for iodine spikes and corresponds to less than 5% fuel clad damage. This amount of radioactivity indicates significant clad damage and thus the Fuel Clad Barrier is considered lost.

There is no equivalent "Potential Loss" Threshold Value for this item.

3. Core Exit Thermocouple Readings

Core Exit Thermocouple Readings are included in addition to the Critical Safety Functions to include conditions when the CSFs may not be in use (initiation after SI is blocked).

The "Loss" Threshold Value of 1200 degrees F corresponds to significant superheating of the coolant. This value corresponds to the temperature reading that indicates core cooling - RED in Fuel Clad Barrier Threshold Value #1.

The "Potential Loss" Threshold Value of 711 degrees F corresponds to loss of subcooling. This value corresponds to the temperature reading that indicates core cooling - ORANGE in Fuel Clad Barrier Threshold Value #1.

4. Reactor Vessel Water Level

There is no "Loss" Threshold Value corresponding to this item because it is better covered by the other Fuel Clad Barrier "Loss" Threshold Values.

The 63% RVLIS value for the "Potential Loss" Threshold Value corresponds to the top of the active fuel. The "Potential Loss" Threshold Value is defined by the Core Cooling - ORANGE path.

5. Containment Radiation Monitoring

The ≥ 2.6E+5 mR/hr reading is a value which indicates the release of reactor coolant, with elevated activity indicative of fuel damage, into the containment. The reading is calculated assuming the instantaneous release and dispersal of the reactor coolant noble gas and iodine inventory associated with a concentration of 300 μCi/gm dose equivalent I-131 into the containment atmosphere. 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. This value is higher than that specified for RCS barrier Loss Threshold Value #4. Thus, this Threshold Value indicates a loss of both the fuel clad barrier and a loss of RCS barrier.

There is no "Potential Loss" Threshold Value associated with this item.

7. Emergency Director Judgment

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

RCS BARRIER Threshold Values:

The RCS Barrier includes the RCS primary side and its connections up to and including the pressurizer safety and relief valves, and other connections up to and including the primary isolation valves.

1. Critical Safety Function Status

NOTE

Heat Sink CSF should not be considered –RED if total AFW flow is less than 570 gpm due to operator action.

This Threshold Value uses the Critical Safety Function Status Tree (CSFST) monitoring and functional restoration procedures. An RCS Integrity RED path indicates an extreme challenge to the safety function derived from appropriate instrument readings, and these CSFs indicate a potential loss of RCS barrier.

There is no "Loss" Threshold Value associated with this item.

2. RCS Leak Rate

The "Loss" Threshold Value 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" Threshold Value is based on the inability to maintain normal liquid inventory within the Reactor Coolant System (RCS) by normal operation of the Chemical and Volume Control System which is considered as one centrifugal charging pump discharging to the charging header. A second charging pump being required is indicative of a substantial RCS leak providing the 120 GPM value.

3. SG Tube Rupture

This Threshold Value is intended to address the full spectrum of Steam Generator (SG) tube rupture events in conjunction with Containment Barrier "Loss" Threshold Value #4 and Fuel Clad Barrier Threshold Values. The "Loss" Threshold Value addresses RUPTURED SG(s) for which the leakage is large enough to cause actuation of ECCS (SI). This is consistent to the RCS Barrier “Potential Loss” Threshold Value #2. This condition is described by SGTR resulting in an SI actuation. By itself, this Threshold Value will result in the declaration of an Alert. However, if the SG is also FAULTED (i.e., two barriers failed), the declaration escalates to a Site Area Emergency per Containment Barrier "Loss" Threshold Value #4.

There is no "Potential Loss" Threshold Value.

4. Containment Radiation Monitoring

The RE-005 OR 006 ≥ 8.7E+2 mR/hr value indicates the release of reactor coolant to the containment. The reading is calculated assuming the instantaneous release and dispersal of the reactor coolant noble gas and iodine inventory associated with normal operating concentrations (i.e., within T/S) into the containment atmosphere. This value is less than that specified for Fuel Clad Barrier Threshold Value #5. Thus, this Threshold Value would be indicative of a RCS leak only. If the radiation monitor reading rise to that specified by Fuel Clad Barrier Threshold Value #5, fuel damage would also be indicated.

There is no "Potential Loss" Threshold Value associated with this item.

5. Other Indications

There is no "Loss" Threshold Value associated with this item.

An unexplained level rise in the containment sump, Reactor Coolant Drain Tank or the Waste Holdup Tank could indicate a RCS leak and is therefore included as a Potential Loss of the RCS Barrier. Sump and tank level rises should be evaluated against known or controlled processes which are under way, i.e. draining, filling, venting, etc.

6. Emergency Director Judgment

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

CONTAINMENT BARRIER Threshold Values:

The Containment Barrier includes the containment building, its connections up to and including the outermost containment isolation valves. This barrier also includes the main steam, feedwater, and blowdown line extensions outside the containment building up to and including the outermost secondary side isolation valve.

1. Critical Safety Function Status

This Threshold Value uses Critical Safety Function Status Tree (CSFST) monitoring and functional restoration procedures. 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. Conditions leading to a containment RED path result from RCS barrier and/or Fuel Clad Barrier Loss. Thus, this Threshold Value is primarily a discriminator between Site Area Emergency and General Emergency representing a potential loss of the third barrier.

There is no "Loss" Threshold Value associated with this item.

2. Containment Pressure

Rapid unexplained loss of pressure (i.e., not attributable to containment spray or condensation effects) following an initial pressure rise indicates a loss of containment integrity. Containment pressure and sump levels should rise as a result of the mass and energy release into containment from a LOCA. Thus, sump level or pressure not increasing indicates containment bypass and a loss of containment integrity.

The 52 PSIG for potential loss of containment is based on the containment design pressure. Existence of an explosive mixture means a hydrogen and oxygen concentration of at least the lower deflagration limit (greater than 6%) curve exists. The indications of potential loss under this Threshold Value corresponds to some of those leading to the RED path in Threshold Value #1 above and may be declared. As described above, this Threshold Value is primarily a discriminator between Site Area Emergency and General Emergency representing a potential loss of the third barrier. The 21.5 PSIG represents a potential loss of containment in that the containment heat removal/depressurization system (e.g., containment sprays, fan coolers, etc., but not including containment venting strategies) are either lost or performing in a degraded

manner, as indicated by containment pressure greater than the setpoint at which the equipment was supposed to have actuated.

3. Core Exit Thermocouples

In this Threshold Value, the function restoration procedures are those emergency operating procedures that address the recovery of the core cooling critical safety functions. The procedure is considered effective if the temperature is decreasing or if the vessel water level is increasing. For units using the CSF status trees a direct correlation to those status trees can be made if the effectiveness of the restoration procedures is also evaluated as stated below.

Severe accident analyses (e.g., NUREG-1150) have concluded that function restoration procedures can arrest core degradation within the reactor vessel in a significant fraction of the core damage scenarios, and that the likelihood of containment failure is very small in these events. Given this, it is appropriate to provide a reasonable period to allow function restoration procedures to arrest the core melt sequence. Whether or not the procedures will be effective should be apparent within 15 minutes. The Emergency Director should make the declaration as soon as it is determined that the procedures have been, or will be ineffective. The reactor vessel level chosen should be consistent with the emergency response guides applicable to the facility.

The conditions in this potential loss Threshold Value represent an imminent core melt sequence which, if not corrected, could lead to vessel failure and an raised potential for containment failure. In conjunction with the Core Cooling and Heat Sink criteria in the Fuel and RCS barrier columns, this Threshold Value would result in the declaration of a General Emergency -- loss of two barriers and the potential loss of a third. If the function restoration procedures are ineffective, there is no "success" path.

There is no "Loss" Threshold Value associated with this item.

4. SG Secondary Side Release With Primary To Secondary Leakage

This “loss” Threshold Value recognizes that SG tube leakage can represent a bypass of the containment barrier as well as a loss of the RCS barrier. The “loss” Threshold Value addresses the condition in which a RUPTURED steam generator is also FAULTED. This condition represents a bypass of the RCS and containment barriers. In conjunction with RCS Barrier “loss” Threshold Value #3, this would always result in the declaration of a Site Area Emergency.

The other leakage “loss” Threshold Value addresses SG tube leaks that exceed 10 gpm in conjunction with a nonisolable release path to the environment from the affected steam generator. The threshold for establishing the nonisolable secondary side release is intended to be a prolonged release of radioactivity from the RUPTURED steam generator directly to the environment. This could be expected to occur when the main condenser is unavailable to accept the contaminated steam (i.e., SGTR with concurrent loss of offsite power and the RUPTURED steam generator is required for plant cooldown or a stuck open relief valve). If the main condenser is available, there may be releases via air ejectors, gland seal exhausters, and other similar controlled, and often monitored, pathways. These pathways do not meet the intent of a nonisolable release path to the environment. These minor releases are assessed using Abnormal Rad Levels / Radiological Effluent ICs.

Users should realize that the two “loss” Thresholds described above could be considered redundant. This was recognized during the development process. The inclusion of a Threshold that uses Emergency Procedure commonly used terms like “ruptured and faulted” adds to the ease of the classification process and has been included based on this human factor concern.

5. Containment Isolation Valve Status After Containment Isolation

This Threshold Value addresses incomplete containment isolation that allows direct release to the environment. It represents a loss of the containment barrier.

The use of the modifier “direct” in defining the release path discriminates against release paths through interfacing liquid systems. The existence of an in–line charcoal filter does not make a release path indirect since the filter is not effective at removing fission noble gases. Typical filters have an efficiency of 95-99% removal of iodine. Given the magnitude of the core inventory of iodine, significant releases could still occur. In addition, since the fission product release would be driven by boiling in the reactor vessel, the high humidity in the release stream can be expected to render the filters ineffective in a short period.

There is no "Potential Loss" Threshold Value associated with this item.

6. Significant Radioactive Inventory in Containment

The ≥ 1.3E+7 mR/hr value indicates significant fuel damage well in excess of the Threshold Values associated with both loss of Fuel Clad and loss of RCS Barriers. As stated in Section 3.8, a major release of radioactivity requiring offsite 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. NUREG-1228, "Source Estimations During Incident Response to Severe Nuclear Power Plant Accidents," indicates that such conditions do not exist when the amount of clad damage is less than 20%. A radiation monitor reading corresponding to 20% fuel clad damage is specified here.

There is no "Loss" Threshold Value associated with this item.

7. Other Indications

This Threshold Value covers other leakage pathways that indicate loss of the containment barrier. Leakage from the Containment would be routed through various ventilation systems where the specific monitors would indicate a release. Increased activity on RE-2562C in conjunction with an alarm on RE-12444C **OR** RE-12442C would indicate a breach in containment. An alarm on RE-2562-C alone would indicate increased activity in containment but not necessarily a breach in containment. An alarm on RE-12444C OR RE-12442C alone would indicate activity being released to the environment but not necessarily from containment. This threshold demonstrates a breach in containment by establishing radioactivity in containment and a clear release path to the environment.

8. Emergency Director Judgment

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

HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

HU1

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Natural and Destructive Phenomena Affecting the PROTECTED AREA.

Operating Mode Applicability: All

Threshold Value: (1 **OR** 2 **OR** 3 **OR** 4 **OR** 5 **OR** 7)

1. Confirmed Seismic monitoring alarm indicates seismic event **OR** plant operators report an earthquake was "felt".

2. Report by plant personnel of tornado **OR** high winds greater than 100 mph striking within PROTECTED AREA.

3. Crash of vehicle, large enough to cause significant damage, into plant structures containing functions or systems required for safe shutdown within the PROTECTED AREA boundary.

4. Report by plant personnel of an unanticipated EXPLOSION within the PROTECTED AREA boundary resulting in VISIBLE DAMAGE to permanent structure **OR** equipment.

5. Report of turbine failure resulting in casing penetration **OR** damage to turbine **OR** generator seals.

6. Not applicable.

7. Sustained hurricane force winds greater than 74 mph forecast to be at the plant site in the next four hours in accordance with 11889-C, Severe Weather Checklist.

Basis:

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

EXPLOSION: is 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.

VISIBLE DAMAGE: is 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 safety 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.

These ICs are categorized on the basis of the occurrence of an event of sufficient magnitude to be of concern to plant operators. Areas identified in the Threshold Values define the location of the event based on the potential for damage to equipment contained therein. Escalation of the event to an Alert occurs when the magnitude of the event is sufficient to result in damage to equipment contained in the specified location.

Threshold Value #1 - As defined in the EPRI-sponsored "Guidelines for Nuclear Plant Response to an Earthquake", dated October 1989, a *"felt earthquake"* is:

> An earthquake of sufficient intensity such that: (a) the vibratory ground motion is felt at the nuclear plant site and recognized as an earthquake based on a consensus of control room operators on duty at the time, and (b) for plants with operable seismic instrumentation, the seismic switches of the plant are activated. For most plants with seismic instrumentation, the seismic switches are set at an acceleration of about 0.01g.

Threshold Value #2 is based on the assumption that a tornado striking (touching down) or high winds within the PROTECTED AREA may have potentially damaged plant structures containing functions or systems required for safe shutdown of the plant. The high wind 100 mph value is based on FSAR design basis (110 mph design) as the highest meter reading available. If such damage is confirmed visually or by other in-plant indications, the event may be escalated to Alert.

Threshold Value #3 addresses crashes of vehicle types large enough to cause significant damage to plant structures containing functions and systems required for safe shutdown of the plant. If the crash is confirmed to affect a plant VITAL AREA, the event may be escalated to Alert.

For Threshold Value #4 only those EXPLOSIONs of sufficient force to damage permanent structures or equipment within the PROTECTED AREA should be considered. No attempt is made in this Threshold Value to assess the actual magnitude of the damage. The occurrence of the EXPLOSION with reports of evidence of damage is sufficient for declaration. The Emergency director also needs to consider any security aspects of the EXPLOSION, if applicable.

Threshold Value #5 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. Of major concern is the potential for leakage of combustible fluids (lubricating oils) and gases (hydrogen cooling) to the plant environs. Actual FIREs and flammable gas build up are appropriately classified via HU2 and HU3. Generator seal damage observed after generator purge does not meet the intent of this Threshold Value because it did not impact normal operation of the plant. This Threshold Value 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 missiles generated by the failure or in conjunction with a steam generator tube rupture. These latter events would be classified by the radiological ICs or Fission Product Barrier ICs.

Threshold Value #6 addresses the effect of flooding caused by internal events such as component failures, equipment misalignment, or outage activity mishaps. PROBABILISTIC

Threshold Value #7 covers site-specific phenomena of the hurricane based on the severe weather mitigation procedure.

HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

HU2

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

FIRE Within PROTECTED AREA Boundary Not Extinguished Within 15 Minutes of Detection.

Operating Mode Applicability: All

Threshold Value:

1. FIRE in buildings **OR** areas contiguous to any of the following areas **NOT** extinguished within 15 minutes of control room notification **OR** verification of a control room alarm unless disproved by personnel observation within 15 minutes of the alarm:

Containment Building
NSCW Cooling Towers
Diesel Generator Building
Auxiliary Building
Fuel Handling Building
Control Building
Diesel Fuel Oil Storage Tank Pumphouse
Auxiliary Feedwater Pumphouse

Basis:

FIRE: is 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.

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

The purpose of this IC 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. Verification 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. A verified 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. In other words, a personnel report from the scene may be used to disprove a sensor alarm if received within 15 minutes of the alarm, but shall not be required to verify the alarm.

The time frames for evaluation and classification are concurrent beginning with the credible notification that a fire is occurring or a VALID fire detection system alarm.

The intent of this 15 minute duration is to size the FIRE and to discriminate against small FIREs that are readily extinguished (e.g., smoldering waste paper basket). The site-specific list should be limited and applies to buildings and areas contiguous (in actual contact with or immediately adjacent*)* to plant VITAL AREAs or other significant buildings or areas. The intent of this IC is not to include buildings (i.e., warehouses) or areas that are not contiguous (in actual contact with or immediately adjacent) to plant VITAL AREAs. This excludes FIREs within administration buildings, waste-basket FIREs, and other small FIREs of no safety consequence.

HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

HU3

Initiating Condition – NOTIFICATION OF UNUSUAL EVENT

Release of Toxic, Asphyxiant, or Flammable Gases Deemed Detrimental to Normal Operation of the Plant.

Operating Mode Applicability: All

Threshold Values: (1 **OR** 2)

1. Report **OR** detection of toxic, asphyxiant, **OR** flammable gas that has **OR** could enter the Owner Controlled Area in amounts greater than life threatening **OR** flammable concentrations that can affect NORMAL PLANT OPERATIONS.

2. Report by Local, County, **OR** State Officials for evacuation **OR** sheltering of site personnel based on an offsite toxic, asphyxiant, **OR** flammable gas event.

Basis:

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.

This IC is based on the existence of uncontrolled releases of toxic, asphyxiant, or flammable gas that may enter the Owner Controlled Area and affect normal plant operations. It is intended that releases of toxic or flammable gases are of sufficient quantity, and the release point of such gases is such that normal plant operations would be affected. Offsite events are included through a warning by local officials as the resultant affect on NORMAL PLANT OPERATIONS would be the same. This would preclude small or incidental releases, or releases that do not impact structures needed for plant operation. The Threshold Values are not intended to require significant assessment or quantification. The IC assumes an uncontrolled process that has the potential to affect plant operations, or personnel safety.

HAZARDS AND 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

Threshold Values: (1 **OR** 2 **OR** 3)

1. A SECURITY CONDITION that does NOT involve a HOSTILE ACTION as reported by security shift supervision.

2. A CREDIBLE VEGP security THREAT notification.

3. A validated notification from NRC providing information of an aircraft threat.

Basis:

Note: Timely and accurate communication between Security Shift Supervision and the Control Room is crucial for the implementation of effective Security EALs.

CREDIBLE THREAT: A threat is considered credible through use of 90321-C, Threat Assessment and Security Force Protection Recommendations

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.

HOSTILE ACTION: An act toward an NPP 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 weapons, 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 NPP. Non-terrorism-based EALs should be used to address such activities, (e.g., violent acts between individuals in the owner controlled area.)

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.

A higher initial classification could be made based upon the nature and timing of the security threat and potential consequences. The licensee shall consider upgrading the emergency response status and emergency classification level in accordance with the site's Safeguards Contingency Plan and Emergency Plan.

In Threshold 1, 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.

This threshold is based on site specific security plans. Site specific Safeguards Contingency Plans are based on guidance provided by NEI 03-12.

The intent of Threshold Value 2 is to ensure that appropriate notifications for the security threat are made in a timely manner. This includes information of a CREDIBLE THREAT.

The intent of Threshold Value 3 is to ensure that notifications for the security threat are made in a timely manner and that Offsite Response Organizations and plant personnel are at a state of heightened awareness regarding the credible threat. It is not the intent of this EAL to replace existing non-hostile related EALs involving aircraft.

This Threshold Value is met when a plant receives information regarding an aircraft threat from the NRC. 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 Unusual Event.
The NRC Headquarters Operations Officer (HOO) 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 NORAD through the NRC.

Escalation to Alert emergency classification level would be via HA4 would be appropriate if the threat involves an airliner within 30 minutes of the plant.

HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

HU5

Initiating Condition – NOTIFICATION OF UNUSUAL EVENT

Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of a NOUE.

Operating Mode Applicability: All

Threshold Value:

1. Other conditions exist which in the judgment of the Emergency Director indicate that 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 offsite response **OR** monitoring are expected unless further degradation of safety systems occurs.

Basis:

This Threshold Value is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the NOUE emergency class.

From a broad perspective, one area that may warrant Emergency Director judgment is related to likely or actual breakdown of site-specific event mitigating actions. Examples to consider include inadequate emergency response procedures, transient response either unexpected or not understood, failure or unavailability of emergency systems during an accident in excess of that assumed in accident analysis, or insufficient availability of equipment and/or support personnel.

HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

HA1

Initiating Condition -- ALERT

Natural and Destructive Phenomena Affecting the Plant VITAL AREA.

Operating Mode Applicability: All

Threshold Values: (1 **OR** 2 **OR** 3 **OR** 4 **OR** 5 **OR** 6)

1. Seismic monitoring system confirms seismic event greater than OBE Earthquake acceleration of 0.12 g.

2. Tornado **OR** high winds greater than 100 mph within the PROTECTED AREA boundary **AND** resulting in VISIBLE DAMAGE to any of the following plant structures/equipment **OR** the Control Room has indication of degraded performance of those systems:

Containment Building	Fuel Handling Building
NSCW Cooling Towers	Control Building
Diesel Generator Building	Diesel Fuel Oil Storage Tank Pumphouse
Auxiliary Building	Auxiliary Feedwater Pumphouse

3. Vehicle crash within PROTECTED AREA boundary **AND** resulting in VISIBLE DAMAGE to any of the following plant structures **OR** equipment therein **OR** control indication of degraded performance of those systems:

Containment Building	Fuel Handling Building
NSCW Cooling Towers	Control Building
Diesel Generator Building	Diesel Fuel Oil Storage Tank Pumphouse
Auxiliary Building	Auxiliary Feedwater Pumphouse

4. Turbine failure-generated missiles result in any VISIBLE DAMAGE to **OR** penetration of any area containing safety-related equipment, their controls **OR** their power supplies.

Containment Building	Fuel Handling Building
NSCW Cooling Towers	Control Building
Diesel Generator Building	Diesel Fuel Oil Storage Tank Pumphouse
Auxiliary Building	Auxiliary Feedwater Pumphouse

5. Uncontrolled flooding in areas of the plant that creates an industrial safety hazard (e.g., electric shock) that precludes access necessary to operate or monitor safety equipment.

6. Sustained hurricane winds greater than 74 mph onsite resulting in VISIBLE DAMAGE to plant structures within the PROTECTED AREA boundary containing equipment necessary for safe shutdown, or has caused damage as evidenced by control room indication of degraded performance of those systems.

Basis:

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

VISIBLE DAMAGE: is 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 safety 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.

The Threshold Values in this IC escalate from the NOUE Threshold Values in HU1 in that the occurrence of the event has resulted in VISIBLE DAMAGE to plant structures or areas containing equipment necessary for a safe shutdown, or has caused damage to the safety systems in those structures evidenced by control indications of degraded system response or performance. The occurrence of VISIBLE DAMAGE and/or degraded system response is intended to discriminate against lesser events. The initial "report" should not be interpreted as mandating a lengthy damage assessment prior to classification. No attempt is made in this Threshold Value 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 other ICs (e.g., System Malfunction).

Threshold Value #1 is based on the OBE earthquake FSAR design basis of 0.12g horizontal acceleration. 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. See EPRI-sponsored "Guidelines for Nuclear Plant Response to an Earthquake", dated October 1989, for information on seismic event categories.

Threshold Value #2 is based on the FSAR design basis. Wind loads greater than 110 mph can cause damage to safety functions. 100 mph was used for the Threshold Value because it is the highest reading available in the Control Room.

Threshold Value #3 addresses crashes of vehicle types large enough to cause significant damage to plant structures containing functions and systems required for safe shutdown of the plant.

Threshold Value #4 addresses the threat to safety related equipment imposed by missiles generated by main turbine rotating component failures. This list of areas includes all areas containing safety-related equipment, their controls, and their power supplies. This Threshold Value is, therefore, consistent with the definition of an ALERT in that if missiles have damaged or penetrated areas containing safety-related equipment the potential exists for substantial degradation of the level of safety of the plant.

Threshold Value #5 addresses the effect of internal flooding that has created industrial safety hazards (e.g., electrical shock) that preclude necessary access to operate or monitor safety equipment. The inability to operate or monitor safety equipment represents a potential for substantial degradation of the level of safety of the plant. This flooding may have been caused

by internal events such as component failures, equipment misalignment, or outage activity mishaps. The site-specific areas include those areas that contain systems required for safe shutdown of the plant, that are not designed to be wetted or submerged.

Threshold Value #6 covers site-specific phenomena of a hurricane. The Threshold Value is based on damage attributable to the wind.

HAZARDS AND 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 Shutdown.

Operating Mode Applicability: All

Threshold Value:

1. FIRE **OR** EXPLOSION **AND** affected system parameter indications show degraded performance **OR** plant personnel report VISIBLE DAMAGE to permanent structures **OR** safety related equipment in any of the following VITAL AREAs:

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Containment Building	Fuel Handling Building
NSCW Cooling Towers	Control Building
Diesel Generator Building	Diesel Fuel Oil Storage Tank Pumphouse
Auxiliary Building	Auxiliary Feedwater Pumphouse

Basis:

FIRE: is 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.

EXPLOSION: is 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.

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.

VISIBLE DAMAGE: is 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 safety 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.

The areas listed contain functions and systems required for the safe shutdown of the plant to determine if the FIRE or EXPLOSION is potentially affecting any redundant trains of safety systems. Escalation to a higher emergency class, if appropriate, will be based on System

Malfunction, Fission Product Barrier Degradation, Abnormal Rad Levels / Radiological Effluent, or Emergency Director Judgment ICs.

This Threshold Value addresses a FIRE / EXPLOSION and not the degradation in performance of affected systems. System degradation is addressed in the System Malfunction Threshold Values. 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. Thus, the designation of a single train was intentional and is appropriate when the FIRE / EXPLOSION is large enough to affect more than one component.

This situation is not the same as removing equipment for maintenance that is covered by a plant's Technical Specifications. Removal of equipment for maintenance is a planned activity controlled in accordance with procedures and, as such, does not constitute a substantial degradation in the level of safety of the plant. A FIRE / EXPLOSION is an UNPLANNED activity and, as such, does constitute a substantial degradation in the level of safety of the plant. In this situation, an Alert classification is warranted.

The inclusion of a "report of VISIBLE DAMAGE" should not be interpreted as mandating a lengthy damage assessment prior to classification. No attempt is made in this Threshold Value to assess the actual magnitude of the damage. The occurrence of the EXPLOSION with reports of evidence of damage is sufficient for declaration. The declaration of an Alert and the activation of the Technical Support Center will provide the Emergency Director with the resources needed to perform these damage assessments. The Emergency Director also needs to consider any security aspects of the EXPLOSIONs, if applicable.

HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

HA3

Initiating Condition -- ALERT

Release of Toxic, Asphyxiant or Flammable Gases Within or Contiguous to a VITAL AREA Which Jeopardizes Operation of Systems Required to Maintain Safe Operations or Establish or Maintain Safe Shutdown.

Operating Mode Applicability: All

Threshold Values: (1 **OR** 2)

1. Report **OR** detection of toxic **OR** asphyxiant gas within **OR** contiguous to a VITAL AREA in concentrations that may result in an atmosphere IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH).

2. Report **OR** detection of flammable gases in concentration greater than the LOWER FLAMMABILITY LIMIT within **OR** contiguous to a VITAL AREA.

Basis:

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.

IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH): A condition that either poses an immediate threat to life and health or an immediate threat of severe exposure to contaminants which are likely to have adverse delayed effects on health.

LOWER FLAMMABILITY LIMIT (LFL): The minimum concentration of a combustible substance that is capable of propagating a flame through a homogenous mixture of the combustible and a gaseous oxidizer.

This IC is based on gases that affect the safe operation of the plant. This IC applies to buildings and areas contiguous to plant VITAL AREAs or other significant buildings or areas (i.e., service water pump house). The intent of this IC is not to include buildings (e.g., warehouses) or other areas that are not contiguous or immediately adjacent to plant VITAL AREAs. It is appropriate that augmented monitoring be done to ascertain whether consequential damage has occurred. Escalation to a higher emergency class, if appropriate, will be based on System Malfunction, Fission Product Barrier Degradation, Abnormal Rad Levels / Radioactive Effluent, or Emergency Director Judgment ICs.

Threshold Value #1 is met if measurement of toxic gas concentration results in an atmosphere that is IDLH within a VITAL AREA or any area or building contiguous to VITAL AREA.

Exposure to an IDLH atmosphere will result in immediate harm to unprotected personnel, and would preclude access to any such affected areas.

Threshold Value #2 is met when the flammable gas concentration in a VITAL AREA or any building or area contiguous to a VITAL AREA exceed the LOWER FLAMMABILITY LIMIT. Flammable gasses, such as hydrogen and acetylene, are routinely used to maintain plant systems (hydrogen) or to repair equipment/components (acetylene - used in welding). This Threshold Value 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. Once it has been determined that an uncontrolled release is occurring, then sampling must be done to determine if the concentration of the released gas is within this range.

HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

HA4

Initiating Condition -- ALERT

HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat.

Operating Mode Applicability: All

Threshold Values:

1. A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLED AREA as reported by security shift supervision.

2. A validated notification from NRC of an airliner attack threat within 30 minutes of the site.

Basis:

Note: Timely and accurate communication between Security Shift Supervision and the Control Room is crucial for the implementation of effective Security EALs.

HOSTILE ACTION: An act toward an NPP 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 weapons, 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 NPP. Non-terrorism-based EALs should be used to address such activities, (e.g., violent acts between individuals in the owner controlled area.)

OWNER CONTROLED AREA – The utility owned property around the plant where access is controlled during declared emergencies by the plant security force.

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 OCA. Those events are adequately addressed by other EALs.

Note that this EAL is applicable for any HOSTILE ACTION occurring, or that has occurred, in the OWNER CONTROLLED AREA. This includes ISFSI's that may be outside the PROTECTED AREA but still within the OWNER CONTROLLED AREA.

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. Only the plant to which the specific threat is made need declare the Alert.

The NRC Headquarters Operations Officer (HOO) 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 NORAD through the NRC.

HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

HA5

Initiating Condition -- ALERT

Control Room Evacuation Has Been Initiated.

Operating Mode Applicability: All

Threshold Value:

1. Entry into 18038 – Operation From the Remote Shutdown Panels, procedure for Control Room evacuation.

Basis:

With the control room evacuated, additional support, monitoring and direction through the Technical Support Center and/or other emergency response facility is necessary. Inability to establish plant control from outside the control room will escalate this event to a Site Area Emergency.

HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

HA6

Initiating Condition -- ALERT

Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of an Alert.

Operating Mode Applicability: All

Threshold Value:

1. Other conditions exist which in the judgment of the Emergency Director indicate that events are in process **OR** have occurred which involve actual **OR** likely 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 intentional malicious dedicated efforts of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

Basis:

HOSTILE ACTION: An act toward an NPP 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 weapons, 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 NPP. Non-terrorism-based EALs should be used to address such activities, (e.g., violent acts between individuals in the owner controlled area.)

This Threshold Value is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the Alert emergency class.

HAZARDS AND 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

Threshold Value:

1. a. Control Room evacuation has been initiated

   AND

   b. Control of the plant **CANNOT** be established per 18038 – Operation From the Remote Shutdown Panels, within 15 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. Site-specific time for transfer based on analysis or assessments as to how quickly control must be reestablished without core uncovering and/or core damage. This time should not exceed 15 minutes without additional justification. The determination of whether or not control is established at the remote shutdown panel is based on Emergency Director (ED) judgment. The ED is expected to make a reasonable, informed judgment within the site-specific time for transfer that the licensee has control of the plant from the remote shutdown panel.

The intent of the Threshold Value 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, RCS inventory, and secondary heat removal.

HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

HS3

Initiating Condition – SITE AREA EMERGENCY

Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of Site Area Emergency.

Operating Mode Applicability: All

Threshold Value:

1. Other conditions exist which in the judgment of the Emergency Director indicate that 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 ACTION that results in intentional damage **OR** malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels that exceed EPA Protective Action Guideline exposure levels beyond the site boundary.

Basis:

HOSTILE ACTION: An act toward an NPP 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 weapons, 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 NPP. Non-terrorism-based EALs should be used to address such activities, (e.g., violent acts between individuals in the owner controlled area.)

This Threshold Value is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the emergency class description for Site Area Emergency.

HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

HS4

Initiating Condition – SITE AREA EMERGENCY

HOSTILE ACTION within the PROTECTED AREA

Operating Mode Applicability: All

Threshold Value:

1. A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by security shift supervision.

Basis:

HOSTILE ACTION: An act toward an NPP 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 weapons, 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 NPP. Non-terrorism-based EALs should be used to address such activities, (e.g., violent acts between individuals in the owner controlled area.)

PROTECTED AREA: the area which encompasses all controlled areas within the security protected area fence.

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 ORO 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 AND 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

Threshold Value: **(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:

HOSTILE ACTION: An act toward an NPP 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 weapons, 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 NPP. Non-terrorism-based EALs should be used to address such activities, (e.g., violent acts between individuals in the owner controlled area.)

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.

This EAL 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.

These safety functions are reactivity control, RCS inventory, and secondary heat removal. 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.

Threshold Value 2 should also address loss of physical control of spent fuel pool cooling systems if imminent fuel damage is likely for a freshly off-loaded reactor core in pool). If the calculated SFP “time to boil” is 2 hours or less, spent fuel damage is likely.

HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

HG2

Initiating Condition – GENERAL EMERGENCY

Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of General Emergency.

Operating Mode Applicability: All

Threshold Value:

1. Other conditions exist which in the judgment of the Emergency Director indicate that 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 Protective Action Guideline exposure levels offsite for more than the immediate site area.

Basis:

HOSTILE ACTION: An act toward an NPP or its personnel that includes the use of violent force to destroy equipment, takes hostages, and /or intimidates the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, projectiles, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the NPP. Non- terrorism-based EALs should be used to address such activities, (e.g., violent acts between individuals in the owner controlled area.)

This Threshold Value is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the General Emergency class.

HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

E-HU1

Initiating Condition

Damage to a loaded cask CONFINEMENT BOUNDARY.

Operating Mode Applicability: Not Applicable

Threshold Value: (1)

1. Damage to a loaded dry fuel storage cask CONFINEMENT BOUNDARY due to natural phenomena events, accident conditions OR any condition in the opinion of the emergency director that affects OR causes a loss of loaded dry fuel storage cask CONFINEMENT BOUNDARY.

Basis:

CONFINEMENT BOUNDARY: is the barrier(s) between areas containing radioactive substances and the environment.

A NOUE in this IC is categorized on the basis of the occurrence of an event of sufficient magnitude that a loaded cask CONFINEMENT BOUNDARY is damaged or violated. This includes classification based on a loaded fuel storage cask CONFINEMENT BOUNDARY loss leading to the degradation of the fuel during storage or posing an operational safety problem with respect to its removal from storage.

Any condition, which, in the judgment of the Emergency Director, is a potential degradation in the level of safety of the ISFSI. Emergency director judgment is to be based on known conditions and the expected response to mitigating activities within a short time period.

SYSTEM MALFUNCTION

SU1

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Loss of All Offsite Power to Essential Busses for Greater Than 15 Minutes.

Operating Mode Applicability: Power Operation
Startup
Hot Standby
Hot Shutdown

Threshold Value:

1. a. Loss of power to **OR** from transformers 1(2)NXRA **AND** 1(2)NXRB resulting in loss of all off-site electrical power to **BOTH** 1(2)AA02 **AND** 1(2)BA03 for greater than 15 minutes

   AND

   b. Emergency diesel generators supplying power to **BOTH** 1(2)AA02 **AND** 1(2)BA03.

Basis:

Prolonged loss of AC power reduces required redundancy and potentially degrades the level of safety of the plant by rendering the plant more vulnerable to a complete Loss of AC Power (e.g., Station Blackout). Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

Plants that have the capability to cross-tie AC power from a companion unit may take credit for the redundant power source in the associated Threshold Value for this IC. Inability to effect the cross-tie within 15 minutes warrants declaring a NOUE.

SYSTEM MALFUNCTION

SU2

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Inability to Reach Required Shutdown Within Technical Specification Limits.

Operating Mode Applicability: Power Operation
Startup
Hot Standby
Hot Shutdown

Threshold Value:

1. Plant is **NOT** brought to required operating mode within Technical Specifications LCO Action Statement Time limit.

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. In any case, the initiation of plant shutdown required by the site Technical Specifications requires a one hour report under 10 CFR 50.72 (b) Non-emergency events. The plant is within its safety envelope when being shut down within the allowable action statement time in the Technical Specifications. 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**.** Other required Technical Specification shutdowns that involve precursors to more serious events are addressed by other System Malfunction, Hazards, or Fission Product Barrier Degradation ICs.

SYSTEM MALFUNCTION

SU3

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

UNPLANNED Loss of Most or All Safety System Annunciation or Indication in the Control Room for Greater Than 15 Minutes

Operating Mode Applicability: Power Operation
Startup
Hot Standby
Hot Shutdown

Threshold Value:

1. UNPLANNED loss of most **OR** all of the MCB annunciators **OR** indicators associated with safety systems for greater than 15 minutes.

Basis:

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

This IC and its associated Threshold Value are intended to recognize the difficulty associated with monitoring changing plant conditions without the use of a major portion of the annunciation or indication equipment.

Recognition of the availability of computer based indication equipment is considered (e.g., SPDS, plant computer, etc.).

Quantification of "Most" is arbitrary, however, it is estimated that if approximately 75% of the safety system annunciators or indicators are lost, there is a greater risk that a degraded plant condition could go undetected. It is not intended that plant personnel perform a detailed count of the instrumentation lost but use the value as a judgment threshold for determining the severity of the plant conditions.

It is further recognized that most plant designs provide redundant safety system indication powered from separate uninterruptible power supplies. While failure of a large portion of annunciators is more likely than a failure of a large portion of indications, the concern is included in this Threshold Value due to difficulty associated with assessment of plant conditions. The loss of specific, or several, safety system indicators should remain a function of that specific system or component operability status. This will be addressed by the specific Technical Specification. The initiation of a Technical Specification imposed plant shutdown related to the instrument loss will be reported via 10 CFR 50.72. If the shutdown is not in compliance with the Technical Specification action, the NOUE is based on SU2 "Inability to Reach Required Shutdown Within Technical Specification Limits."

The annunciators or indicators for this Threshold Value include those identified in the Abnormal Operating Procedures, in the Emergency Operating Procedures, and in other Threshold Values (e.g., area, process, and/or effluent rad monitors, etc.).

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.
Due to the limited number of safety systems in operation during cold shutdown, refueling, and defueled modes, no IC is indicated during these modes of operation.

This NOUE will be escalated to an Alert if a transient is in progress during the loss of annunciation or indication.

SYSTEM MALFUNCTION

SU4

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Fuel Clad Degradation.

Operating Mode Applicability: Power Operation
Startup
Hot Standby
Hot Shutdown

Threshold Values: (1 **OR** 2)

1. RE-48000 radiation monitor reading greater than 5.0 µCi/gm indicating fuel clad degradation greater than Technical Specification allowable limits.

2. RCS coolant sample activity value indicating fuel clad degradation greater than Technical Specification allowable limits as indicated by ANY of the following:

Dose Equivalent I-131 greater than 1 µCi/gm for greater than 48 hours
Dose Equivalent I-131 greater than Technical Specification figure 3.4.16-1 limits
RCS specific activity greater than 100/E µCi/gm gross radioactivity

Basis:

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

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. EALThreshold Value #1 addresses the site specific radiation monitor reading that provides indication of loss of fuel clad integrity.

The Threshold Value #2 addresses coolant samples exceeding coolant technical specifications for iodine spike. Escalation of this IC to the Alert level is via the Fission Product Barrier Degradation Monitoring ICs. Though the referenced Technical Specification limits are mode dependent, it is appropriate that the Threshold Value's be applicable in all modes, as they indicate a potential degradation in the level of safety of the plant. The companion IC to SU4 for the Cold Shutdown/Refueling modes is CU5.

SYSTEM MALFUNCTION

SU5

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

RCS Leakage.

Operating Mode Applicability: Power Operation
Startup
Hot Standby
Hot Shutdown

Threshold Values: (1 **OR** 2)

1. Unidentified **OR** pressure boundary leakage greater than 10 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 10 gpm value for the unidentified and pressure boundary leakage was selected as it is observable with normal control room indications. Lesser values must generally be determined through time-consuming surveillance tests (e.g., mass balances). The Threshold Value 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. 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 Onsite **OR** Offsite Communications Capabilities.

Operating Mode Applicability: Power Operation
Startup
Hot Standby
Hot Shutdown

Threshold Values: (1 **OR** 2)

1. UNPLANNED loss of ALL of the following on-site communications capability affecting the ability to perform routine operations:

In plant telephones
Public address system
Plant radio systems

2. UNPLANNED loss of ALL of the following off-site communications capability:

ENN (Emergency Notification Network)
ENS (Emergency Notification System)
Commercial phones (Radio, PBX, Satellite, Wireless)
VOIP (Voice Over Internet Protocol)
OPX (Off Premise Extension)

Basis:

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

The purpose of this IC and its associated Threshold Values 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 offsite authorities. The loss of offsite communications ability is expected to be significantly more comprehensive than the condition addressed by 10 CFR 50.72.

The availability of one method of ordinary offsite communications is sufficient to inform state and local authorities of plant conditions. This Threshold Value is intended to be used only when extraordinary means (e.g., relaying of information from radio transmissions, individuals being sent to offsite locations, etc.) are being used to make communications possible.

The list for onsite communications loss encompasses the loss of all means of routine communications. The list for offsite communications loss encompasses the loss of all means of communications with offsite authorities.

SYSTEM MALFUNCTION

SU8

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Inadvertent Criticality.

OPERATING MODE APPLICABILITY Hot Standby
Hot Shutdown

Threshold Value:

1. An UNPLANNED sustained positive startup rate observed on nuclear instrumentation.

Basis:

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

This IC addresses inadvertent criticality events. While the primary concern of this IC is criticality events that occur in Cold Shutdown or Refueling modes (NUREG 1449, Shutdown and Low-Power Operation at Commercial Nuclear Power Plants in the United States), the IC is applicable in other modes in which inadvertent criticalities are possible. 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 (e.g., criticality earlier than estimated). The Cold Shutdown/Refueling IC is CU8.

This condition is identified using the startup rate monitor. The term “sustained“ is used in order to allow exclusion of expected short term positive startup rates from planned control rod movements. These short term positive startup rates are the result of the rise in neutron population due to subcritical multiplication.

SYSTEM MALFUNCTION

SA2

Initiating Condition -- ALERT

Failure of Reactor Protection System Instrumentation to Complete or Initiate an Automatic Reactor Trip Once a Reactor Protection System Setpoint Has Been Exceeded **AND** Manual Trip Was Successful.

Operating Mode Applicability: Power Operation
Startup
Hot Standby

Threshold Value:

NOTE

A successful manual trip for purposes of declaration is any action taken from the Main Control Board (MCB) that rapidly inserts the control rods, this can be accomplished by tripping the reactor using the Reactor Trip switches on the MCB **OR** by de-energizing both Rod Drive Motor Generator sets from the MCB.

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1. Indication(s) exist that a reactor protection setpoint was exceeded and an automatic scram did not occur, and a manual scram resulted in the reactor being subcritical.

Basis:

This condition indicates failure of the automatic protection system to 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 and thus the plant safety has been compromised, and design limits of the fuel may have been exceeded. An Alert is indicated because conditions exist that lead to potential loss of fuel clad or RCS. Reactor protection system setpoint being exceeded, rather than limiting safety system setpoint being exceeded, is specified here because failure of the automatic protection system is the issue. A manual reactor trip is considered to be a trip input to the automatic Reactor Protection System. Failure of manual scram would escalate the event to a Site Area Emergency.

The Reactor should be considered subcritical when reactor power level has been reduced to less than 5% power and SUR is negative.

SYSTEM MALFUNCTION

SA4

Initiating Condition -- ALERT

UNPLANNED Loss of Most or All Safety System Annunciation or Indication in Control Room With **EITHER** (1) a SIGNIFICANT TRANSIENT in Progress, **OR** (2) Compensatory Non-Alarming Indicators are Unavailable.

Operating Mode Applicability: Power Operation
Startup
Hot Standby
Hot Shutdown

Threshold Value: (1 **AND EITHER** 2.a **OR** b.)

1. UNPLANNED loss of most **OR** all MCB annunciators **OR** indicators associated with safety systems for greater than 15 minutes

   AND EITHER

2. a. A SIGNIFICANT TRANSIENT is in progress

   OR

   b. Compensatory non-alarming indications are **NOT** available

Basis:

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

SIGNIFICANT TRANSIENT: is an UNPLANNED event involving one or more of the following: (1) automatic turbine runback >25% thermal reactor power, (2) electrical load rejection >25% full electrical load, (3) Reactor Trip, (4) Safety Injection Activation, or (5) thermal power oscillations >10%.

This IC and its associated Threshold Values are intended to recognize the difficulty associated with monitoring changing plant conditions without the use of a major portion of the annunciation or indication equipment during a transient. Recognition of the availability of computer based indication equipment is considered (e.g., SPDS, plant computer, etc.).

"Planned" loss of annunciators or indicators includes scheduled maintenance and testing activities.

Quantification of "Most" is arbitrary, however, it is estimated that if approximately 75% of the safety system annunciators or indicators are lost, there is a greater risk that a degraded plant condition could go undetected. It is not intended that plant personnel perform a detailed count of the instrumentation lost but use the value as a judgment threshold for determining the severity of the plant conditions. It is

also not intended that the Shift Supervisor be tasked with making a judgment decision as to whether additional personnel are required to provide augmented monitoring of system operation.

It is further recognized that most plant designs provide redundant safety system indication powered from separate uninterruptible power supplies. While failure of a large portion of annunciators is more likely than a failure of a large portion of indications, the concern is included in this Threshold Value due to difficulty associated with assessment of plant conditions. The loss of specific, or several, safety system indicators should remain a function of that specific system or component operability status. This will be addressed by the specific Technical Specification. The initiation of a Technical Specification imposed plant shutdown related to the instrument loss will be reported via 10 CFR 50.72. If the shutdown is not in compliance with the Technical Specification action, the NOUE is based on SU2 "Inability to Reach Required Shutdown Within Technical Specification Limits."

The annunciators or indicators for this Threshold Value include those identified in the Abnormal Operating Procedures, in the Emergency Operating Procedures, and in other Threshold Values (e.g., area, process, and/or effluent rad monitors, etc.).

"Compensatory non-alarming indications" in this context includes computer based information such as SPDS. This should include all computer systems available for this use depending on specific plant design and subsequent retrofits. If both a major portion of the annunciation system and all computer monitoring are unavailable, the Alert is required.

Due to the limited number of safety systems in operation during cold shutdown, refueling and defueled modes, no IC is indicated during these modes of operation.

SYSTEM MALFUNCTION

SA5

Initiating Condition -- ALERT

AC power capability to essential busses reduced to a single power source for greater than 15 minutes such that any additional single failure would result in station blackout.

Operating Mode Applicability: Power Operation
Startup
Hot Shutdown

Threshold Value:

1. a. AC power capability to 1(2)AA02 **AND** 1(2)BA03 reduced to a single power source for greater than 15 minutes

   AND

   b. ANY additional single failure will result in station blackout.

Basis:

This IC and the associated Threshold Values are intended to provide an escalation from IC SU1, "Loss of All Offsite Power To Essential Busses for Greater Than 15 Minutes." The condition indicated by this IC is the degradation of the offsite and onsite power systems such that any additional single failure would result in a station blackout. This condition could occur due to a loss of offsite power with a concurrent failure of one emergency generator to supply power to its emergency busses. Another related condition could be the loss of all offsite power and loss of onsite emergency diesels with only one train of emergency busses being backfed from the SAT, or the loss of onsite emergency diesels with only one train of emergency busses being backfed from offsite power. The subsequent loss of this single power source would escalate the event to a Site Area Emergency in accordance with IC SS1, "Loss of All Offsite and Loss of All Onsite AC Power to Essential Busses."

The Threshold Values allow credit for operation of installed design features, such as cross-ties or swing diesels, provided that abnormal or emergency operating procedures address their use. Consider the impact of this condition on other shared safety functions.

SYSTEM MALFUNCTION

SS1

Initiating Condition -- SITE AREA EMERGENCY

Loss of All Offsite Power and Loss of All Onsite AC Power to Essential Busses.

Operating Mode Applicability: Power Operation
Startup
Hot Standby
Hot Shutdown

Threshold Value:

1. Loss of all AC power indicated by:

   a. Loss of power to **OR** from transformers 1(2)NXRA **AND** 1(2)NXRB resulting in loss of all off-site electrical power to **BOTH** 1(2)AA02 **AND** 1(2)BA03 for greater than 15 minutes

   AND

   b. Failure of emergency diesel generators to supply power to emergency busses.

   AND

   c. Restoration of at least one 4160V ESF bus, AA02 **OR** BA03, has **NOT** occurred within 15 minutes of time of loss of all AC power

Basis:

Loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, Containment Heat Removal and the Ultimate Heat Sink. Prolonged loss of all AC power will cause core uncovering and loss of containment integrity, thus this event can escalate to a General Emergency. The 15 minute time duration is selected to exclude transient or momentary power losses.

Escalation to General Emergency is via Fission Product Barrier Degradation or IC SG1, "Prolonged Loss of All Offsite Power and Prolonged Loss of All Onsite AC Power."

Consideration should be given to operable loads necessary to remove decay heat or provide Reactor Vessel makeup capability when evaluating loss of AC power to essential busses. Even though an essential bus may be energized, if necessary loads (i.e., loads that if lost would inhibit decay heat removal capability or Reactor Vessel makeup capability) are not operable on the energized bus then the bus should not be considered operable. If this bus was the only energized bus then a Site Area Emergency per SS1 should be declared.

SYSTEM MALFUNCTION

SS2

Initiating Condition -- SITE AREA EMERGENCY

Failure of Reactor Protection System Instrumentation to Complete or Initiate an Automatic Reactor Trip Once a Reactor Protection System Setpoint Has Been Exceeded **AND** Manual Trip Was NOT Successful.

Operating Mode Applicability: Power Operation
Startup

Threshold Value:

NOTE

A successful manual trip for purposes of declaration is any action taken from the Main Control Board (MCB) that rapidly inserts the control rods, this can be accomplished by tripping the reactor using the Reactor Trip switches on the MCB **OR** by de-energizing both Rod Drive Motor Generator sets from the MCB.

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1. Indications exist that a reactor protection system setpoint was exceeded and automatic trip did not occur, and a manual trip did not result in the reactor being made subcritical.(NOTE)

Basis:

Automatic and manual trip are not considered successful if action away from the reactor control console was required to trip the reactor.

The Reactor should be considered subcritical when reactor power level has been reduced to less than 5% power and SUR is negative.

Under these continued power generation conditions, the reactor may be producing more heat than the maximum decay heat load for which the safety systems are designed. A Site Area Emergency is indicated because conditions exist that may lead to imminent loss or potential loss of both fuel clad and RCS. Although this IC may be viewed as redundant to the Fission Product Barrier Degradation IC, its inclusion is necessary to better assure timely recognition and emergency response. Escalation of this event to a General Emergency would be via Fission Product Barrier Degradation or Emergency Director Judgment ICs.

SYSTEM MALFUNCTION

SS3

Initiating Condition -- SITE AREA EMERGENCY

Loss of All Vital DC Power.

Operating Mode Applicability: Power Operation
Startup
Hot Standby
Hot Shutdown

Threshold Value:

1. Loss of Vital DC power to 125 VDC Buses AD1, BD1, CD1, **AND** DD1 indicated by bus voltage indications less than 105 VDC for greater than 15 minutes.

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.

105 VDC bus voltage is based on the minimum bus voltage necessary for the operation of safety related equipment. This voltage value incorporates a margin of at least 15 minutes of operation before the onset of inability to operate those loads.

SYSTEM MALFUNCTION

SS4

Initiating Condition -- SITE AREA EMERGENCY

Complete Loss of Heat Removal Capability.

Operating Mode Applicability: Power Operation
Startup
Hot Standby
Hot Shutdown

Threshold Value:

NOTE

Heat Sink CSF should not be considered –RED if total AFW flow is less than 570 gpm due to operator action.

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1. Complete Loss of Heat Removal Capability as indicated by:

   a. Core Cooling CSF - ORANGE

      AND

   b. Heat Sink CSF - RED

Basis:

This Threshold Value addresses complete loss of functions, including ultimate heat sink (NSCW), required for hot shutdown with the reactor at pressure and temperature. Reactivity control is addressed in other Threshold Values.

Under these conditions, there is an actual major failure of a system intended for protection of the public. Thus, declaration of a Site Area Emergency is warranted. Escalation to General Emergency would be via Abnormal Rad Levels / Radiological Effluent, Emergency Director Judgment, or Fission Product Barrier Degradation 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
Hot Shutdown

Threshold Value:

1. a. SIGNIFICANT TRANSIENT in progress
AND

   b. Loss of most **OR** all of the MCB annunciators **OR** indicators associated with safety systems

   AND

   c. Compensatory non-alarming indications are **NOT** available

   AND

   d. Indications needed to monitor the Critical Safety Function Status Tree parameters are **NOT** available

Basis:

SIGNIFICANT TRANSIENT: is an UNPLANNED event involving one or more of the following: (1) automatic turbine runback >25% thermal reactor power, (2) electrical load rejection >25% full electrical load, (3) Reactor Trip, (4) Safety Injection Activation, or (5) thermal power oscillations >10%.

This IC and its associated Threshold Value are intended to recognize 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.

The annunciators for this Threshold Value are limited to include those identified in the Abnormal Operating Procedures, in the Emergency Operating Procedures, and in other Threshold Values (e.g., rad monitors, etc.)

"Compensatory non-alarming indications" in this context includes computer based information such as SPDS.

The indications needed to monitor safety functions necessary for protection of the public must include control room indications, computer generated indications and dedicated annunciation capability. The specific indications are those used to determine such functions as the ability to shut down the reactor,

maintain the core cooled, to maintain the reactor coolant system intact, and to maintain containment intact.

"Planned" and “UNPLANNED” actions are not differentiated since the loss of instrumentation of this magnitude is of such significance during a transient that the cause of the loss is not an ameliorating factor.

Quantification of "Most" is arbitrary, however, it is estimated that if approximately 75% of the safety system annunciators or indicators are lost, there is a greater risk that a degraded plant condition could go undetected. It is not intended that plant personnel perform a detailed count of the instrumentation lost but use the value as a judgment threshold for determining the severity of the plant conditions. It is also not intended that the Shift Supervisor be tasked with making a judgment decision as to whether additional personnel are required to provide augmented monitoring of system operation.

SYSTEM MALFUNCTION

SG1

Initiating Condition -- GENERAL EMERGENCY

Prolonged Loss of All Offsite Power **AND** Prolonged Loss of All Onsite AC Power to Essential Busses.

Operating Mode Applicability: Power Operation
Startup
Hot Standby
Hot Shutdown

Threshold Value: **(**1 **AND EITHER** 2 **OR** 3)

1. Loss of ALL AC power indicated by:

   a. Loss of power to **OR** from transformers 1(2)NXRA **AND** 1(2)NXRB resulting in loss of all off-site electrical power to **BOTH** 1(2)AA02 **AND** 1(2)BA03 for greater than 15 minutes

   AND

   b. Failure of emergency diesel generators to supply power to emergency busses.

   AND EITHER

2. Restoration of at least one 4160V ESF bus, AA02 **OR** BA03, within 4 hr. of time of loss is **NOT** likely

   OR

3. Fuel Clad Barrier Evaluation indicates continuing degradation (Loss or Potential Loss) due to core cooling

Basis:

Loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, Containment Heat Removal and the Ultimate Heat Sink. Prolonged loss of all AC power will lead to loss of fuel clad, RCS, and containment. The 4 hours to restore AC power is based on a site blackout coping analysis performed in conformance with 10 CFR 50.63 and Regulatory Guide 1.155, "Station Blackout". Appropriate allowance for offsite emergency response including evacuation of surrounding areas should be considered. Although this IC may be viewed as redundant to the Fission Product Barrier Degradation IC, its inclusion is necessary to better assure timely recognition and emergency response.

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 emergency 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.

In addition, under these conditions, fission product barrier monitoring capability may be degraded. Although it may be difficult to predict when power can be restored, it is necessary to give the Emergency Director a reasonable idea of how quickly (s)he may need to declare a General Emergency based on two major considerations:

1. Are there any present indications that core cooling is already degraded to the point that Loss or Potential Loss of Fission Product Barriers is imminent?

2. If there are no present indications of such core cooling degradation, how likely is it that power can be restored in time to assure that a loss of two barriers with a potential loss of the third barrier can be prevented?

Thus, indication of continuing core cooling degradation must be based on Fission Product Barrier monitoring with particular emphasis on Emergency Director judgment as it relates to imminent Loss or Potential Loss of fission product barriers and degraded ability to monitor fission product barriers.

SYSTEM MALFUNCTION

SG2

Initiating Condition -- GENERAL EMERGENCY

Failure of the Reactor Protection System to Complete an Automatic Trip and Manual Trip was NOT Successful **AND** there is Indication of an Extreme Challenge to the Ability to Cool the Core.

Operating Mode Applicability: Power Operation
Startup

Threshold Value:

NOTE

Heat Sink CSF should not be considered – RED if total AFW flow is less than 570 gpm due to operator action.

---

1. Indications exist that a reactor protection system setpoint was exceeded and automatic trip did not occur, and a manual trip did not result in the reactor being made subcritical.

   AND

   Core Cooling CSF - RED

   OR

   Heat Sink CSF - RED

Basis:

Automatic and manual trip are not considered successful if action away from the reactor control console is required to trip the reactor.

The Reactor should be considered subcritical when reactor power level has been reduced to less than 5% power and SUR is negative.

Under the conditions of this IC and its associated Threshold Values, the efforts to bring the reactor subcritical have been unsuccessful and, as a result, the reactor is producing more heat than the maximum decay heat load for which the safety systems were designed. Although there are capabilities away from the reactor control console, such as emergency boration, the continuing temperature rise indicates that these capabilities are not effective. This situation could be a precursor for a core melt sequence. This Threshold Value equates to a Subcriticality RED condition.

The extreme challenge to the ability to cool the core is intended to mean that the core exit temperatures are at or approaching 1200 degrees F or that the reactor vessel water level is below the top of active fuel. This Threshold Value equates to a Core Cooling RED condition.

Another consideration is the inability to initially remove heat during the early stages of this sequence. If emergency feedwater flow is insufficient to remove the amount of heat required by design from at least one steam generator, an extreme challenge should be considered to exist. This Threshold Value equates to a Heat Sink RED condition.

In the event either of these challenges exist at a time that the reactor has not been brought below the power associated with the safety system design (typically 3 to 5% power) 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 offsite intervention time.

E. NOTIFICATION METHODS AND PROCEDURES

This section describes the plan for notification of onsite and offsite Vogtle Electric Generating Plant (VEGP) response personnel and State, local, and Nuclear Regulatory Commission (NRC) emergency response centers. Actual methods and sequencing of notifications are covered in appropriate implementation procedures (NMP-EP-111, Emergency Notifications, and Procedure 91204-C, Emergency Response Communications). Tables E-1 and E-2 and figure E-1 present the initial notification concept.

E.1 NOTIFICATION OF PERSONNEL

The emergency director is responsible for classifying an event (section D) into the appropriate emergency class and then notifying onsite and offsite personnel accordingly. This notification will involve sounding the appropriate plant emergency alarm signal, making appropriate announcements over the plant public address system, activation of the recall system and using appropriate plant telephone system.

The primary means for notification of personnel within the protected area is the public address (PA) system. Upon declaration of a Notification of Unusual Event (NUE), an Alert, a Site Area Emergency, or a General Emergency, the emergency director will order an announcement of the emergency

The tone signals for each of these classes of emergency conditions, as well as for a fire, are as follows:

- NUE: announcement only, no tone signal.
- Alert: warble tone.
- Site Area Emergency: warble tone.
- General Emergency: warble tone.
- Fire: siren tone.

During security related events the ED may elect to not sound a warning tone and, in such cases, will provide event specific instructions for onsite personnel over the PA system as well as other available communications means as needed.

The supervisor nuclear security is responsible for notifying Plant Wilson, the training center, the visitors center, and recreation park staff. All visitors at the visitors center will leave the site if directed by the emergency director or if a Site Area or General Emergency is declared. Security will activate the site siren to notify personnel on site, outside the protected area of an evacuation order.

The Security Department will also be responsible for evacuating all visitors and nonessential personnel from the Plant Vogtle Recreational Park and for the verification of the evacuation of all nonessential personnel from Plant Wilson, the training center, and the remaining areas inside the owner controlled area.

Visitors within the protected area are escorted by a permanently badged individual. This individual is responsible for informing the visitors of emergencies when they occur and for taking action to evacuate the visitors from the site, as necessary.

Plant and contractor personnel will be trained on actions to be taken in an emergency prior to their work assignment. Otherwise, they must be escorted by an individual who has been trained in emergency procedures. The training includes instructions on the methods of personnel notification and the required personnel actions in the event of an emergency.

Notification of the corporate staff is performed in accordance with NMP-EP-002 / NMP-GM-036.

The notification procedure includes notification of Emergency Response Organization Personnel (ERO) not on site. ERO members will be notified by means of an autodialer system activated by on-shift personnel. In addition to those personnel recalled; Operations, Maintenance, and Security personnel required to report shall be contacted by on-shift personnel from their own respective department.

E.2 NOTIFICATION OF STATE AND LOCAL RESPONSE PERSONNEL

The emergency director is responsible for the completion of the Initial Message Form (see figure E-1 for a sample form) and for the notification of the following within 15 min of the declaration of an emergency:

- Georgia Emergency Management Agency Emergency Operations Center (EOC) communicator.
- Burke County Emergency Operations Center (EOC) communicator.
- South Carolina warning point.
- Aiken County sheriff dispatcher.
- Barnwell County sheriff dispatcher.
- Allendale County central dispatch.

- Department of Energy-Savannah River (DOE SR) Operations Center communicator.

These agencies will be responsible for notifying appropriate response personnel in accordance with their emergency plans and procedures. A dedicated telephone system, known as the Emergency Notification Network (ENN), will normally be used to accomplish these notifications. Section F describes the ENN and backup means of communication. Figure E-1 presents the sample initial message form for making notifications to these response centers. This form has been developed in conjunction with appropriate offsite agencies. The message form may be transmitted electronically or verbally.

E.3 NOTIFICATION OF FEDERAL AGENCIES

The emergency director is responsible for ordering notification calls to the DOE-SR Operations Center by ENN and to the NRC Operations Center by the Emergency Notification System (ENS) or commercial telephone as backup within prescribed time constraints from the declaration of an emergency. Examples of the type of Initial Emergency Message Form used to provide the initial notification to the SRS Operations Center, and the NRC Operations Center Event Notification Form used for the NRC notification, are shown in figures E-1 and E-2, respectively.

E.4 NOTIFICATION OF THE PUBLIC

It is the responsibility of VEGP to provide adequate means for notifying the public, or to be assured that such means are provided. In case of an emergency, State and local agencies are responsible for activating the alert notification system. Administrative and physical means have been established for providing early initial warning and subsequent clear instructions to the populace within the plume exposure pathway emergency planning zone (EPZ). The alert notification system, except for the Savannah River Site (SRS), is described in appendix 3; this system has the capability to complete the initial alert notification of residents within the plume EPZ in about 15 min. Follow up messages can be delivered to the public over commercial broadcast

In the event that an emergency is declared at the Vogtle Electric Generating Plant (VEGP), DOE-SR has agreed to provide for the prompt notification of all persons on the SRS within VEGP's plume exposure pathway EPZ. See appendix 5.

VEGP will provide offsite authorities with supporting information for their messages to the public. Such messages, consistent with the emergency classification scheme, will provide the public with instructions in regard to specific protective actions to be taken by occupants of affected areas.

E.5 FOLLOWUP EMERGENCY MESSAGES

The emergency director is responsible for the completion of a followup emergency message. (See figure E-1, sample form.) The appropriate support coordinator will ensure the emergency communicator(s) periodically provide followup messages to the appropriate offsite Federal, State, and local authorities.

E.6 VERIFICATION OF NOTIFICATION MESSAGES

All notification messages must be verified. When the ENN is used, verification is accomplished by roll call. This is a suitable mechanism, since the ENN is a multiparty dedicated telephone line.

When commercial telephone or radio is used for notification, the called party will contact the Vogtle Electric Generating Plant to verify the validity of the message or use the authentication system provided by the State of South Carolina EPD.

When electronic notifications are performed, verification is accomplished by roll call.

TABLE E-1 (SHEET 1 OF 2)

INITIAL NOTIFICATION SYSTEM
NORMAL WORKING HOURS

Responsible Communicator	Primary Notification System	Party Notified
Control Room Staff	PA system	1. Protected area and Admin. Bldg. personnel
	PA system telephone, pager	2. Vogtle duty manager
	Autodialer system and beeper system	3. Recall for emergency response personnel not on site
Security Department	Plant telephone system	1. Visitors center personnel 2. Training center personnel 3. Personnel onsite, outside protected area 4. Personnel at Plant Wilson
	Direct contact	Recreation area occupants
ENN Communicator	ENN	1. GEMA Operations Center communicator 2. Burke County EOC communicator 3. SRS Operations Center communicator 4. South Carolina Warning Point 5. Aiken County sheriff dispatcher 6. Barnwell County sheriff dispatcher 7. Allendale County Central Dispatcher

TABLE E-1 (SHEET 2 OF 2)

Responsible Communicator	Primary Notification System	Party Notified
Operations Staff	ENS	NRC Operations Center
Vogtle duty manager	telephone	Nuclear Duty Officer

TABLE E-2 (SHEET 1 OF 2)

INITIAL NOTIFICATION SYSTEM
BACKSHIFT HOURS

Responsible Communicator	Primary Notification System	Party Notified
Control Room Staff	Public address system	1. Protected area personnel
	Telephone and pager	2. Vogtle duty manager
	Autodialer system and beeper system	3. Recall for emergency response personnel not on site
ENN Communicator	ENN	1. GEMA Operations Center communicator
		2. Burke County EOC communicator
		3. SRS communicator
		4. South Carolina Warning Point
		5. Aiken County sheriff dispatcher
		6. Barnwell County sheriff dispatcher
		7. Allendale County Central dispatcher
Operations Staff	ENS	1. NRC Operations Center
Vogtle duty manager	Telephone	1. Nuclear Duty Officer
VEGP security	Plant telephone system	1. Visitors center personnel
		2. Training center personnel
		3. Personnel onsite, outside protected area
		4. Plant Wilson

TABLE E-2 (SHEET 2 OF 2)

Responsible Communicator	Primary Notification System	Party Notified
VEGP Security (cont)	Direct contact	1. Recreation area occupants

FIGURE E-1
EXAMPLE OF INITIAL EMERGENCY MESSAGE AFOR STATE AND LOCAL RESPONSE AGENCIES

Southern Nuclear Emergency Notification

1. [A] DRILL [B] ACTUAL EVENT MESSAGE # _____
2. [A] INITIAL [B] FOLLOW-UP NOTIFICATION: TIME_____ DATE____/____/____ AUTHENTICATION # _____
3. SITE: _____ Confirmation Phone # (___)_____

4. **EMERGENCY CLASSIFICATION:** [A] UNUSUAL EVENT [B] ALERT [C] SITE AREA EMERGENCY [D] GENERAL EMERGENCY
   BASED ON EAL #_____ EAL DESCRIPTION: _____

5. **PROTECTIVE ACTION RECOMMENDATIONS:** [A] NONE
   [B] EVACUATE _____
   [C] SHELTER _____
   [D] CONSIDER THE USE OF KI (POTASSIUM IODIDE) IN ACCORDANCE WITH STATE PLANS AND POLICY.
   [E] OTHER_____

6. **EMERGENCY RELEASE:** [A] None [B] Is Occurring [C] Has Occurred

7. RELEASE SIGNIFICANCE: [A] Not applicable [B] Within normal operating limits [C] Above normal operating limits [D] Under evaluation

8. EVENT PROGNOSIS: [A] Improving [B] Stable [C] Degrading

9. METEOROLOGICAL DATA: Wind Direction from _____ degrees Wind Speed _____mph
   Precipitation _____ Stability Class [A] [B] [C] [D] [E] [F] [G]

10. [A] DECLARATION [B] TERMINATION Time _____ Date ____/_____/_____

11. AFFECTED UNIT(S): [1] [2] [All]

12. UNIT STATUS: (Unaffected Unit(s) Status Not Required for Initial Notifications)
    [A] U1 ____% Power Shutdown at Time _____ Date ___/____/____
    [B] U2 ____% Power Shutdown at Time _____ Date ___/____/____

13. REMARKS: _____

FOLLOW-UP INFORMATION (Lines 14 through 16 Not Required for Initial Notifications)

EMERGENCY RELEASE DATA. NOT REQUIRED IF LINE 6 A IS SELECTED.

14. RELEASE CHARACTERIZATION: TYPE: [A] Elevated [B] Mixed [C] Ground UNITS: [A] Ci [B] Ci/sec [C] µCi/sec
    MAGNITUDE: Noble Gases:_____ Iodines:_____ Particulates:_____ Other: _____
    FORM: [A] Airborne Start Time _____ Date ___/____/____Stop Time _____ Date ___/____/____
    [B] Liquid Start Time _____ Date ___/____/____Stop Time _____ Date ___/____/____

15. PROJECTION PARAMETERS: Projection period: _____Hours Estimated Release Duration _____Hours
    Projection performed: Time _____ Date ___/____/____ Accident Type: _____

16. PROJECTED DOSE:

DISTANCE	TEDE (mrem)	Adult Thyroid CDE (mrem)
Site boundary		
2 Miles		
5 Miles		
10 Miles		

17. APPROVED BY: _____ Title _____ Time _____ Date___/____/____

NOTIFIED BY: _____

RECEIVED BY: _____ Time _____ Date___/____/____
(To be completed by receiving organization)

NRC FORM 361
(12-2000)

U.S. NUCLEAR REGULATORY COMMISSION
OPERATIONS CENTER

REACTOR PLANT
EVENT NOTIFICATION WORKSHEET

EN #

NRC OPERATION TELEPHONE NUMBER: PRIMARY -- 301-816-5100 or 800-532-3469*, BACKUPS -- [1st] 301-951-0550 or 800-449-3694*, [2nd] 301-415-0550 and [3rd] 301-415-0553

*Licensees who maintain their own ETS are provided these telephone numbers.

NOTIFICATION TIME	FACILITY OR ORGANIZATION	UNIT	NAME OF CALLER	CALL BACK #

EVENT TIME & ZONE	EVENT DATE	POWER/MODE BEFORE	POWER/MODE AFTER

EVENT CLASSIFICATIONS

	GENERAL EMERGENCY	GEN/AAEC
	SITE AREA EMERGENCY	SIT/AAEC
	ALERT	ALE/AAEC
	UNUSUAL EVENT	UNU/AAEC
	50.72 NON-EMERGENCY	(see next columns)
	PHYSICAL SECURITY (73.71)	DDDD
	MATERIAL/EXPOSURE	B???
	FITNESS FOR DUTY	HFIT
	OTHER UNSPECIFIED REQMT.	(see last column)
	INFORMATION ONLY	NINF

1-Hr. Non-Emergency 10 CFR 50.72(b)(1)

		TS Deviation	ADEV

4-Hr. Non-Emergency 10 CFR 50.72(b)(2)

	(i)	TS Required S/D	ASHU
	(iv)(A)	ECCS Discharge to RCS	ACCS
	(iv)(B)	RPS Actuation (scram)	ARPS
	(xi)	Offsite Notification	APRE

8-Hr. Non-Emergency 10 CFR 50.72(b)(3)

	(ii)(A)	Degraded Condition	ADEG
	(ii)(B)	Unanalyzed Condition	AUNA
	(iv)(A)	Specified System Actuation	AESF

	(v)(A)	Safe S/D Capability	AINA
	(v)(B)	RHR Capability	AINB
	(v)(C)	Control of Rad Release	AINC
	(v)(D)	Accident Mitigation	AIND
	(xii)	Offsite Medical	AMED
	(xiii)	Loss Comm/Asmt/Resp	ACOM

60-Day Optional 10 CFR 50.73(a)(1)

		Invalid Specified System Actuation	AINV

Other Unspecified Requirement (Identify)

	NONR
	NONR

DESCRIPTION

Include: Systems affected, actuations and their initiating signals, causes, effect of event on plant, actions taken or planned, etc. *(Continue on back)*

NOTIFICATIONS	YES	NO	WILL BE
NRC RESIDENT			
STATE(s)			
LOCAL			
OTHER GOV AGENCIES			
MEDIA/PRESS RELEASE			

ANYTHING UNUSUAL OR NOT UNDERSTOOD? ☐ YES (Explain above) ☐ NO

DID ALL SYSTEMS FUNCTION AS REQUIRED? ☐ YES ☐ NO (Explain above)

MODE OF OPERATION UNTIL CORRECTED:

ESTIMATED RESTART DATE:

ADDITIONAL INFO ON BACK ☐ YES ☐ NO

NRC FORM 361 (12-2000)

Vogtle Electric Generating Plant

EXAMPLE OF NRC OPERATIONS CENTER EVENT NOTIFICATION WORKSHEET

FIGURE E-2 (SHEET 1 OF 2)

REV 35 6/02

ADDITIONAL INFORMATION

RADIOLOGICAL RELEASES: CHECK OR FILL IN APPLICABLE ITEMS ***(specific details/explanations should be covered in event description)***

	LIQUID RELEASE		GASEOUS RELEASE		UNPLANNED RELEASE		PLANNED RELEASE		ONGOING		TERMINATED
	MONITORED		UNMONITORED		OFFSITE RELEASE		T. S. EXCEEDED		RM ALARMS		AREAS EVACUATED
	PERSONNEL EXPOSED OR CONTAMINATED				OFFSITE PROTECTIVE ACTIONS RECOMMENDED				*State release path in description		

	Release Rate (Ci/sec)	% T. S. LIMIT	HOO GUIDE	Total Activity (Ci)	% T. S. LIMIT	HOO GUIDE
Noble Gas			0.1 Ci/sec			1000 Ci
Iodine			10 uCi/sec			0.01 Ci
Particulate			1 uCi/sec			1 mCi
Liquid *(excluding tritium and dissolved noble gases)*			10 uCi/min			0.1 Ci
Liquid (tritium)			0.2 Ci/min			5 Ci
Total Activity						

	PLANT STACK	CONDENSER/AIR EJECTOR	MAIN STEAM LINE	SG BLOWDOWN	OTHER
RAD MONITOR READINGS					
ALARM SETPOINTS					
% T. S. LIMIT *(if applicable)*					

RCS OR SG TUBE LEAKS: CHECK OR FILL IN APPLICABLE ITEMS: ***(specific details/explanations should be covered in event description)***

LOCATION OF THE LEAK *(e.g., SG #, valve, pipe, etc.)*

LEAK RATE	UNITS: gpm/gpd	T. S. LIMITS	SUDDEN OR LONG-TERM DEVELOPMENT
LEAK START DATE	TIME	COOLANT ACTIVITY AND UNITS:	PRIMARY / SECONDARY

LIST OF SAFETY RELATED EQUIPMENT NOT OPERATIONAL

EVENT DESCRIPTION *(Continued from front)*

F. EMERGENCY COMMUNICATIONS

This section describes the provisions for communication among the principal response organizations and among the Vogtle Electric Generating Plant (VEGP) Emergency Response Facilities (ERF). See Procedure 91204-C, Emergency Response Communications, for details of communication systems and operation. The communications described in this section are summarized in table F-1.

F.1 COMMUNICATIONS WITH THE STATE OF GEORGIA AND BURKE COUNTY

F.1.1 State of Georgia

The primary means of communication between the VEGP and the State of Georgia is the Emergency Notification Network (ENN), a dedicated telephone system from the plant to the State Emergency Operating Center (EOC) at Georgia Emergency Management Agency (GEMA) headquarters in Atlanta, Georgia. There is also an ENN terminal at GEMA's FEOC. Extensions for this system are located in the control room, technical support center (TSC), emergency operations facility (EOF). The ENN system is available and manned 24 h per day. Commercial telephones and a Southern Company Communications in Atlanta provide backup for the dedicated telephone circuits. The plant telephone backup power is supplied by a battery system.

An Administrative Decision Line (ADL) connects the EOF, SRS Operations Center, the GEMA FEOC, the SEOCs of both states and the three South Carolina counties. This is a prearranged conference call over commercial telephone lines and may be used for discussions other than emergency notifications.

F.1.2 Burke County

The primary means of communication between VEGP and Burke County is the ENN, a dedicated telephone system from the plant to the Burke County EOC. Commercial telephones and Southern Company Communications provide backups for the ENN.

The ENN is available and manned 24 h per day. At the plant, the emergency director is in charge of communications to the Burke County EOC. Actual communications may be completed by others as designated by the emergency director. At the Burke County EOC, the Burke County emergency management director is in charge of communications.

F.2 COMMUNICATIONS WITH THE STATE OF SOUTH CAROLINA AND AIKEN, BARNWELL, AND ALLENDALE COUNTIES

F.2.1 State of South Carolina

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 manned 24 h per day. Commercial telephones provide the backup for the ENN.

An ADL connects the EOF, the SRS Operations Center, the GEMA FEOC, the SEOCs of both states, and the three South Carolina counties. This prearranged conference call over commercial lines may be used for discussions other than emergency notifications.

The State emergency preparedness director is responsible for communication at the SEOC with the plant, the Savannah River Site, and contiguous local and State governments.

F.2.2 Aiken, Barnwell, and Allendale Counties

The primary means of communication between VEGP and the South Carolina counties is the ENN, a dedicated telephone system which includes the plant and Aiken, Barnwell, and Allendale County emergency response agencies. Commercial telephone is the backup means of communication.

Each county has 2 ENN drops: one at the County EOC and one at the following 24-h warning points:

County	Location
Aiken	Sheriff Department (Dispatcher)
Allendale	Allendale County Communications
Barnwell	911 Center)

F.3 COMMUNICATIONS WITH THE SAVANNAH RIVER SITE

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 manned 24 h per day. Commercial telephones provide a backup for the ENN.

At VEGP, the emergency director is in charge of communications to the SRS Operations Centers. Actual communications may be completed by others as designated by the emergency director. At the SRS Operations Center, the DOE duty officer is in charge of communications with VEGP.

F.4 COMMUNICATIONS WITH NUCLEAR REGULATORY COMMISSION AND OTHER FEDERAL AGENCIES

The primary means of communication between VEGP and the Nuclear Regulatory Commission (NRC) is the emergency notification system (ENS). The ENS phone service is provided by the Federal Telecommunications System (FTS). Emergency notification system phones are located in the control room, TSC, and EOF. The NRC also provides the health physics network (HPN). The HPN phone service is also provided by the FTS. Health physics network phones are located in the TSC and EOF. In the TSC, the HPN telephone is located in the communications room and will be attended by VEGP personnel until an NRC representative arrives. The NRC Region II office in Atlanta, Georgia, may also be connected on the ENS through Rockville, Maryland.

The Emergency Response Data System (ERDS) is the primary means by which the transmission of plant parameters occurs. The ERDS computer, when activated, periodically transmits a predefined list of critical plant parameters over the dedicated ERDS FTS lines to the NRC Operations Center in Rockville, Maryland.

Commercial telephone lines and the Southern Company Communications serve as backups to the ENS and HPN. Communications with other Federal emergency response organizations will be by telephone.

F.5 COMMUNICATIONS AMONG VEGP EMERGENCY RESPONSE FACILITIES

Communications among the control room, TSC, OSC, and EOF can be completed using dedicated telephone circuits, normal plant telephones, and radio, using the plant network. The radio system is also used for communications with the radiological monitoring teams. Communications available at each emergency response facility are as follows:

1. CONTROL ROOM

   - Dedicated telephone circuits to the TSC, EOF, and OSC (one for each location).
   - The ENN.
   - The NRC ENS.

- Normal plant phones.
- In-plant radio console
- Sound-powered phones.
- Plant page system.
- Commercial dial.
- Southern Company Communications.
- Facsimile.

2. TECHNICAL SUPPORT CENTER

- Dedicated telephone circuits to the control room, EOF, and OSC (one to each location).
- The ENN.
- The ENS.
- Two FTS ERDS lines.
- The HPN.
- Facsimile.
- Normal plant phones.
- In-plant radio.
- Sound-powered phones.
- Plant page system.
- Field team radio remote.
- Additional FTS lines.

- Commercial dial.
- South Carolina radio remote.
- Southern Company Communications.

3. OPERATIONS SUPPORT CENTER

- Dedicated voice telephone circuits to the EOF and TSC (one for each location).
- Normal plant phones.
- In-plant radio transceiver.
- Plant page system.
- Commercial dial.

4. EMERGENCY OPERATIONS FACILITY

- Dedicated telephone circuits to the control room, OSC, and TSC (one each to the control room, OSC, TSC).
- The ENN.
- The ENS.
- The HPN.
- Facsimile.
- Normal plant phones.
- Commercial dial.
- Additional FTS lines.

- Southern Company Communications.
- JIC hotline.
- Field team radio remote.
- ADL prearranged conference.

5. JOINT INFORMATION CENTER

- Southern Company Communications.
- GPC general office dial.
- Commercial dial.
- VEGP dial.
- Facsimile.

F.6 MEDICAL SUPPORT FACILITY COMMUNICATIONS

Communications with Doctors Hospital or the Burke Medical Center 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. Vogtle Electric Generating Plant can communicate with the ambulances by contacting the hospitals, which have radio communications with the ambulances.

F.7 ALERTING EMERGENCY RESPONSE PERSONNEL

As described in section E, notification of onsite personnel at VEGP will be completed through a combination of public address system announcements, tone signals, and proceduralized telephone calls. After normal working hours, VEGP personnel not on site at the time of the emergency will be notified by beeper (for plant management) or by telephone call using an autodialer system.

F.8 COMMUNICATIONS SYSTEM TESTS

Communication channels with the State of Georgia, Burke County, the State of South Carolina, Aiken County, Barnwell County, Allendale County, SRS, and the NRC will be tested monthly, using the extensions in the control room, TSC, and EOF. Communications systems that link the control room, TSC, EOF, State EOC's and GEMA FEOC, County EOC's and SRS EOC are tested quarterly. The communication system for communicating between the TSC, EOF, and VEGP field monitoring teams is tested quarterly. Communications procedures and systems are also tested biennially during a communications drill. This drill is normally conducted during the biennial exercise.

Emergency Response Data System computers are tested once per quarter, or as dictated by NUREG 1394.

F.9 VEGP RADIOLOGICAL MONITORING TEAMS

In-plant monitoring teams will communicate with the Health Physics or OSC communicator at least every half hour per Procedure 91302-C, In-Plant Sampling and Surveys. Field monitoring teams will communicate with the EOF or TSC communicator at least every half hour per Procedure 91303-C, Field Sampling and Surveys.

There are multiple radio frequencies used for communicating with monitoring teams. Transmitters and antennas are located throughout the owner controlled area for field monitoring teams and the in-plant monitoring teams. The field monitoring team radio covers the entire plume exposure pathway EPZ. Remote stations for communicating with the field monitoring teams are located in the TSC and the EOF.

TABLE F-1
EMERGENCY RESPONSE COMMUNICATIONS SUMMARY

	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		●							●		●	●			

(a) ENS available when bridged with NRC Operations Center

G. PUBLIC EDUCATION AND INFORMATION

The detailed planning for public information actions during an emergency, including rumor control, is contained in the Emergency Communications Plan (appendix 8). A general description of the public education and information program follows.

Georgia Power Company (GPC) and Southern Nuclear Operating Company (SNC) in coordination with State and local officials will provide information to the public at least annually regarding how they will be notified and what their actions should be in an emergency. All materials used to provide emergency planning information to the public (information brochures, advertisements, signs and notices, etc.) will be reviewed by GPC and SNC on an annual basis. All materials will be updated as necessary and printed material distributed annually.

The means for disseminating this information include information on siren poles, signs, notices in public areas, and publications distributed at least annually.

Information is distributed annually to residents in the plume exposure pathway emergency planning zone (EPZ) through an emergency information calendar entitled, "The Plant Vogtle Emergency Information Calendar". The text of the calendar addresses the following subjects:

- Summary - What to do if you are warned of an emergency at Plant Vogtle.
- Emergency response plans.
- When an emergency will affect you.
- How you will be told about an emergency.
- What actions you might need to take.
- What if you are told to shelter.
- What if you are told to evacuate.
- Steps to be prepared for an emergency.
- Steps for using map and chart of evacuation area.
- Steps to take to get ready for the trip.
- Classes of accidents.

- Where to get more information or other help.
- What radiation is.
- Special needs card.
- A joint message from Southern Nuclear Operating Company, the states of Georgia and South Carolina, and Burke, Aiken, Allendale, and Barnwell counties explaining the contents of the calendar, asking that they read the emergency information, requesting that they keep it in a handy place, and giving contacts for further information.

In addition, public information personnel provide public education programs to the community. These programs typically focus on plant operational concepts, plant safety considerations, and radiation.

G.1 INFORMATION FOR TRANSIENTS

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.

Finally, a Vogtle 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.

G.2 JOINT INFORMATION CENTER OPERATIONS

The joint information center (JIC) will be the principal point of contact with the news media during an emergency. The JIC will accommodate public information representatives from SNC, GPC, State, local and Federal response agencies. News releases and media briefings will be coordinated to the maximum extent possible.

GPC will utilize the Corporate Headquarters Building at 241 Ralph McGill Boulevard, NE, Atlanta, Georgia, to serve as a temporary information center until the JIC in Waynesboro is activated. Once activated, the JIC becomes the principal location for dissemination of information about the emergency. This facility is located approximately 15 miles from the plant and can accommodate a large number of reporters.

Principal GPC and SNC contacts for the media will be the public information director and the designated Company spokesperson. The Company spokesperson position is filled by individuals who, under normal operations, hold supervisory positions on the SNC Corporate or plant staff and are technically and professionally qualified to perform this important function. The Company spokesperson has access to all information and telephone contact with the emergency director through the EOF Manager. He briefs the media on plant status and Company emergency activities. In addition, technical briefers have been designated who can provide general and background information, as appropriate, to reporters at the JIC.

Further information on the public information organization and information flow to the public during an emergency is available in appendix 8.

G.3 OFFSITE AGENCY COORDINATION

GPC and SNC will provide timely and accurate information to local, State and federal agencies and will seek reciprocal information from these agencies. Efforts will be made to coordinate periodic press briefings and to issue public statements in conjunction with these Government agencies. A joint public information center operation at the Joint Information Center will provide ample opportunity for all parties represented to review all information prior to public release.

G.4 RUMOR CONTROL

Providing timely, accurate, and consistent information to the public is considered the best way to dispel rumors. Rumors are controlled by having a single source of information. In an emergency, a rumor control network will be activated. News media will be monitored to detect and respond to misinformation. The public will be instructed to listen to their radio or TV. Offsite information is the responsibility of offsite agencies; however, rumor control will be coordinated between the states, SNC, and GPC. The states, SNC, and GPC provide information jointly to the rumor control desk at the JIC.

G.5 MEDIA EDUCATION

GPC will offer an annual program to acquaint the news media with the methodology for obtaining information about overall emergency preparedness at Vogtle. Training will include information about the plant, radiation, and the role of the emergency news center.

H. EMERGENCY FACILITIES AND EQUIPMENT

Following the declaration of an emergency, response activities will be coordinated at a number of facilities. These Emergency Response Facilities (ERF) and the equipment which will be used for accident assessment and monitoring functions are described in this section.

H.1 EMERGENCY FACILITIES

1. TECHNICAL SUPPORT CENTER (TSC)

The TSC has been established consistent with NUREG 0696, as described below. The TSC is shared by both units and is located adjacent to the Unit 1 control room at el 220 ft. The layout of the TSC and location of key personnel are shown in figure H-1. Walking time from the TSC to the control room is less than 2 min. The TSC covers about 5900 ft^2 and can accommodate 25 people. It is an integral part of the Seismic Category I control building structure.

The TSC provides 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 room during an emergency. The emergency director and NRC director will be located in close proximity to ensure proper communications. 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. In addition, the TSC has ready access to plant records, some of which are stored in the TSC and some in the control room.

The TSC structure and ventilation system are designed to ensure that the TSC personnel are protected from radiological hazards. The TSC ventilation is a separate system and not a part of the control room ventilation system.

The air supply is filtered by high efficiency particulate air (HEPA) and charcoal filters. During accident conditions the filtration system provides filtered cooling air meeting the following exposure design criteria: 5 rem - whole body; 30 rem - thyroid; and 75 rem - skin dose for a 30 day occupancy.

The air filtration system will be placed in service when required by Procedure 91110-C, Duties of the Health Physics Supervisor (TSC). The ventilation system can be manually controlled from the TSC. The air filtration system will also be placed in the filtration mode automatically whenever the control room HVAC is isolated. The air filtration system, when activated, automatically processes all of the outdoor air together with approximately 25 percent of the recirculated air through the filtration unit. In the initial actuation of the air filtration system, a parallel signal is initiated to deenergize the onsite technical support center battery room and toilet exhaust fans and dampers. The continuous influx of outdoor air with no positive exhaust is designed to pressurize the area to 0.125 in. WG. After the filtration process, the filtered air is mixed with the balance of recirculated air for further conditioning by the normal supply system.

When the TSC is activated, there will be a portable radiation monitor placed in the TSC to alert personnel of the presence of high radiation levels. In addition, portable radiation monitors are available for personnel in transit from the TSC to other areas. Portable air breathing apparatus and anti-contamination clothing are provided in the TSC.

The TSC normal lighting is supplied from normal offsite power through a motor control center backed up by the security diesel generator. The TSC essential lighting is supplied from the essential lighting system. Self-contained, battery-operated emergency lighting is provided as a backup to the normal lighting for ingress and egress only and is located in the TSC hallway.

Power for TSC vital equipment is provided from either the motor control center backed up by the security diesel generator or from a battery-backed uninterruptible power supply system. Power to the dc system is provided via battery chargers, one of which is powered from this same motor control center.

The records storage is shared by the control room and the TSC. Separate copies of the following documents will be stored in the control room complex and in the TSC:

- Technical Specifications.
- Plant Operating Procedures.
- Final Safety Analysis Report.

- Emergency Plan.
- Emergency Plan Implementing Procedures.

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.
- Technical Specifications.
- Final Safety Analysis Report.
- Emergency Plan.
- Records needed to perform the functions of the emergency operating facility (EOF) when it is not operational.

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

Operations at this facility are directed by the TSC manager.

2. OPERATIONS SUPPORT CENTER (OSC)

The OSC has been established to be consistent with NUREG 0696 as described below. The OSC is located on the second floor of the maintenance building in the lunch room. The lunch room is located in the southeast corner of the second floor and is accessed via the south stairwell or the east stairwell. Figure H-2 defines the OSC layout and shows access stairwells. The OSC is where operational support personnel (such as instrument technicians, engineers, mechanics, electricians, chemical/radiation technicians, equipment operators, incoming shift personnel, etc.) assemble to aid in the response to an emergency.

Preparations for dispatching maintenance teams to the plant will include the following steps as described in Procedure 91104, Duties of the OSC Manager, and Procedure 91202, Activation and Operation of the OSC.

A. Members of the team will be selected by the OSC manager based on the type of work to be conducted.

B. The work will be preplanned by the maintenance personnel.

C. Drawings, manuals, and other procedures will be obtained from the document control room or maintenance building. If the equipment manuals are not available in either facility, a complete set of manuals is available in the service building.

D. Dosimetry will be obtained from the OSC emergency kit or at the HP control point.

E. Protective clothing and equipment, radios, and other supplies will be obtained from the emergency kit stored in the OSC or the health physics control point. All equipment will be checked before leaving the OSC or health physics control point.

F. A radiation work permit (RWP) will be completed in accordance with standard practices at the health physics control point, TSC, or OSC. Standard procedures include emergency RWPs. Procedure 91301-C, Emergency Exposure Guidelines, provides instruction for emergency exposures.

G. The tools and equipment needed to conduct repairs and take corrective actions will be determined. This equipment may be available in the auxiliary building tool crib or in the maintenance building. Arrangements for tools and equipment not located onsite will be made in coordination with the support coordinator.

H. ALARA and job briefings will be held with each team in the OSC, the TSC, or at the health physics control point, as appropriate. Work to be performed, special precautions, plant conditions, and radiological information will be included in the briefings.

I. Upon completion of the job, the team members will be debriefed and their exposures recorded.

Status boards containing plant conditions and emergency classification will be available in the OSC.

Emergency kits containing radiation monitoring equipment, first aid supplies, decontamination supplies, breathing apparatus, portable lighting, and hand-held radios are stored in the OSC. Emergency kit contents are listed in appendix 4.

In the event that this facility becomes uninhabitable, the functions of the OSC will be conducted from Clearance and Tagging (C&T) located in the control building. Evacuation of the OSC will be conducted according to Procedure 91202-C, Activation and Operation of the OSC. This Procedure describes the method by which the OSC is evacuated and the movement of personnel to other facilities in an orderly manner. 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 are directed by the OSC manager.

3. EMERGENCY OPERATIONS FACILITY

The Emergency Operations Facility is described in Appendix 7.

4. ALTERNATIVE FACILITY

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 Plant Vogtle JIC building. The alternative facility is located in the rear conference room of the JIC and 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 SNC document management resources, work planning resources for performing engineering assessment activities, including damage control team planning and preparation for return to the site. Procedural guidance for this facility is provided in NMP-EP-135, Alternative Facility Setup and Operation.

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H.2 NEWS CENTER FACILITIES

The Joint Information Center is described in appendix 8.

H.3 ACTIVATION AND STAFFING OF EMERGENCY FACILITIES

During the initial stages of an emergency situation, emergency activities at VEGP are directed from the control room. For a Notification of Unusual Event, no other facilities need be activated.

For security related events, the activation of emergency facilities may be delayed as described in section B.

Upon declaration of an Alert or higher level classification, the TSC will be activated and will be operational within about an hour of the initial notification. Overall direction and control will be exercised from the TSC for an Alert or higher declaration.

Activation of the OSC will be initiated at an Alert or higher level classification. Support personnel will be directed to report to that facility as appropriate for the specific situation. The OSC will be operational within about an hour of initial notification.

Activation of the EOF is described in Appendix 7.

H.4 PLANT MONITORING AND DATA HANDLING SYSTEMS

1. GEOPHYSICAL PHENOMENA MONITORS

a. Meteorological

A meteorological monitoring program is in place at VEGP. Instruments are mounted on a 60-m 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.

The important parameters for characterizing the transport of airborne radioactivity are windspeed, 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. The methodology is described in section I, Accident Assessment.

b. Hydrologic

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.

c. Seismic

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.

d. Fire Detection

The fire-detection system at VEGP includes smoke, flame, and temperature detectors and manual fire alarms. Fire-detection systems are provided in all areas with safe shutdown equipment, as well as other locations throughout the plant. In addition to initiating fire-suppression systems, indications from the fire-detection system are transmitted to the control room.

2. PROCESS AND EFFLUENT RADIATION MONITORING SYSTEM (PERMS)

PERMS receives and processes radiological input readings during normal and abnormal operating and accident conditions; measures, evaluates, and reports radioactivity in designated areas; and monitors releases of radioactive materials in liquid and gaseous effluents. Data from PERMS are obtained for the IPC. A more detailed description of PERMS is provided in FSAR section 11.5.

PERMS consists of the following components:

- PERMS Display Computer: capable of nonvolatile mass data storage and provided with all necessary programming, communication, display, and hardware to serve as information manager for the PERMS.
- Communications Display Computer: in the control room, polls individual data modules and updates alarm status and system radiation levels throughout the plant. Communicates with the IPC to provide data to general plant areas.
- Safety-related display console: in the control room, provides remote control and status display of the safety-related channels from the safety data modules.

- Data processing modules (DPMs): microprocessor-based data acquisition processors for local control and data processing; have two-way digital communication with the communication display computer except safety related DPMs which have one way communications.
- Radiation monitors: along with their associated DPMs, detect, compute, and indicate the radiation levels at selected plant locations and actuate alarms if these levels exceed predetermined values; include area, airborne, and liquid monitors.
- Displays:
  - PERMS Display Computer.
  - Communications Display Computer.
- Printers:
  - Radiochemistry Lab.

There are four types of radiation monitors in PERMS: area radiation monitors, airborne and air particulate radiation monitors, liquid radiation monitors, and post-accident radiation monitors.

The post-accident radiation monitors provide radiation monitoring after an accident. The monitors are comprised of area, airborne, and air particulate monitors. Area monitors respond to gamma radiation photons within any energy range from 60 keV to 3 MeV. Airborne monitors are capable of detecting and measuring radioactive gaseous effluent concentrations with compositions ranging from fresh equilibrium noble gas fission product mixtures to 10-day old mixtures. Power to post-accident monitors is diesel generator backed to ensure against interruption of monitor operation and loss of data.

3. Integrated Plant Computer (IPC)

The Integrated Plant Computer gathers, stores, and displays data used by TSC and EOF personnel to analyze plant conditions. The IPC performs this function independently of actions in the control room and without degrading or interfering with control room and plant functions. The IPC consists of workstations, printers, and associated computer hardware and software.

The IPC serves as the primary data acquisition system for emergency response, acquiring, processing, and feeding data to the TSC and SPDS. In addition, data links are provided to other locations including the EOF. Overall system unavailability is 0.01 or less. All inputs originating from safety systems are individually isolated at specific locations before entering the IPC system.

The IPC has the required data storage capability to meet the guidelines of NUREG-0696, which specifies 2 hours of pre-events data, 12 hours of post event data, and 2 weeks of additional post-event data within reduced-time resolution.

The emergency response parameters provided to the IPC are listed in table H-1. All the parameters in the IPC are available to all IPC workstations.

The IPC hardware and software are protected against unauthorized manipulation of, or interference with, input signals, data processing, data storage, and data output. This security is provided by way of key lock devices, integral program write protection, restricted authorized personnel access, and other administrative controls.

The required IPC equipment (processor, workstations, printer, and network devices) are powered by a battery system (uninterruptible power).

Meteorological information is collected by a data recorder at the meteorological tower. The information is transmitted via microwave to the plant. In the plant, the data is provided to the IPC computer. The meteorological system power is provided with a wet cell battery backup.

In the event the data transmission system fails, data will be obtained by sending a person to the meteorological shack to collect the information and phone it back to the plant.

Fire detection information is provided via visual observation of the fire alarm panel by the control room personnel and an audible alarm. The fire alarm panels are discussed in the Vogtle Electric Generating Plant (VEGP) Final Safety Analysis Report (FSAR) subsection 9.5.1. Information of fire detection will be verbally transmitted to the other ERFs by control room personnel. Fire main header pressure is provided by direct input to the IPC. Seismic panels are discussed in the VEGP FSAR subsection 3.7.4. Information on seismic motion will be verbally transmitted to other ERFs by control room personnel.

The following discussion summarizes the IPC system hardware for emergency response at various locations.

a. Computer Room Hardware

The computer is located next to the lower cable spreading room. This room house the main computer for processing information. Also located in this room is the Input/Output equipment, printing, off-line storage, and computer network equipment.

b. EOF Hardware

The EOF is located in Birmingham, Alabama. It contains workstations and computer network equipment required for communicating with the main IPC processors via the IPC gateway.

c. TSC Hardware

The TSC is located in the power block in the vicinity of the control room. This room houses workstations, computer network equipment and data link equipment.

d. Control Room Hardware

The control room contains SPDS workstations and other general operator use workstations.

e. System Input Room Hardware

This room is used for signal tie point to the IPC equipment when required.

f. Remote Processing Units

In addition to the input configuration described above, many input signals come from remote processing units (RPUs).

Field data will be scanned, converted to engineering units, and transmitted to the IPC system via seven data links from three remote processing units. Data from train A will be transmitted via three data links by RPUA. Data from train B will be transmitted via three data links by RPUB. Nonnuclear safety data will be transmitted via a single data link by RPUN.

g. Process Effluent Radiation Monitoring System

Radiation inputs are scanned and transmitted to the IPC system via data links by PERMS.

4. Emergency Response Data System (ERDS)

In accordance with the requirements of 10 CFR 50, Appendix E, Section VI and NUREG 1394, Revision 1, means are provided to transmit critical plant variables from the onsite computer system to the Nuclear Regulatory Commission Operations Center via a dedicated communications link. The installed system consists of a computer which polls the Integrated Plant Computer (IPC)for the required data, assigns the appropriate data quality value, formats the data stream, and periodically transmits the data stream over the dedicated telecommunications circuit to the NRC.

NUREG 1394, Revision 1, required submittal of a Plant Attribute Library (PAL) and Data Point Library (DPL) to the NRC. Vogtle Electric Generating Plant submitted the original PAL and DPL information to the NRC under a letter from C. K. McCoy to the USNRC (letter number ELV-03500). Changes to the computer configuration or data protocols (contained in the PAL) must be reported to the USNRC at least 30 days prior to installing the change. Changes to the information describing the specific computer data points transmitted must be reported to the USNRC within 30 days following the change. The specific plant parameters which are designated as ERDS points are shown in the FSAR in table 7.5.2-1. Typical plant modifications which might affect the DPL include:

1. Software changes which affect calculated points on the IPC.
2. Rescaling or replacement of transmitters that are scanned by the IPC, PSMS, or PERMS and are associated with ERDS.

5. SAFETY PARAMETER DISPLAY SYSTEM

The SPDS provides a display of plant parameters from which the status of operation can be assessed, in the control room and TSC. The EOF accesses SPDS via the IPC gateway. The SPDS has the following functions:

- Aids the control room operators in the rapid detection and identification of abnormal operating conditions.

- Provides additional specific information to analyze and diagnose the cause of abnormal operating conditions.
- Monitors plant response to corrective actions.
- Provides grouping of parameters to enhance the operators' capability to assess plant status quickly without surveying all control room displays concurrently.
- Directs the operators' attention to other specific confirmatory non-SPDS control room displays.
- Provides human factors engineered display formats in simple and consistent display patterns and codings.
- Provides display information on a real-time basis, along with validation of data.
- Provides generated selectable trend displays on a real-time basis for monitoring reactivity control, reactor core cooling and heat removal from the primary system, reactor coolant system integrity, radioactivity control, containment integrity, and other selected parameters.

The SPDS in the control room consists of displays of sets of concentrated parameters from which plant safety status can be rapidly assessed. Duplicate SPDS displays are located in the TSC and EOF to maximize the exchange of information between these facilities and the control room. The SPDS in each facility is a peripheral of the IPC system. The SPDS is in operation during normal and abnormal operating conditions.

The selection of parameters to be displayed on the SPDS is based on the parameters required to monitor the critical safety functions identified by the Westinghouse Owners Group (WOG). These parameters will aid control room operators in determining the safety status of the plant. The justification for selecting these parameters is contained in the analyses and background information generated by the WOG to support the critical safety function restoration guidelines. The emergency response guidelines, which contain the critical safety function restoration guidelines and identify the parameters used to monitor the critical safety functions, have been submitted to the NRC by the WOG.

6. POST ACCIDENT SAMPLING

Liquid samples from the reactor coolant system and the containment sumps, and air samples from the containment atmosphere may be taken during accident conditions. Section I of this plan contains a more detailed description of these capabilities.

7. OTHER PROCESS PARAMETERS

Several other process parameters, including reactor coolant system pressure and temperature, containment pressure and temperature, liquid levels and other system indications, are useful both for the initiation phase and continued assessment. The specific parameters monitored by the IPC are listed in table H-1. Several of these are used in the classification process as discussed in section D, Emergency Classification System.

H.5 OUT OF PLANT MONITORING

1. GEOPHYSICAL MONITORING

A source of meteorological data is Bush Field in Augusta. The National Weather Service (NWS) maintains an automated observation station at the airport; and windspeed, wind direction, cloud cover, and ceiling height can be obtained. Information from this automated observation station as well as forecast information can be obtained from the NWS in Columbia, S. C.

2. RADIOLOGICAL MONITORING

VEGP will have sufficient portable equipment and trained personnel to field three field monitoring teams. Each team will include two people who will obtain an emergency monitoring kit. The kits will include dosimeters, a two-way radio, meters for measuring gamma and beta/gamma dose rates, and air samplers for collecting particulates and iodines. The particulate filter is used in the field primarily to clean the sample so that any activity on the cartridge (silver zeolite or equivalent) will be iodine. The cartridge is then counted in the field to provide an estimate of airborne iodine concentration. VEGP monitoring teams will remain on the Georgia side of the Savannah River.

Radiological monitoring on the South Carolina side of the Savannah River will be conducted by personnel from the SRS, or the State of South Carolina. These field monitoring teams will be equipped with equipment similar to that used by the VEGP teams. Results of the offsite monitoring activities will be provided to the TSC until the dose assessment activities are transferred from the TSC to the EOF.

3. LABORATORY FACILITIES

VEGP has laboratory facilities for analysis of radioactive samples. The major pieces of equipment include a solid-state gamma spectrometer and a beta/gamma gas proportional counter.

The GPC environmental laboratory located in Smyrna, GA has the capability to perform isotopic analyses of drinking water, river water, milk, vegetation, sediment, and biological samples, as well as tritium and gross-beta analysis. In addition, processing of environmental optically stimulated luminescent dosimeters (OSLDs) will be handled by this laboratory.

Backup laboratory facilities are available at Plant Hatch. This backup capability could be used if facilities in VEGP were not available.

H.6 EMERGENCY KITS

Emergency kits are located in the TSC (for control room also), the OSC, the health physics control point, the EOF 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.

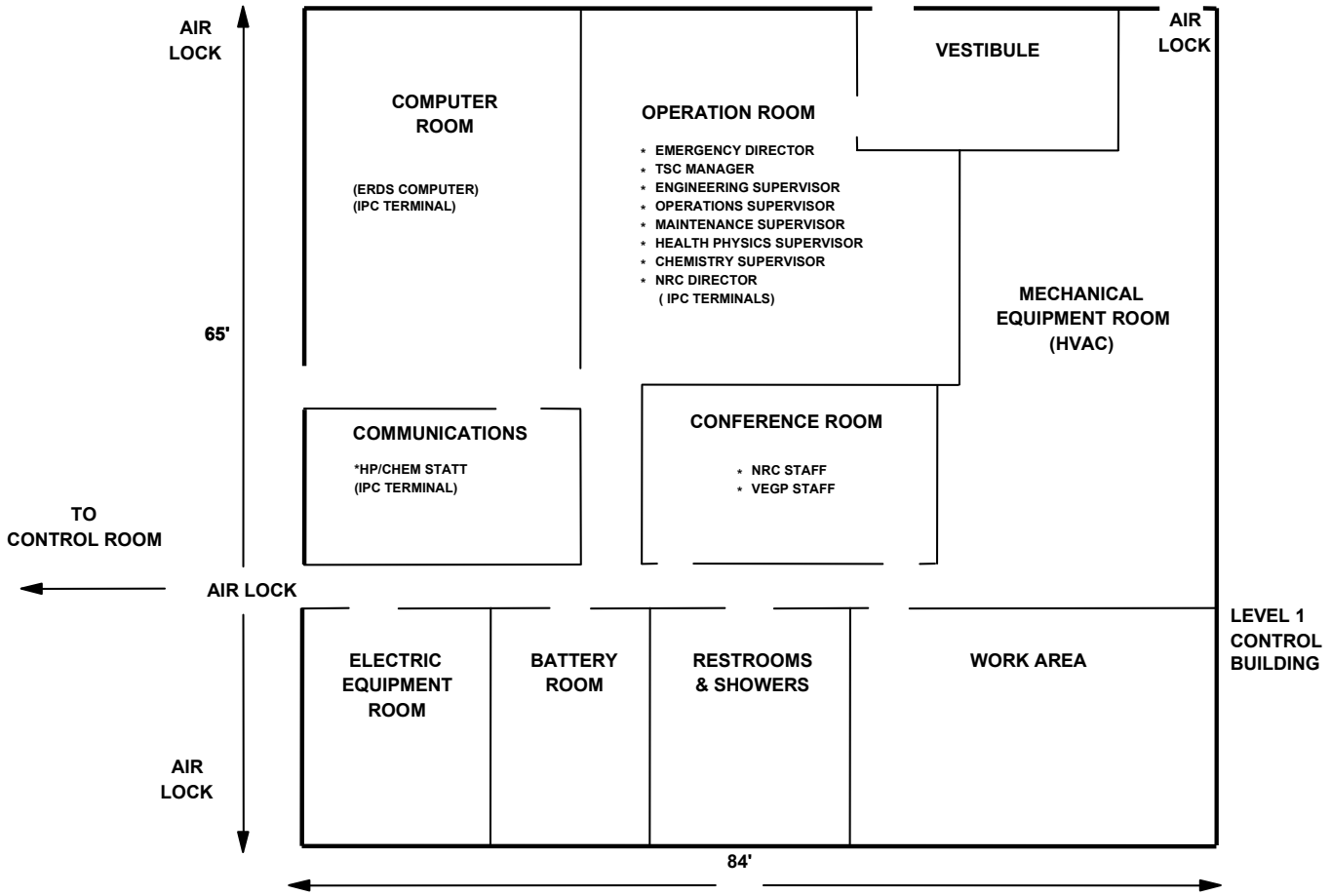
A listing of the typical contents of each kit and the spares is included in appendix 4.

TABLE H-1

INTEGRATED PLANT COMPUTER INPUTS

- Neutron flux
- Pressurizer (pressure, level, temperature, valve position).
- Reactor coolant system (pressure, temperature, flow)
- Reactor coolant pump status
- Containment (pressure, temperature, H2 concentration, water level)
- Containment spray system status
- Safety injection system status
- Residual heat removal (RHR) system status
- Chemical and volume control system (CVCS) status
- Nuclear service cooling water (NSCW) system status
- Component cooling water (CCW) system status
- Auxiliary component cooling water (ACCW) system status
- Steam generator (pressure, level, flow)
- Auxiliary feedwater system status
- Turbine status
- Generator status
- Condensate system status
- Feedwater system status
- Circulating water system status
- HVAC systems status
- Radiation monitoring systems (effluent, area, and process monitors)
- Meteorological system (primary and backup tower, wind speed, wind direction, indication of stability class, temperature) {Unit One IPC only}

TECHNICAL SUPPORT CENTER



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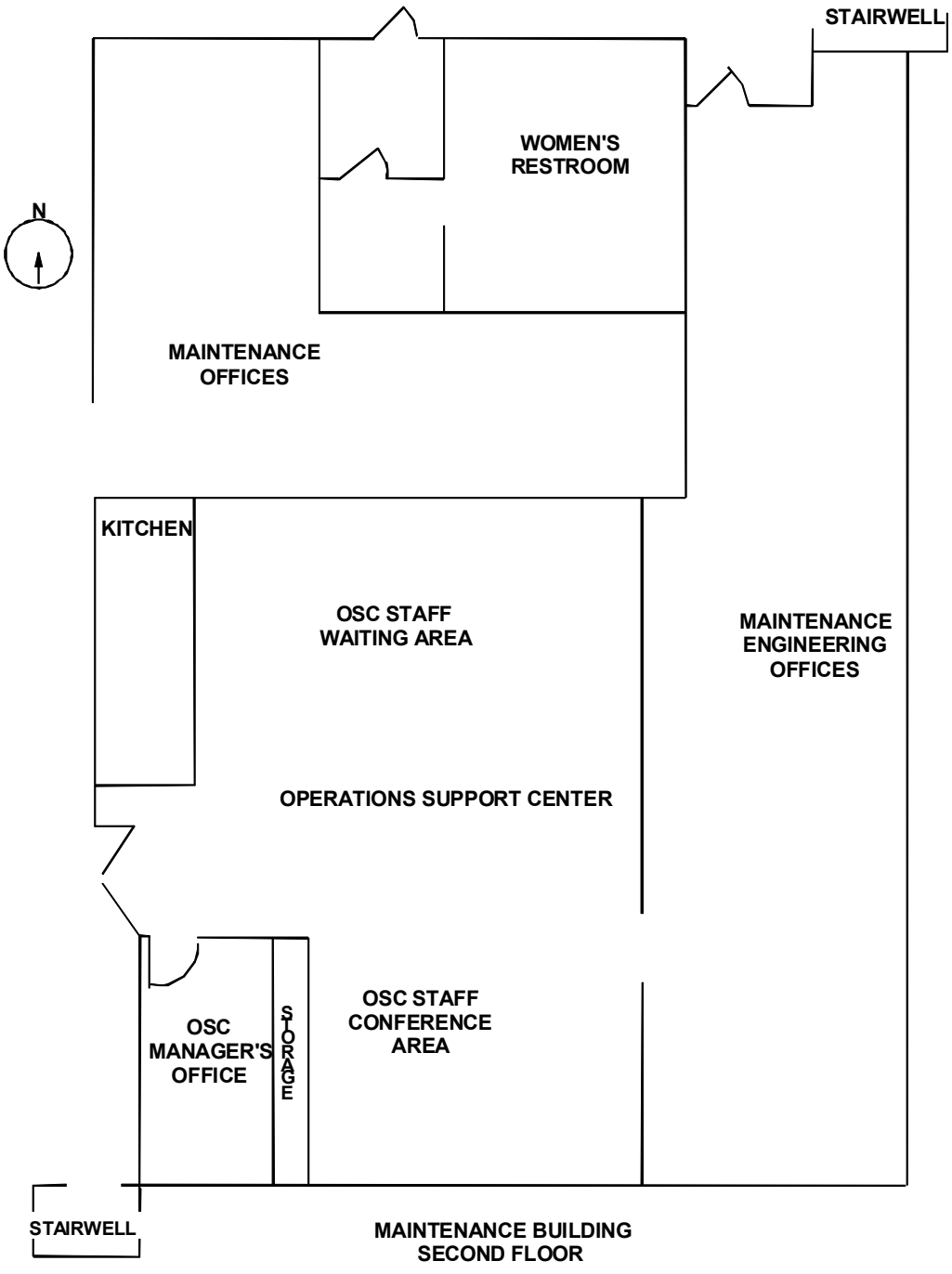
Vogtle Electric Generating Plant

TSC LAYOUT PLAN

FIGURE H-1



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Vogtle Electric Generating Plant	OSC LAYOUT PLAN
	FIGURE H-2

I. ACCIDENT ASSESSMENT

This section describes the methods, systems, and equipment available for assessing and monitoring actual or potential offsite consequences of a radiological emergency. Initial assessment actions are the responsibility of the shift superintendent and/or the shift supervisor, using available shift personnel. Subsequent assessment actions are directed by the emergency director with assistance from the control room, technical support center (TSC), emergency operations facility (EOF), and emergency teams, as necessary.

I.1 PLANT PARAMETERS

Plant system and effluent parameter values characteristic of the spectrum of off-normal conditions and accidents and the manner in which these values are used to classify an emergency are provided in section D. Some of the parameters monitored include reactor coolant system pressure, reactor/pressurizer water level, containment pressure, containment radiation level, effluent monitor readings, and area radiation monitor readings. NMP-EP-110, "Emergency Classification Determination and Initial Actions, includes methods for quickly assessing plant system and effluent parameter values and classifying the emergency condition. Additional information on plant instrumentation is provided in section H.

I.2 RADIOLOGICAL MONITORS

In-plant radiological measurements provide information to help assess emergency conditions. The containment high-range radiation monitor and containment hydrogen monitor are used to provide an early indication of the quantity of radioactivity available for release from the containment. Emergency procedures (Procedure 91502-C) include a correlation between the monitor reading and the extent of core damage. These correlations are based on the Westinghouse Owners Group (WOG) Core Damage Assessment Guidance, WCAP-14696-A, Revision 1, November 1999. A more detailed assessment of core damage is then performed using Procedures 91502-C and 91503-C, which are also based on the WOG methodology.

Data required to evaluate core conditions and coolant chemistry conditions are obtained through established chemistry procedures. Samples can be obtained for reactor coolant, containment sump, and containment atmosphere and are used for all radiochemical analyses.

Reactor coolant grab samples can be either diluted or undiluted. Grab samples can be transported in a shielded cask. Analysis capability meets all Final Safety Analysis Report (FSAR) commitments to Regulatory Guide 0737, II.B.3.

In addition to the onsite capabilities for radiological assessment, AREVA NP has agreed to provide backup analysis of high radioactivity level samples.

The TSC manager will approve and direct the transport of the grab sample to AREVA NP. A transport cask will be obtained from the Pooled Inventory Management Systems (PIMS). Chemistry personnel will collect the sample in the sampling cask and transport it to the loading area. Documentation will be completed and the transport cask shipped to AREVA NP.

I.3 DETERMINATION OF RELEASE RATE

The source term or release rate is determined using the process and effluent radiation monitoring system (PERMS) and measured or estimated flowrates for releases via monitored effluent release paths (plant vent, turbine building vent, or steam generator relief valves) per procedure NMP-EP-104, Dose Assessment.

In the event that instrumentation is off-scale or inoperative, direct measurements with portable survey instruments will be used for determination and verified by field monitoring team samples.

I.4 DOSE ASSESSMENT SYSTEM

Computer dose calculation systems will be located in both the TSC and EOF for offsite dose assessment purposes. These systems will support the MIDAS code, a Vogtle-specific version of a dose assessment computer code developed by Pickard, Lowe, and Garrick, Inc., (PLG). The code is based on a program written by PLG called CRACIT (Calculation of Reactor Accident Consequences Including Trajectory), which is similar in concept to that in the CRAC program written for the Reactor Safety Study. The MIDAS version is referred to as MIDRAC. The basic functions of MIDRAC are the calculation of dispersion of the released material as it travels downwind and the estimation of the resulting concentrations of this material. Dispersion is modeled using the straight-line Gaussian dispersion model and variable trajectory transport. Initial dose projections can be made within 15 min of a radiological release utilizing the computer system. Subsequent dose projections will be made approximately every 15-30 min depending on the variability of meteorological conditions and/or radioactive releases.

MIDAS is a personal computer based program for rapidly assessing the radiological impact of accidents at nuclear power plants. It calculates total effective dose equivalent (TEDE), thyroid doses, and skin doses at various fixed downwind distances. Source term information is derived from plant effluent monitors, RCS or containment samples, field monitoring teams, or default accident scenario.

Actual meteorological data and release rate data are obtained from the plant computer and entered into the dose projection computer. Minimum meteorological data to be obtained include windspeed, wind direction, and a stability indicator (either vertical temperature difference or standard deviation of the horizontal wind direction). Plant-specific default values are part of the program for use when meteorological or release rate data are not available. The computer will calculate dispersion, dose, and plume arrival times. Dose calculations are based on dose conversion factors (DCF) from EPA 400.

Default release rates are available for possible accidents in the event that measured source term data are not available or the case where bounding calculations are desired. Default values for various accident source terms are presented in chapter 15 of the FSAR.

Meteorological data are obtained and utilized as input to the dose model, as described in section H.4.1.a. Data from the primary meteorological monitoring system can be accessed directly from the control room, TSC, and EOF, and are also available to NRC personnel and State representatives at the site. In the event the primary instruments are unavailable, the backup meteorological tower is equipped with instruments at the 10-m level to provide parameters relevant to atmospheric dispersion calculations (i.e., windspeed, wind direction, and sigma theta). In the event both the primary and backup meteorological systems are unavailable, meteorological data will be obtained by commercial telephone directly from the National Weather Service located in Columbia, South Carolina. NWS Columbia has access to information from the automated weather station at Bush Field, Augusta, Georgia. Forecast changes in wind direction will be utilized in determination of expected changes in plume trajectory. These forecast changes in plume trajectory may be utilized to expand the areas for which protective actions are recommended.

In the event that significant wind speed or stability class changes are expected, the effect of the expected changes on dose projections will be analyzed utilizing the dose assessment model.

In cases where weather forecasts predict precipitation, this information will be utilized in reference to adverse weather evacuation time estimates as appropriate. When precipitation is predicted or occurring in the area of the plume, the potential for significantly increased rates of radioactivity deposition will be considered by increasing the scope of environmental sampling as required in order to quantify the effects of this potentially increased deposition.

The VEGP staff will calculate the 50-mile ingestion pathway doses from the deposition of specific radionuclides.

The VEGP field monitoring team will collect sufficient environmental data to characterize the initial deposition of activity, the peak activity in pasture grass and milk, and total intake of I-131, Cs-137, Sr-90, and Sr-89. The samples will be analyzed at the VEGP site, the Environmental Laboratory in Smyrna, Georgia, or at the Plant Hatch Laboratory. The analysis results will be compared with the Preventive and Emergency PAGs and the associated doses will be determined.

The dose assessment computer program will be used to calculate the projected deposition of radionuclides and associated doses in the ingestion pathway based on release data and meteorological conditions. These estimates will be compared to the Preventive and Emergency PAGs. The results of all analyses will be provided to the States of Georgia and South Carolina by the dose assessment supervisor.

Each state is responsible for implementing protective measures based on protective action guides and other criteria. The measures will be consistent with the recommendations of HEW/FDA regarding contamination of human food and animal feed.

I.5 FIELD MONITORING

The emergency director or his designee can deploy up to three teams for field monitoring. These teams are available for field monitoring within the plume EPZ as described in section H. Initially, the emergency director can activate at least one team from on-shift personnel. Once the emergency facilities are activated, the emergency director can request additional monitoring teams from support personnel located at the operations support center (OSC).

Monitoring teams of at least two people are formed and dispatched at the OSC or TSC as appropriate. Field monitoring kits are available to the teams in predetermined locations as described in 91702-C. The kits will include anti-contamination suits, respirators, a two-way radio, meters for measuring gamma and beta/gamma dose rates, and air samplers.

Designated vehicles may be used which are equipped with two-way radios on plant-dedicated frequencies. Handheld radios will also be available as a backup. Vehicles will be available 24 h per day.

Prior to leaving for the field, the dose assessment supervisor, or designee, will normally direct and brief the teams on the initial survey and sample locations, suggested travel routes, meteorological conditions, and team identification name or number for communication purposes. The teams will inspect their field monitoring kits, perform survey equipment operation checks, obtain dosimeters, and establish radio communications with the monitoring team communicator. Monitoring teams are instructed to contact the monitoring team communicator approximately every half hour.

The teams will obtain their briefing from the health physics supervisor in the TSC or in the OSC by the OSC manager. They will be controlled by the TSC until the responsibility is transferred to the EOF.

It is estimated that teams will be in the field and performing monitoring tasks within about 1 h of the determination of the need for field monitoring.

Additional field monitoring team formation and dispatch details are contained in Procedures 91201-C, 91202-C, NMP-EP-102, "EPF Manager," NMP-EP-104, "Dose Assessment Supervisor," NMP-EP-101, "Activation and Operation of the EOF," and NMP-EP-106, "EOF Support Coordinator."

Preselected radiological sampling and monitoring locations are designated in implementing procedures and are shown on figure iii. Field monitoring teams may be directed to perform sampling at these locations and others by the dose assessment staff at the TSC or EOF. In-transit dose rate measurements will be made. The teams may conduct airborne and dose rate measurements near the expected plume centerline.

If the dose rate exceeds 100 mrem/h, off-centerline measurements will be made. Based on dose rates, the teams will be directed to sweep the plume to identify the centerline or maximum dose rate. Dose rate readings will be taken with open and closed window on the radiation meter. When the ratio between open and closed window readings is a factor of 2 or higher, it will be assumed that the measurement was taken in the plume. If the open and closed window readings are the same, it indicates that the plume is probably overhead.

The emergency monitoring kits contain a portable air sampler, silver zeolite cartridges, and counters to provide the capability to detect and measure radioiodine concentrations in the air as low as 10^{-7} µCi/cc. The list of equipment carried by the field teams is described in appendix 4, Table 4-3. Procedure 91303-C, describes the sampling and measuring techniques for air samples.

The total sample volume and the limiting background count rate allow for a LLD of at least 10^{-7} µCi/cc. The cartridges can be counted in the field without interference from noble gas (background count rate below 300 cpm on an HP-210 probe or equivalent). The cartridge and air particulate filter will be returned to the laboratory at the plant for isotopic analysis if the field analysis reading is 100 cpm above background on an HP-210 probe or equivalent.

Depending on wind direction and/or the severity of the incident, additional field monitoring teams may be provided by DNR, SC-DHEC, DOE-SR or other divisions of the DOE. Coordination of these teams and data transfer will be accomplished using existing communication links (see Section F for details). The state and VEGP field monitoring teams will be coordinated by the dose assessment supervisor to assure a fully coordinated effort. DOE-SR will direct the field monitoring teams of the Savannah River Site depending upon the wind direction. DOE-SR will make their monitoring data available to VEGP and State and local representatives at the EOF. The Dose Assessment Team at the EOF will collate field monitoring data for VEGP dose projection purposes. This information will be available to the State and local representatives at the EOF and to DOE-SR.

I.6 ENVIRONMENTAL SAMPLES

In addition to direct monitoring and air sampling, the assessment program includes an emergency environmental sampling program in which routine types of environmental samples (water, air, soil, and vegetation) are collected and analyzed in the laboratory for detailed radionuclide data.

The GPC environmental laboratory, located in Smyrna, Georgia, has the capability to perform isotopic analyses of drinking water, river water, milk, vegetation, sediment, and biological samples as well as tritium and gross beta analysis.

A detailed description of the current fixed environmental monitoring program, which is summarized below, is presented in the Plant Vogtle Offsite Dose Calculation Manual. Fixed environmental sampling and monitoring locations are described in Procedure 91303-C and are shown on figure iii. Copies of the map showing the locations will be in the field monitoring kits, the TSC and EOF. This program may be modified as per VEGP Technical Specifications.

Direct radiation is measured by optically stimulated luminescent dosimeters (OSLDs) which are exchanged and analyzed (read) for gamma dose quarterly.

Airborne radioiodine and particulates are collected at control and indicator stations by continuously drawing a sample stream of air through a charcoal cartridge and a particulate filter using an air displacement pump. The cartridge and filter are changed weekly. The cartridge is analyzed weekly for I-131; the filter is analyzed for gross beta following filter change. Filters are composited quarterly by location for gamma isotopic analysis.

Surface water samples are taken from the Savannah River by continuous automatic sampling equipment and collected in containers resulting in composite samples for each location. Composite samples are collected monthly and analyzed for gamma isotopics. Quarterly composites, which are obtained from the monthly composites, are analyzed for tritium.

Samples from drinking water supplies are taken by continuous automatic sampling equipment near the intakes of water treatment plants. Composite samples from each location are collected monthly. Grab samples of finished drinking water are taken monthly. Monthly samples are analyzed for gross beta and gamma isotopics. Quarterly composites, which are prepared from the monthly samples, are analyzed for tritium.

Sediment from the Savannah River is collected semiannually from control and indicator locations using manual grab sampling techniques. Sediment samples are analyzed for gamma isotopics.

Milk samples are collected semimonthly by taking grab samples from milk supplies at control and indicator stations. These samples are analyzed for gamma isotopics.

Vegetation is sampled monthly during the growing season by collecting grab samples of grass or leafy vegetation at control and indicator stations. Vegetation samples are analyzed for gamma isotopics.

The normal environmental sample analysis is performed at the Georgia Power Company's Environmental Laboratory located in Smyrna, Georgia. During and/or subsequent to emergency conditions, the routine environmental monitoring program will be modified to collect and analyze additional samples from existing stations. The dose assessment supervisor will coordinate sampling and analysis activities for those areas that may have been impacted by a release from the plant. Sample results will be transmitted back to the dose assessment supervisor by the analyzing organization.

Data from fixed monitoring stations (OSLDs and air samplers) will be utilized to estimate population dose. The samples from fixed monitoring stations would be collected after termination of a radioactive release and analyzed. The results would then be reduced in a manner that would assist in defining the trajectory, radioactivity, and impact of the released plume.

I.7 USE OF FIELD MONITORING DATA

Field monitoring measurements are important in determining the actual radiation levels in the environment. The dose assessment computer code provides only a rough approximation of radiation levels and location of the plume. The uncertainties in the source term and meteorological conditions in the affected areas are the chief contributors to the inaccuracies of projected dose and dose rate. Once field monitoring information becomes available, the dose assessment computer code becomes less important in providing data on which to base protective action recommendations. There is no widely accepted formula to use field monitoring data to reduce the uncertainties and inaccuracies in the dose assessment computer code. The dose assessment supervisor or TSC HP supervisor must exercise professional judgement in determining the proper correction factors.

Field monitoring teams should not unnecessarily be exposed to high levels of radiation from a radioactive plume. ALARA principles should be applied to all field monitoring activities. Once the decision to evacuate the general public has been made, field monitoring activities should be restricted to such activities as determining the source term for an unmonitored release or confirming the presence of a radioactive plume. Plume centerline tracking is of

relatively minor importance in protecting the health and safety of the public and should not be attempted for highly radioactive plumes unless the information derived has some value in assisting in the evacuation of the public. Field monitoring team's activities that contribute to the expeditious evacuation and consequent reduction in radiation dose of the public should continue within the EPA emergency exposure guidelines if necessary.

J. PROTECTIVE RESPONSE

This section describes the protective actions that have been developed to limit radiation exposure of plant personnel and the public following an accident at the plant. This section addresses conditions at the Alert, Site Area, or General Emergency classification. Protective response at the Notification of Unusual Event (NUE) level would be taken at the discretion of the emergency director.

J.1 PROTECTIVE RESPONSE FOR ONSITE PERSONNEL

Protective response for onsite personnel (including visitors and contractor personnel) depends upon alerting, assembly and accountability, site dismissal, monitoring, and decontamination.

1. ALERTING

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

2. ASSEMBLY AND ACCOUNTABILITY

   A security related emergency may preclude the ordering of assembly and accountability in order to protect plant personnel from the security threat. The decision not to order assembly and accountability will be made by the Emergency Director.

   Upon activation of the plant emergency alarm, plant personnel assigned specific emergency responsibilities proceed to their designated emergency response location. Emergency response personnel in the protected area badge into their emergency response facility (TSC, OSC, or control room) using their ACAD badge and also sign in on a personnel roster (TSC and OSC only). The security computer system performs an initial accountability of all persons in the protected area. Thereafter, the emergency response facility managers of the control room, TSC, and operations support center shall be responsible for periodically assuring that accountabilities in their facilities are being maintained. Assignment logs and required periodic communications between emergency response teams maintain accountability.

   Non-involved plant personnel, visitors, and contractors located within the protected area leave the protected area upon hearing the emergency alarm and report to their designated assembly areas. As these individuals exit the protected area, they badge out. The Security Department accounts for each person inside the protected area at the start of an emergency by using the security computer system.

This method provides for accountability of all individuals inside the protected area within about 30 min. of the emergency declaration page announcement. Accountability reports are made periodically to the emergency director by the Security Department.

3. SEARCH AND RESCUE

If protected area accountability reveals a missing person, the emergency director assembles a search and rescue team per emergency response procedures (Procedure 91401-C, Assembly and Accountability). The search and rescue team obtains information on last known location from the computer system or reports from other personnel. A search of likely areas is conducted until the missing individual is located.

4. SITE DISMISSAL

Site dismissal, with or without monitoring, of non-involved personnel on-site (if feasible) is ordered by the emergency director whenever a Site Area or General Emergency is declared.

If there has been no radioactive release and a release is not projected, the emergency director may elect to order a "site dismissal with no monitoring" rather than with monitoring. For a site dismissal with no monitoring, non-involved personnel are sent home without going to reception centers.

If site dismissal with monitoring is necessary, the emergency director will notify Burke County EMA and request setup of a reception center to receive VEGP non-involved personnel. The route selected to the reception center is based on meteorological and/or radiological conditions. The location of the reception center is shown in figure iv in the Preface Personnel on site will be notified by public address, site siren, or other communication that dismissal of non-involved personnel to the applicable reception center will take place and specify the route. The site dismissal will be conducted and controlled per Procedure 91403-C, Site Dismissal. Security will dispatch security officers to work areas outside the protected area to ensure all non-involved personnel have left the owner-controlled area.

Upon site dismissal to a reception center, non-involved personnel will be monitored for contamination to determine gross contamination as per the Burke County Emergency Operations Plan. Those personnel who are contaminated will undergo a decontamination process in accordance with standard health physics procedures. Those personnel who are not contaminated will be released upon clearance of the vehicle.

Vehicles will be monitored by gamma instruments for contamination in the designated parking areas. Those vehicles which indicate contamination will be marked or identified for decontamination. Uncontaminated vehicles will be allowed to exit the area upon authorization of the reception center emergency workers. Contaminated vehicles will be decontaminated as per the Burke County Emergency Operations Plan.

Contaminated articles and clothing and waste material will be collected and placed in containers or bags for disposal and/or processing at the site.

5. SECURITY EVENTS

Onsite protection of employees during hostile action involves a combination of restricted movement, movement to safe locations, and site evacuation depending on the nature of the hostile event and advance warning. Site procedures provide specific actions to take during hostile action based events. These actions will be communicated to onsite personnel via the plant PA system and other communications means as applicable.

6. MONITORING AND DECONTAMINATION

When an Alert is declared and site dismissal with no monitoring 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 appropriate location.

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

Should decontamination be necessary, the reception center establishes a field decontamination area, using materials from emergency kits located in the vicinity of the reception center. Decontamination and waste disposal are completed in accordance with the Burke County Emergency Operations Plan.

6. USE OF ONSITE PROTECTIVE EQUIPMENT AND SUPPLIES

A supply of potassium iodide is stored in the TSC for TSC and control room use, OSC, main control point, or health physics room. The health physics supervisor will direct the issuance of potassium iodide when the projected thyroid exposure is greater than 25 rem. The health physics supervisor will direct radiological survey personnel to distribute potassium iodide and record the name and social security number of those individuals who are issued potassium iodide. Potassium iodide will be issued in 130-mg doses daily for at least 3 days, but not more than 10 days. Issuance will be performed immediately prior to exposure or not longer than 4 hours after exposure.

At the time potassium iodide is distributed, an iodine sensitivity check will be made by querying each individual concerning known reactions to iodine. Individuals who have experienced reactions to iodine will be excused from duties requiring issuance of KI.

J.2 PROTECTIVE RESPONSE FOR THE PUBLIC

VEGP is responsible for ensuring that timely recommendations for protective actions reach appropriate State and local officials. These officials (as described in section A) are then responsible for alerting the public and ordering shelter and/or evacuation, if necessary.

1. ALERTING

The means used by VEGP to alert local and State agencies and the means used by local and State agencies to alert the public are described in section E and appendix 3 of this Plan.

2. PROTECTIVE ACTION RECOMMENDATIONS

The emergency director is responsible for providing protective action recommendations to State and local officials as part of initial notifications and follow-up communications of a General Emergency. These recommendations are based upon assessment actions as described in section I of this Plan. Using available information on plant conditions, projected dose estimates, and any available monitoring data, the emergency director recommends whether the public should be advised to seek shelter or evacuate based on the Environmental Protection Agency (EPA) Protective Action Guidelines. Procedure NMP-EP-112, Protective Action Recommendations, provides detailed guidance on protective action recommendations (PARs) which were developed in accordance with NUREG-0654, Supplement 3, Rev. 1. Offsite Response Organizations (OROs) were actively involved in the development of the PARs. The emergency director will approve the PAR decision developed using the methodology from the Flowcharts shown as Figures J-1, Initial and J-2, Follow-up. The mechanism for communicating these recommendations is described in section E of this Plan.

3. EVACUATION AND SHELTERING

The Georgia Emergency Management Agency (in coordination with Georgia Department of Natural Resources) and South Carolina Emergency Management Division (in coordination with South Carolina Department of Health and Environmental Control) are responsible for deciding protective measures for affected offsite areas within their jurisdictions. State officials will consider the potential risks of implementing protective actions against the reduction of radiological risk achieved by the protective action.

Determination of the benefit of evacuation must take into account the time needed to complete the evacuation. Appendix 6 includes more detail on how these estimates were developed and presents information on evacuation routes, evacuation areas, relocation centers, shelter areas, and the population distribution by evacuation areas and sectors.

If a decision is made to evacuate any part or all of the plume exposure pathway EPZ, the evacuation will be carried out in accordance with the emergency response plan of each affected county.

In the event of an evacuation, the populace will be instructed to proceed by the appropriate evacuation route to predesignated reception centers/shelters.

Reception centers/shelters for Georgia and South Carolina counties within the plume exposure pathway EPZ are listed in Table J-5. The services to be provided in the reception centers include:

- Registration
- Screening for contamination
- Decontamination as needed
- Information and assistance for family unification
- Food and lodging
- First aid

Privately owned vehicles will be the primary mode of transportation if evacuation is directed. Individuals who do not have their own means of transportation have been advised in the public information calendar, to arrange their own transportation, if possible. If this is not possible, individuals are instructed to stay tuned to the radio or television and listen for the phone number to call to be picked up. Specially equipped vehicles will be dispatched directly to the homes of handicapped and/or nonambulatory individuals requiring special transportation means.

Under certain conditions, sheltering inside the home may be the preferred recommended action. Area radio and television stations or tone alert radios will advise the public on taking this action, will provide instructions to the public, and will give the "all clear signal" when appropriate.

TABLE J-1

USE OF PROTECTIVE EQUIPMENT AND SUPPLIES

Equipment	Criteria for Issuance	Location	Means of Distribution
Full face canister respirator	As needed by onsite emergency teams in areas of high airborne radioactivity	a. Emergency kits b. Health physics (HP) supply room	a. Issued at OSC or control point b. Issued as needed by HP personnel
Self contained breathing apparatus	a. Firefighting b. Toxic Gas c. Highly radioactive airborne activity d. Lack of oxygen	a. Control room b. Emergency kits	a. Used as needed by operators
Protective clothing (coveralls, hoods, boots, gloves)	As needed in areas of known contamination	a. Various areas of the station b. Emergency kits c. HP supply room	a. Issued as needed by HP personnel b. Issued at OSC or control point for emergency teams

TABLE J-2

Table J-2 has been deleted.

TABLE J-3

Table J-3 has been deleted.

TABLE J-4
EVACUATION TIME ESTIMATE SUMMARY

Table J-4 has been Deleted.

TABLE J-5 (SHEET 1 OF 2)

RECEPTION CENTERS/SHELTERS FOR COUNTIES WITHIN PLUME EXPOSURE PATHWAY EPZ OF VEGP

COUNTY	RECEPTION CENTER/SHELTER	CAPACITY
1. Georgia Burke County	Burke County Comprehensive High School 1057 Perimeter Road Waynesboro	4,675, school in session 5,980, school not in session
2. South Carolina Aiken County	<u>PRIMARY</u> South Aiken High School 701 Pine Road Aiken, SC 29801 (803) 641-2600 <u>ADDITIONAL CENTER</u> Kennedy Middle School 659 Pine Log Road Aiken, SC 29801 (803) 641-2470 Middlebrook Elementary School 255 East Pine Log Road Aiken, SC 29801 (803) 641-2580	1200 1200

TABLE J-5 (SHEET 2 OF 2)

COUNTY	RECEPTION CENTER/SHELTER	CAPACITY
Allendale County(a)	PRIMARY Allendale-Fairfax High School 3581 Allendale-Fairfax Highway (278 E.) Allendale, South Carolina 29810 (803) 584-2311	675
	ADDITIONAL CENTER Allendale Elementary School 4561 Allendale-Fairfax Highway (278 E.) Allendale, South Carolina 29810 (803) 584-3476	400
Barnwell County	See Allendale County Shelters listed above	

a. To accommodate residents of Barnwell County within the Vogtle EPZ.

Figure J-1

INITIAL PROTECTIVE ACTION RECOMMENDATIONS

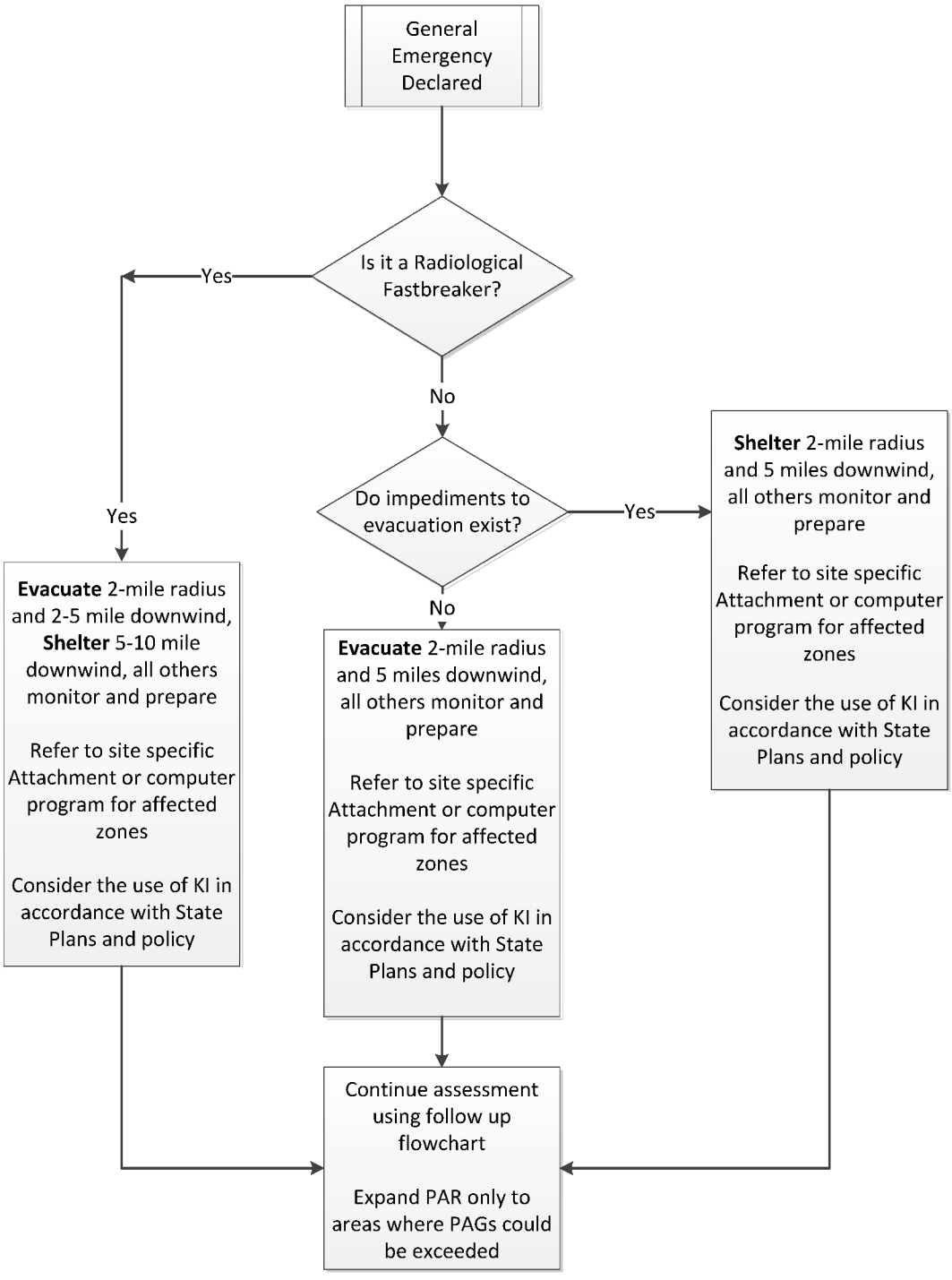
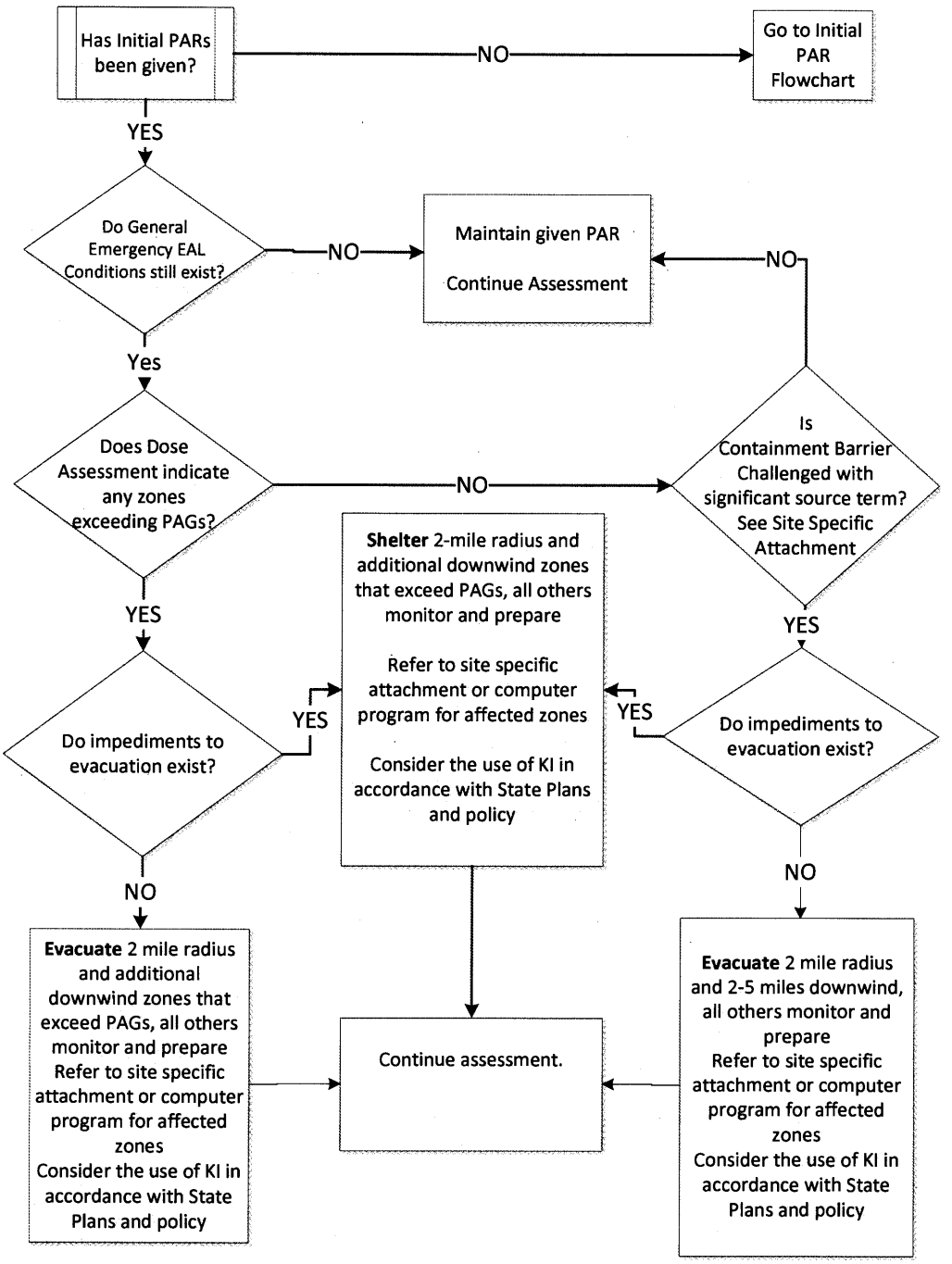


Figure J-2

FOLLOW UP PROTECTIVE ACTION RECOMMENDATIONS



K. RADIOLOGICAL EXPOSURE CONTROL

K.1 EMERGENCY EXPOSURE GUIDELINES

During an emergency, it may be necessary to authorize radiation exposures above 10 CFR 20 limits. These higher exposures may be necessary to complete protective, corrective, or lifesaving actions. Table K-1 presents the emergency exposure limits for emergency workers involved in protecting valuable property, protection of large populations, or lifesaving actions. Under all such situations, every reasonable effort will be made to minimize exposures. Decisions as to appropriate exposures, considering the action required and relative risks, will be made by the emergency director in consultation with health physics personnel.

Equipment and facilities have been designed in accordance with Title 10, Code of Federal Regulations, Part 50 (10 CFR 50), Appendix A, General Design Criteria for Nuclear Power Plants. Criterion 61, "Fuel Storage and Handling and Radioactivity Control," requires systems which may contain radioactivity to be designed to assure adequate safety under normal and postulated accident conditions. Plant design has undergone an extensive As Low As Reasonably Achievable (ALARA) review. The ALARA reviews ensured that the design philosophies established in Regulatory Guide 8.8 were considered at the design stage. Design features are considered for potential exposure and changes are recommended to reduce potentially high doses.

The post-accident sampling procedures have been designed to provide adequate protection to personnel during the collection of grab samples. Designated sample points are specified in plant procedures.

A plant shielding design review was conducted in accordance with the criteria for infrequently occupied areas in NUREG 0737, Item II.B.2. The projected dose rates in the facility are presented in table 12.3.1-5 of the VEGP FSAR. The effluent sampling procedures have been written to assure that no individual receives a dose in excess of regulatory criteria as designated in Table K-1. A time and dose rate study has been conducted to assure that the exposure criteria can be achieved under accident conditions.

K.2 ONSITE RADIATION PROTECTION PROGRAM

When necessary, the emergency director can authorize emergency exposures in excess of 10 CFR 20 limits but within the limits in table K-1. Where possible, the normal radiation work permit (RWP) procedure will be used to control exposures. This procedure requires signature approval, prior knowledge of worker past exposures, and guidance on protective actions to be used in the course of the emergency work. If time and urgency do not allow this procedure to be followed, the health physics supervisor may approve emergency RWP controls. In all cases, a briefing is given to the emergency team by health physics staff, and each team is accompanied by a qualified health physics technician who meets the qualifications of ANSI 18.1 criteria set out in the VEGP Technical Specifications. This briefing includes a discussion of the hazards involved in the planned action, as well as protective actions to be taken.

A record of individual and collective exposure received during the emergency will be maintained by the dosimetry team. Exposure records at the control point or the OSC will be updated after each entry into a radiologically controlled area. This may be accomplished through the dosimetry records computer system or manually. An individual's dose margin will be assessed by determining the difference between the updated exposure and current administrative limit; these margins are used to determine emergency assignments. Operation of the manual system and activation of the dosimetry team are described in Procedure 91110, Duties of the Health Physics Supervisor (TSC).

In situations where exposures in excess of 10 CFR 20 limits are authorized, the following considerations will be made prior to emergency team selection:

1. Declared pregnant female employees shall not be allowed to participate.
2. For doses greater than 25 rem, personnel shall be volunteers and be fully aware of the risks involved.

All emergency exposures will be included in personnel radiation exposure records.

Emergency dosimetry is provided to each member of the emergency response organization for both onsite and offsite organizations as required by the radiological conditions existing at the time. Appendix 4 presents information on the types of dosimetry available in each emergency response facility and other locations.

Emergency response personnel will be made aware that self reading dosimeters should be checked every 15 to 30 min. during the emergency. There is the capability to read optically stimulated luminescent dosimeters (OSLDs) within 24 h. They will also be read if the individual has received greater than a previously established value as determined by health physics procedures on their direct reading dosimeter.

Radiation dose will normally be controlled by the health physics supervisor within the limits authorized by routine station health physics procedures. The 10 CFR 20 limits will not be exceeded without the prior approval of the emergency director.

OSLDs are processed on a routine basis as delineated in chapter 12 of the FSAR.

K.3 DECONTAMINATION

The action levels for determining the need for decontamination of personnel, equipment, and areas are delineated in plant admin. and health physics procedures. Personnel decontamination facilities are located on Level 1 of the control building in room R-110. The decontamination facility is located adjacent to the health physics station. Instrumentation to survey personnel during and after decontamination is located at the health physics station. The facility has vertical showering and normal wash sinks. Decontamination equipment for personnel is similar to that available in the Decontamination Emergency Equipment Kit (Appendix 4), except that the available supply is greater and stronger cleaning solutions are available. Waste generated through the use of the decontamination facilities is collected and processed by the plant liquid radwaste system.

Decontamination of personnel will be conducted in accordance with standard health physics practices.

If decontamination activities are required, a controlled access area will be established by roping off the area. Procedure 91306, Contamination Monitoring and Decontamination, addresses field decontamination and waste control. Supplies of clean clothing will be made available. Personnel decontamination will be accomplished using water washes or other methods for extreme cases as described in plant health physics procedures. These procedures will be applicable to removal of radioiodine from the skin. Decontamination of serious wounds will be accomplished at Doctors Hospital or the Burke Medical Center as described in section L of this Plan.

Equipment and area decontamination will be conducted as determined by the TSC manager, maintenance supervisor, operations supervisor, or health physics supervisor. It is accomplished as described in plant health physics procedures and ranges from vacuum cleaning to wash downs with water and acid or caustic solutions.

Personnel exiting the radiation-controlled area will be monitored for contamination by stand-up monitoring booths or by a whole-body scan with a hand-held probe. The standard health physics contamination limits will be used for release of personnel. The decontamination facilities described above can accommodate both men and women who indicate low and high levels of contamination. Plant areas that require access to facilitate recovery operations will be surveyed with portable instruments equipped with Beta/Gamma detectors. Appropriate protective clothing will be worn, as determined by this survey, to perform activities in these areas. Recovery operations will necessitate more detailed surveys on an as-needed basis.

K.4 ONSITE RADIOLOGICAL CONTAMINATION CONTROL

Access control is provided by the Security Department during emergency conditions. Only authorized emergency response personnel are allowed to enter the protected area. Such personnel report to the appropriate emergency response facility for accountability prior to completing any emergency assignments.

Access to in-plant areas that are contaminated is controlled by barriers, signs, locked doors, or personnel stationed for that purpose. Emergency monitoring teams are responsible for determining the need for onsite access control and establishing the proper method through discussions with technical support center (TSC) personnel. Plant procedures used for determining contaminated areas will be used for determining the need for access control.

Any food, tobacco, or potable liquids that are inside a radiation or contamination controlled area, regardless of the packaging, will be considered to be contaminated until surveyed or otherwise determined to be free of contamination. These areas will be controlled by plant health physics procedures and no eating, smoking, or drinking will be allowed. The emergency director or designee will make arrangements for supplies to be brought in.

The emergency health physics supervisor is responsible for permitting return of onsite areas and equipment to normal use once monitoring and decontamination are completed.

TABLE K-1

EMERGENCY EXPOSURE LIMITS FOR WORKERS PERFORMING EMERGENCY SERVICES

Dose Limit (rem)(a) Total Effective Dose Equivalent (TEDE)	Activity	Condition
5	All	
10	Protecting valuable property.	Lower dose not practicable.
25	Life saving or protection of large populations.	Lower dose not practicable.
>25	Life saving or protection of large populations.	Only on a voluntary basis to persons fully aware of the risks involved.

a. Limit dose to the lens of the eye to three times the listed value and doses to any other organ (including skin and extremities) to ten times the listed value.

L. MEDICAL AND PUBLIC HEALTH SUPPORT

L.1 ONSITE CAPABILITY

Provisions have been made to assist personnel who are injured, who may have received high radiation doses, or who have been externally contaminated. Decontamination materials and portable first aid kits are available at strategic locations throughout the site. There are personnel on shift and in the Emergency Organization trained in first aid and decontamination procedures. The onsite personnel responsible for responding to a medical emergency have had training per the OSHA standard 29 CFR 1910.151 and directive OSHA 3317-06N, Fundamentals of a Workplace First-Aid Program. Health physics technicians will be assigned to first aid teams in accordance with Procedure 70302-C, Reporting and Documenting Occupational Injuries Or Illnesses. The health physics technician will direct and assist in decontamination of injured personnel as necessary. Personnel to perform first aid and decontamination will be available 24-h a day as identified in Section B, Table B-1.

In addition, an onsite first aid and decontamination area equipped with decontamination supplies and other specialized equipment is located near the health physics station on the 220 ft elevation in the control building. Personnel found to be externally contaminated but not requiring immediate medical attention will undergo decontamination in accordance with plant procedures.

L.2 MEDICAL TRANSPORTATION

Injured and contaminated personnel requiring hospital medical attention will be transported to Doctors Hospital, Augusta, or Burke Medical Center, Waynesboro, by the Burke County Ambulance Service.

The ambulance will be met at the plant entry and security building, provided with dosimetry, and escorted to the patient pickup location. The ambulance and crew will be prepared to receive the contaminated patient as time permits by laying protective material in the ambulance and wearing protective clothing by the crew. Medical treatment of serious injuries will take precedence over contamination control. A health physics technician (HPT) will accompany the patient to the hospital. The HPT will provide advice and guidance to the ambulance crew and hospital staff regarding contamination control, decontamination, radiation exposure, and protective actions. The HPT will perform radiation surveys of the patient, ambulance, and attending hospital staff and assist in maintaining

contamination control in the hospital. All contaminated materials will be properly packaged and returned to the site for disposal. The ambulance will also be decontaminated at VEGP if required.

L.3 OFFSITE SUPPORT SERVICES

Arrangements for treating externally contaminated patients have been made with the Doctors Hospital in Augusta, Georgia, and Burke Medical Center in Waynesboro, Georgia. The objectives of the support hospital are: (1) to resuscitate and stabilize an accident victim from a nuclear facility; and (2) to decontaminate a contaminated/injured patient while controlling the contaminants to a preselected area within the hospital. Each hospital has a radiation emergency area (REA) which has a separate entrance adjacent to the emergency room complex. This area will serve as the facility for handling contaminated and injured patients for the following reasons:

- Its proximity to emergency medical equipment and supplies.
- Effective isolation of the area from the hospital proper for contamination control purposes.
- Separate patient ingress and egress for effective contamination control.
- The area can be denied to routine hospital use for a given period of time for patient treatment and decontamination, as well as decontamination of the area itself.
- Capability to delineate contamination zone (treatment area) from a "clean" area (buffer zone).
- Water supply in treatment area.

Each hospital has available specialized supplies and equipment for decontamination, exposure evaluation, and contamination control; specifically, a decontamination table top which provides for washing contamination from a patient and collecting water in portable storage containers. Precut plastic material for the floor of the treatment room and buffer zone are also available to limit the spread of contamination. Ropes and signs will be used to delineate the REA. These facilities will enable emergency treatment and handling of contaminated individuals. Noncontamination injuries will be handled by the hospital with its routine facilities.

The medical staff of the hospital is trained to treat externally contaminated patients or individuals who have received high exposures. Trained plant radiation

protection personnel will assist hospital staff when plant personnel are being evaluated. Following decontamination, personnel suspected to have ingested radionuclides will undergo whole body counting at VEGP.

In addition, protection of attending personnel is afforded by the availability of disposable clothing and self-reading and badge-type dosimeters. Radiation survey instruments are available for monitoring patients and attending personnel. Each hospital has a comprehensive kit containing items necessary for removal of radioactive contamination from skin and wounds. Included in this kit are culture tubes for nasal, oral, and aural samples, as well as containers for urine, fecal, and wound specimens. Large waste containers and plastic liners are available for the collection of contaminated articles.

Each hospital has a procedure entitled, "Decontamination and Treatment of the Radioactively Contaminated Patient." This protocol details the following procedures: notification responsibilities of associated individuals including VEGP health physics personnel, REA setup, emergency treatment, use of protective clothing, patient decontamination and sample collection techniques, handling multiple victims, and return of the REA to routine use. Upon notification of impending patient arrival, hospital personnel will initiate these procedures to prepare the REA for patient arrival.

Arrangements have also been made with local doctors to render medical assistance, both onsite and offsite, and to assume responsibility for the medical supervision of the patient. These doctors will be on emergency call at all times and will respond to an accident when called.

Southern Nuclear Operating Company (SNC) or contractor personnel will maintain programs at Doctors Hospital and Burke Medical Center for treatment of contaminated individuals. In addition, these personnel provide training for the hospital staffs. The current contractor is also on-call for assistance in handling the treatment of contaminated injured personnel.

In conjunction with the hospital of the University of Alabama in Birmingham, the current contractor has established advanced radiation medical facilities. These facilities include qualified personnel trained in the care of radiation accident victims, a radiosurgery decontamination suite for surgery on contaminated patients, an exposure treatment suite for treatment of severely overexposed victims, and an exposure

evaluation laboratory with advanced analysis techniques.

L.4 TRAINING OF MEDICAL SUPPORT PERSONNEL

Section O, Radiological Emergency Response Training, identifies the training that will be provided for both onsite and offsite personnel who have medical support responsibilities. The VEGP training department conducts training sessions at least once per calendar year. In addition, drills and exercises are an integral part of the training program and are conducted as specified in section N, Exercises and Drills.

M. RECOVERY AND REENTRY PLANNING AND POST ACCIDENT OPERATIONS

The objectives of Vogtle Electric Generating Plant (VEGP) following any emergency declaration will be to mitigate the consequences of the event and to take those steps described in this Emergency Plan which will minimize any effects on the health and safety of the public and emergency workers. Once the emergency situation has been terminated, the goal will be to restore VEGP to normal operating status. For some situations, such as a Notification of Unusual Event involving a natural phenomenon that has no effect on VEGP, the emergency situation may not have required any change to normal operations, so no formal transition will be required. In other circumstances which may involve suspected or actual damage to the plant, a transition will be appropriate. This is defined as the recovery phase.

M.1 COMMENCEMENT OF RECOVERY PHASE

The emergency director will determine when the recovery phase begins. The following guidelines, as applicable to the specific situation, will be observed prior to terminating the emergency:

1. The affected reactor is in a stable condition and can be maintained in that condition indefinitely.
2. Plant radiation levels are stable or are decreasing with time.
3. Releases of radioactive material to the environment have ceased or are being controlled within permissible limits.
4. Fire or similar emergency conditions no longer constitute a hazard to safety-related systems or equipment or personnel.
5. For a site area emergency or general emergency, discussions with plant management, applicable members of the VEGP emergency organization, offsite authorities including the Nuclear Regulatory Commission (NRC); Georgia Emergency Management Agency, Burke County Emergency Management Agency director; South Carolina Emergency Management Division director; and Savannah River Site (SRS) emergency staff do not result in identification of any valid reason for not terminating the emergency.

Once the above conditions have been satisfied, the emergency director will announce that the emergency is terminated and the plant is in a recovery mode. He will direct that all elements of the emergency response organization be advised of the change in status via the Emergency Notification Network (ENN), Emergency Notification System (ENS), and other pertinent

communications systems. At this time, the emergency director will designate a recovery manager to constitute the recovery organization.

M.2 RECOVERY ORGANIZATION

Initially, the recovery manager may direct operations from the emergency operations facility (EOF). He will structure the recovery organization to accomplish the following general objectives:

1. Maintain comprehensive radiation surveillance of the site until levels return to normal.
2. Control access to the affected area of the plant and exposures to workers.
3. Decontaminate affected areas and equipment.
4. Conduct activities in radiation areas in accordance with the plant's standard radiation work practices.
5. Isolate and repair damaged systems.
6. Document proceedings of the accident and review the effectiveness of the emergency response organization in mitigating plant damage and reducing radiation exposures to the public.
7. Provide offsite authorities with plant status reports and information concerning the plant recovery organization.
8. Provide assistance with recovery activities undertaken by State and county authorities, if requested.
9. Provide public information on the status of recovery operations via releases to the media.

Individuals will be assigned to specific positions by the recovery manager, depending on the nature and extent of damage to the plant. Figure M-1 shows a representative organization for recovery operations. The responsibilities and functions of the managers shown on figure M-1 are summarized as follows:

- Recovery manager: has overall responsibility for restoring the station to a normal operating configuration.
- Plant operations manager: manages day-to-day in-plant operations and during recovery, is responsible for ensuring that repairs and modifications will optimize post recovery plant operational effectiveness and safety.

- Design and construction support manager: focuses necessary engineering, design, and construction resources on those aspects of plant recovery requiring redesign, modifications, or new construction; directs and coordinates nuclear steam supply system (NSSS) and balance-of-plant engineering and construction/repair work.
- Chemistry manager: develops plans and procedures to process and control liquid, gaseous, and solid wastes to minimize adverse effects on the health and safety of the public and plant recovery personnel. In addition, the chemistry manager coordinates the activities of staff radiological engineers and radiation protection personnel engaged in waste treatment operations.
- Health physics manager: responsible for As Low As Reasonably Achievable (ALARA) planning, execution, and monitoring; plans and manages decontamination of affected areas and equipment; supervises and directs all special radiological controls required to support the recovery operation; and coordinates environmental assessment activities with the manager-environmental services.
- Technical support manager: provides analyses, plans, schedules, and procedures in direct support of plant operations.
- Nuclear oversight manager: ensures that the overall conduct of recovery operations is performed in accordance with corporate policy and rules and regulations governing activities which may affect public health and safety.
- Scheduling/planning manager: prepares plans and schedules and tracks/expedites recovery operations.
- Administration/logistics manager: supplies administrative, logistic, communications, and personnel support for the recovery operation.
- Public information director: coordinates the flow of media information concerning recovery operations.

Once the organization is established and specific responsibilities are assigned, the recovery manager may relocate some or all of the recovery organization staff from the EOF.

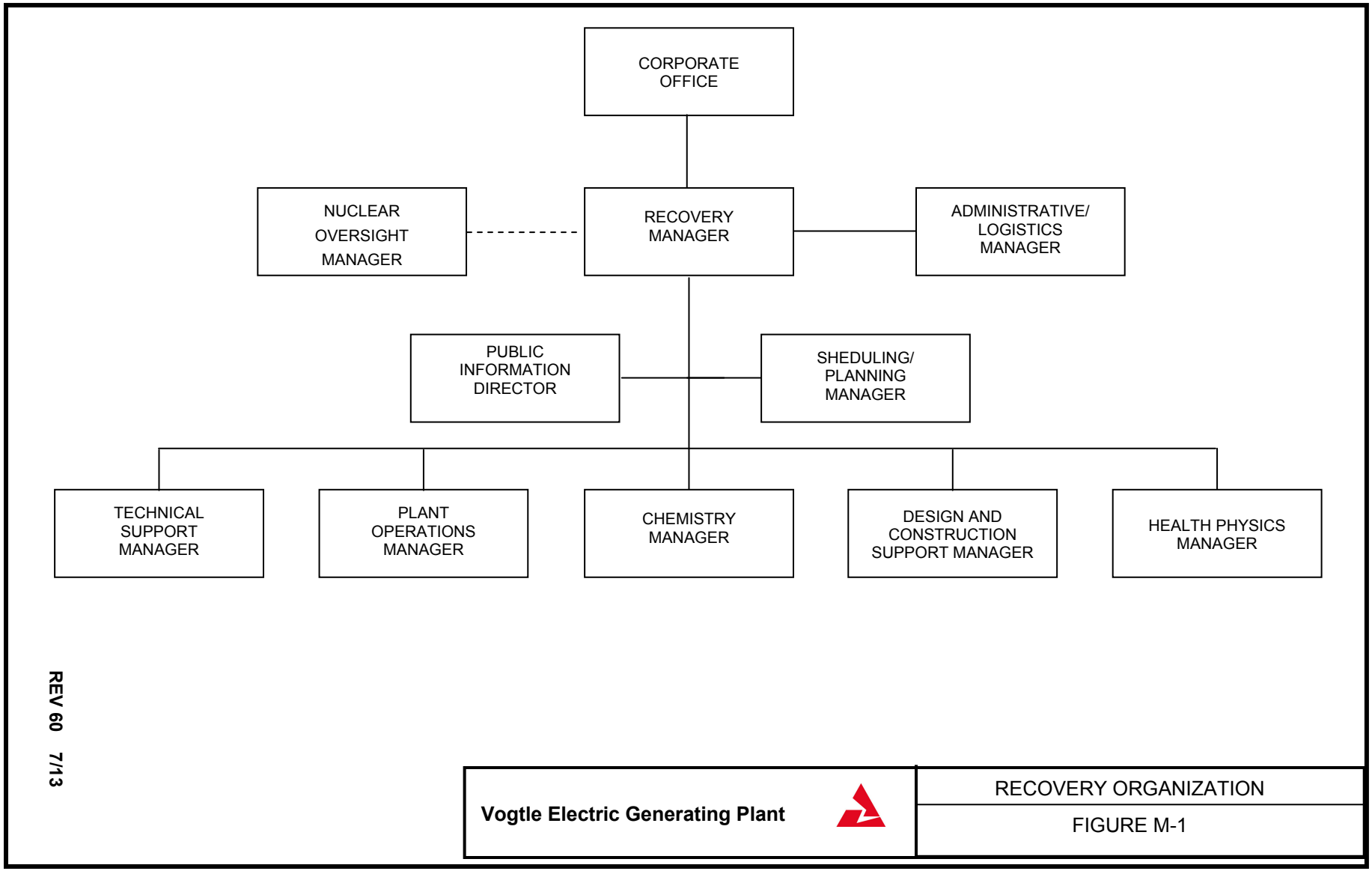
M.3 REENTRY PLANNING

If the accident situation involved a release of radioactivity, appropriate areas of the plant and site will be monitored to determine contamination and radiation levels. Identifying and controlling access to these areas will be in accordance with normal plant procedures. When reentry to a radiation area is required for inspection or work, the activity will be preplanned and plant radiation work practices and As Low As Reasonably Achievable (ALARA) program principles will be followed.

M.4 EXPOSURE MONITORING

All personnel who require access to the plant or to radiation areas on site during the recovery phase will be issued dosimetry, as appropriate. The criteria for reading Optically Stimulated Luminescent Dosimeters (OSLDs) and assessing radiation dose will be in accordance with standard health physics practices. The results of the dosimeter readings, including integrated exposures (i.e., man-rems) will be reported to the recovery manager, the radcon/radwaste manager, and others in the plant organization who normally receive such reports.

The State of Georgia, the State of South Carolina, and SRS have the responsibility for determining population exposure of the public via plume exposure and ingestion pathways. VEGP will provide radiological information including estimated quantity of radioactivity released, isotopic composition of released material, and meteorological data to assist the governmental authorities in their determinations. By determining the affected population (see appendix 6) and by performing dose assessment calculations including determining the quantity of radioactivity and release rate, VEGP personnel can estimate the population exposure if necessary. Use of data from fixed monitoring stations (OSLDs and air samplers) can be used to confirm the exposure estimates.



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Vogtle Electric Generating Plant

RECOVERY ORGANIZATION

FIGURE M-1

N. EXERCISES AND DRILLS

Vogtle Electric Generating Plant (VEGP) maintains an emergency drill and exercise program in accordance with 10 CFR 50 Appendix E.IV.F. As part of this program emergency exercises and drills are conducted to test and evaluate the adequacy of emergency facilities, equipment, procedures, communication links, actions of emergency response personnel, and coordination between the VEGP and offsite emergency response organizations. Some exercises and/or drills will be unannounced.

N.1 EXERCISES

Emergency preparedness exercises test integrated response capabilities and are conducted in accordance with Nuclear Regulatory Commission (NRC) and Federal Emergency Management Agency (FEMA) guidance as described below. Exercises are conducted every two calendar years, and are designed to include the demonstration of response to a major portion of the basic elements of the emergency preparedness plans of the participating organizations. The planning and execution of the emergency exercise is coordinated with Federal, State, and local agencies, as appropriate.

In accordance with 10CFR50, Appendix E, VEGP has not identified any States or local governments refusing to participate, pursuant to 10 CFR 50.47(c)(1).

For those exercises during which offsite response groups play a significant part, mobilization of Federal, State, and local personnel and resources adequate to verify the capability to respond to an accident situation is included. The exercise program for VEGP consists of an 8 year cycle that incorporates the following features:

1. A full participation exercise which tests as much of the Plant Vogtle, State, and local emergency plans as is reasonable achievable without mandatory public participation will be conducted on a biennial basis and evaluated by NRC and FEMA.
2. Biennial exercise scenarios will be submitted to the NRC under § 50.4 at least 60 days before use in the biennial exercise.
3. Each biennial exercise scenario will provide the opportunity for the ERO to perform their key skills as applicable to their emergency response duties in the CR, TSC, OSC, EOF, and joint information center to implement the EP principal functional areas.

4. Biennial evaluated exercises will be varied such that the following scenario elements are demonstrated over the course of an 8 year exercise cycle:

   - Hostile action directed at the plant site.
   - No radiological release or an unplanned minimal radiological release that does not require public protective actions.
   - Initial classification of or rapid escalation to a Site Area Emergency or General Emergency.
   - Implementation of strategies, procedures, and guidance developed under 10 CFR 50.54(hh)(2).
   - Integration of offsite resources with onsite response.

5. An ingestion pathway exercise will be conducted on a frequency to ensure the applicable States have the opportunity to participate in an ingestion pathway exercise at least once every exercise cycle.

N.2 DRILLS

A drill is a supervised instruction period aimed at testing, developing, and maintaining skills in a particular operation. Drills may be incorporated into the biennial exercise; they will be supervised and evaluated by either a training instructor or designated controller/evaluator.

1. OFF YEAR DRILL

Drills shall be conducted to ensure that adequate emergency response capabilities are maintained in the interval between biennial exercises. At least one of these drills will be conducted during the calendar year when there is no biennial exercise and shall involve a combination of some of the principal functional areas of the onsite emergency response capabilities. The principal functional areas include activities such as event classification, notification of offsite authorities, command and control of emergency response, accident assessment, protective action recommendation development, protective action decision making, and plant system repair and corrective actions. Activation of all onsite emergency response facilities (TSC, OSC AND EOF) is not required during these drills. Supervised instruction, success paths and accident management strategies may be included in these drills.

The States of Georgia and South Carolina including the Counties of Burke, Aiken, Allendale and Barnwell will be permitted to participate in drills when requested by the State or County Government.

During each exercise cycle periodic drills will be conducted to ensure the ERO teams (not necessarily each individual)are provided the opportunity to develop and maintain key emergency response skills within the scope of their duties. The ERO (not necessarily each ERO team) will be provided the opportunity to demonstrate key skills in response to the following scenario elements in drills or exercises.

- All functions in each ERF (e.g., all ERFs that are responsible for dose assessment perform those duties in response to a radiological release).
- Use of alternative facilities to stage the ERO for rapid activation during hostile action.
- Real-time staffing of facilities during off-hours (i.e., 6:00 p.m. to 4:00 a.m.).
- Providing medical care for injured, contaminated personnel (every 2 years).
- Response to essentially 100 percent of initiating conditions identified in the site emergency plan implementing procedure for classification of emergencies.
- Response to actual industry event sequences appropriate for the nuclear plant technology (e.g., BWR).
- Use of procedures developed in response to an aircraft threat and in compliance with 10 CFR 50.54(hh)(1).
- Use of the strategies associated with 10 CFR 50.54(hh)(2) to mitigate spent fuel pool damage scenarios (all strategies, such as makeup, spray, and leakage control, but not every variation of a given strategy).
- Use of the strategies associated with 10 CFR 50.54 9(hh)(2) to mitigate reactor accidents and maintain containment).

2. COMMUNICATION DRILLS

To ensure that emergency communication channels between VEGP and offsite authorities are operable, periodic drills are conducted. For drills, the communication is initiated at VEGP using the actual message format in accordance with the applicable plan and procedure. By using the standard message format, the drill tests understanding of message content as well as the communication systems hardware. The following test and drills are conducted:

a. Communication channels with the State of Georgia, Burke County, State of South Carolina, Aiken County, Barnwell County, Allendale County, Savannah River Site (SRS), and the NRC are tested as described in section F.

b. Communication drills among the control room, technical support center (TSC), operations support center (OSC), emergency operations facility (EOF), Joint Information Center (JIC), general office operations center, the States of Georgia and South Carolina, Burke, Aiken, Barnwell, and Allendale Counties, SRS, and VEGP field monitoring teams are conducted every two years. These drills are normally conducted during the biennial exercise.

3. FIRE DRILLS

Fire drills are conducted in accordance with the Final Safety Analysis Report (FSAR). As discussed in the FSAR, the program involves quarterly drills, at least one of which is unannounced. The quarterly drills are scheduled so that each member of the fire brigade participates in at least two drills per year. In addition, an annual practice is conducted which requires extinguishing a fire.

4. MEDICAL EMERGENCY DRILLS

A medical emergency drill involving a simulated contaminated person is conducted each calendar year. A moulage kit may be used to mock the injuries; otherwise, the drill script will describe the injuries. Controller data will be used for dose rates, contamination levels, and dosimeter readings. The simulated injured player is given initial treatment, as appropriate, by the VEGP first aid team, transported by ambulance to the hospital, and then given subsequent treatment by the hospital staff. This drill may be conducted as part of the biennial exercise.

5. RADIOLOGICAL MONITORING DRILLS

Plant environs and radiological monitoring drills are conducted each calendar year per Procedure NMP-EP-303, Drill and Exercise Standards. For these drills, a team is dispatched with a controller to obtain the required measurements or samples. The drill controller will evaluate the proper use of survey instruments, record keeping, communications, and the collection of sample media (soil, air, water, and vegetation), as appropriate. Procedures to be tested include Procedure 91303-C. This drill may be conducted in conjunction with one of the semiannual health physics drills.

6. HEALTH PHYSICS DRILLS

Semiannual health physics drills will be conducted per Procedure NMP-EP-303, Drill and Exercise Standards. The emergency preparedness supervisor will direct the development of drill scenarios so as to test and evaluate the response activities. Drill scenarios will simulate, as closely as possible, actual anticipated emergency conditions. Simulated elevated airborne and liquid samples and radiation in the environment will be utilized for drill activities.

Drills will evaluate the proper response per Procedure 91302-C and Procedure 91303-C. Use of sample techniques, survey techniques, monitoring methods, decontamination methods, and protective clothing and respirators will be demonstrated as appropriate during the drill but may not be used throughout the drill (for example, field monitoring teams will not wear protective clothing). Exposure control considerations will also be exercised during the drill.

Post accident sampling under simulated accident conditions will be demonstrated each calendar year. The post accident analysis may be performed using available instrumentation or using laboratory equipment to demonstrate the methods employed under actual accident conditions.

N.3 SCENARIOS

Each drill and exercise is conducted in accordance with a scenario. The scenarios for the drills may be considerably less extensive than the scenario for the biennial exercise. The preparation of exercise scenarios is directed by the emergency preparedness supervisor who enlists the assistance of personnel from other departments, as required, to assist in this task.

The scenario is coordinated with offsite authorities when they are participating in the exercise. The scenario is submitted to the NRC in accordance with current practice. FEMA receives a copy of the scenario from the participating states.

Scenarios include the following information:

- Objectives.
- Date, time period, place, and participating organizations.
- Controller/evaluator assignments.
- Time schedules of real and simulated initiating events.
- Messages describing equipment malfunctions, personnel injuries, and other non plant events, as appropriate.
- Narrative summary describing the conduct of the drill or exercise.
- Radiological data for onsite facilities and offsite field monitoring teams.

The exercise program is structured with sufficient flexibility to allow free play for decision making processes. The exercise scenario package identifies a specific accident sequence and includes messages that support the accident sequence. The exercise control organization receives general instructions concerning the deviation of plant personnel from procedural response. The exercise control organization may restrict player action if the response would interfere with the time sequence or prevent demonstration of an exercise objective. Free play items may be included in the scenario to maintain player interest.

Specific elements that may allow free play in the decision making process during the exercise include:

- Damage control.
- Accident mitigation.
- Manpower augmentation actions.
- Exposure control actions.
- Communication with offsite authorities.
- Recommendation of protective actions.

N.4 EVALUATIONS AND CORRECTIVE ACTIONS

All drills and exercises are evaluated. For periodic drills, the process consists of the following steps:

1. Drills will be evaluated by controllers/evaluators selected on the basis of expertise and availability.
2. Improper or incorrect performance during the drill may be corrected by the controller/evaluator and the proper method pointed out or demonstrated.
3. The exercise or drill controllers assemble the players at the conclusion of activities for a critique. Players are encouraged to identify areas where improvements are required. The drill controllers also present their observations to the players.
4. The site emergency preparedness supervisor submits a list of corrective actions, responsibilities, and schedule information to the site support manager for approval.
5. The emergency preparedness supervisor assigns action items and monitors the status of completion of corrective actions. Significant problems will be brought to the attention of appropriate plant management.

Exercise evaluation and corrective action are carried out in similar fashion. Critiques with the players are conducted in each facility and coordinated by the controller/evaluator at that facility. Each controller/evaluator submits written reports to the exercise controller. An overall critique is presented to key players and to the control organization after the exercise. The site support manager approves the responsibilities for corrective actions and deadlines for completion. The site emergency preparedness supervisor monitors completion status.

In addition to the internal critique and evaluation, Federal observers may observe, evaluate, and critique the biennial exercise. Corrective actions resulting from this critique, together with deadlines for completion, are assigned by the site support manager. The site support manager is advised of the status of these open items periodically.

As stated in 10CFR50, Appendix E, section IV, if VEGP failed to demonstrate with reasonable assurance that protective measures can and will be taken, a remedial exercise would be performed as directed by the NRC.

O. RADIOLOGICAL EMERGENCY RESPONSE TRAINING

Emergency response training is provided at four levels:

1. All VEGP badged personnel will receive General Employee Training at inception of onsite duties. GET will include emergency classification, individual response, signals, accountability, and site dismissal procedures.
2. All VEGP emergency response organization personnel will receive specialized training per Table O-2.
3. Offsite response groups who may support onsite situations, such as fire or personnel injury, will be offered annual training in notification, expected roles, site orientation, security procedures, and basic radiation protection.
4. Selected state and local emergency response management personnel with offsite emergency response roles will be offered a seminar/training course in specific areas; (1) the VEGP emergency classification system; (2) the VEGP protective action recommendation criteria and their relationship to plant conditions; and (3) the VEGP emergency response organization. These offsite management personnel will be offered initial training and annual retraining. Coordination with offsite authorities will include planning for and participation in VEGP exercises.

O.1 TRAINING

As a minimum, training will be provided in the subject areas shown in table O-1 to various personnel according to their emergency response position as shown on table O-2. It should be noted that these subject areas do not necessarily represent specific course titles, since several individual courses may be used to implement the training in each area. Also, both the content and depth of training may be varied slightly, depending upon the particular audience, in order to tailor the presentation to the specific needs of the group.

The training will be conducted in accordance with lesson plans. Classroom lectures, demonstration and use of equipment, and walk throughs of facilities will be incorporated into the lesson plans as appropriate. A written examination or practical exercise may be administered at the conclusion of a lesson. Records of the attendance and examination scores will be retained in the training files. Those designated to receive training in each subject area are indicated in table O-2.

Radiological emergency response training is offered throughout the year, with each training course being covered at least once per calendar year or as often as necessary to ensure that ERO personnel remain qualified per training requirements in section O.2. Annual retraining consists of initial training material reinforcement and appropriate lessons learned from the previous year's operating experience. Lessons learned that are distributed by other methods may not be included in annual retraining. The plant manager may receive credit for Management of Radiological Emergencies (MRE) requalification by participating in an integrated drill or annual exercise.

In addition, drills and exercises are an integral part of the training program and are conducted as specified in section N of this Plan. During practical drills, on the spot corrections will be made, if the situation and time allow. If not, the corrections will be pointed out in the critique. Upon completion of each training session or drill, the participants will be asked to critique the training in order to ensure continued improvement.

O.2 QUALIFICATION

Emergency response personnel at VEGP are qualified by the following criteria:

Normal duties	Positions in the emergency organization are assigned commensurate with normal managerial, supervisory, and/or technical skills, as shown in table B-2.
Mandatory training for emergency positions held	All ERO personnel shall be trained per table O-2 within the last 15 months, except for post accident sampling and first aid training, which is to be within 36 months.
Drills/exercise performance	Individual performance is evaluated and corrective actions taken as necessary.

O.3 SUMMARY

All badged VEGP workers will receive general training in emergency preparedness. Selected individuals on site and off site will annually receive specialized training in order to implement the VEGP Emergency Plan.

TABLE O-1 (SHEET 1 OF 3)

TRAINING COURSE DESCRIPTIONS

Training Course	Description
Core Damage Assessment	This course covers the calculational methodology for assessing core damage and estimating potential source terms. It includes retrieval of pertinent plant parameter data from the control room; making core inventory determinations based on reactor power history; estimating cladding and/or fuel damage; and estimating resultant activity released to containment atmosphere.
Offsite Communications	This course covers operation of communications equipment in the ERFs; communications methods, and procedures for notification of off-site emergency response agencies.
Emergency Plan Overview(a) (EPO)	This course covers an overview of the Emergency Plan with special attention to emergency planning zones (EPZs); emergency classification system; onsite emergency response organizations; responsibilities of emergency response personnel; and site accountability and site dismissal.
First Aid	This course covers the required subject material as referenced in OSHA 3317-06N 2006, "Best Practices Guide: Fundamentals of a Workplace First Aid Program."

a. EPO is included in G.E.T. badge training for all unescorted personnel.

TABLE O-1 (SHEET 2 OF 3)

Training Course	Description
Management of Radiological Emergencies (MRE)	This course covers classification of emergencies; emergency notification of on and offsite emergency response personnel and agencies; activation and staffing of emergency response facilities; protective action recommendation decision-making based on EPA PAG; retrieval of available plant computer data; reentry and repair operations; and communications and information management; and recovery.
Offsite Dose Assessment	This course covers dose projection methodology including computerized methods; retrieval of plant computer data; methods for obtaining meteorological data; operation of the dose assessment computer; and interpretation of offsite dose calculation results.
Post-Accident Sampling (TSC Chemistry Supervisors Only)	This course covers collection of samples from plant process and effluent streams under emergency conditions; measuring radionuclide and selected chemical concentrations in those samples; interpretation of sample results. Training requirement for the TSC chemistry supervisor is triennial.
Repair and Corrective Actions	This course covers As Low As Reasonably Achievable (ALARA) principles as they apply to planning and implementing repair and corrective action; emergency exposure guidelines; and communications during repair and corrective actions.
Field Monitoring Team	This course covers field measurement of airborne radioactivity, radiation levels and contamination in the EPZ; collecting environmental samples; map reading; record keeping; and radio communications.

TABLE O-1 (SHEET 3 OF 3)

Training Course	Description
Radiological Emergency Team In Plant	This course covers methods for performing in-plant radiation, contamination, and airborne radioactivity surveys under emergency conditions; search and rescue of missing personnel; managing health physics activities; and communications for the above activities.
Security	This course covers emergency response activities of the security department including personnel accountability; traffic control; communications; and access control to emergency response facilities.
Medical Support of Radiation Emergencies	This course covers the responsibilities and methods for handling exposed and/or contaminated injuries. It includes interfacing with ambulance crews; health physics activities for transporting a contaminated injured patient to the hospital; monitoring and decontamination while at the hospital; and final disposition of the ambulance, ambulance crew, hospital staff, and radiation emergency area (REA) at the hospital.
SCBA	This course covers the use of self-contained breathing apparatus including equipment description; proper donning and use; and inspection and actions in case of equipment failure.

TABLE O-2 (Sheet 1 of 2)

Training Requirements For VEGP ERO Personnel	CORE DAMAGE ASSESSMENT	OFFSITE COMMUNICATIONS	EMERGENCY PLAN OVERVIEW	FIRST AID	MANAGEMENT OF RADIOLOGICAL EMERGENCIES	OFFSITE DOSE ASSESSMENT	POST-ACCIDENT SAMPLING	REPAIR AND CORRECTIVE ACTIONS	FIELD MONITORING TEAM	RAD EMERGENCY TEAM IN-PLANT	SECURITY	MEDICAL SUPPORT OF RADIOLOGICAL EMERGENCY	SCBA
Emergency Director			x		x								X
EOF Management	- Training provided as described in Appendix 7												
EOF Staff	- Training provided as described in Appendix 7												
Dose Analyst			x			x							
Security Coordinators			x								x		
TSC Manager			x		x								
TSC Support Coordinator			x										
Engineering Supervisor	x		x										
Maintenance Supervisor			x					x					
Operations Supervisor			x		x								
Health Physics Supervisor			x			x				x		x	
Chemistry Supervisor			x				x						
TSC Engineering Staff			x										
OSC Manager			x		x			x					
Communicators		x	x										
Clerks			x										
Teams													
In-Plant Monitoring			x							x			x
Damage Control/Assessment			x					x					x
Repair And Modification			x					x					x
Search And Rescue			x	X(a)									x
Fire Brigade			x										x
First Aid			x	x									x

TABLE O-2 (Sheet 2 of 2)

Training Requirements For VEGP ERO Personnel	CORE DAMAGE ASSESSMENT	OFFSITE COMMUNICATIONS	EMERGENCY PLAN OVERVIEW	FIRST AID	MANAGEMENT OF RADIOLOGICAL EMERGENCIES	OFFSITE DOSE ASSESSMENT	POST-ACCIDENT SAMPLING	REPAIR AND CORRECTIVE ACTIONS	FIELD MONITORING TEAM	RAD EMERGENCY TEAM IN-PLANT	SECURITY	MEDICAL SUPPORT OF RADIOLOGICAL EMERGENCY	SCBA
Field Monitoring Team			x						x				
Dosimetry			x										
Health Physics Technicians			x	x						x			x
Monitoring Team Communicator			x						x				

(a) At least one member first aid qualified

P. RESPONSIBILITY FOR THE PLANNING EFFORT

The Executive Vice President/Chief Nuclear Officer (CNO) Southern Nuclear Operating Company (SNC) has overall responsibility and authority for all nuclear activities, including emergency planning (EP) programs. Reporting to the Executive Vice President of Operational Readiness and Site Integration is the Site Integration Director-(Plant).

The SNC Emergency Planning program is comprised of two distinct and integral functions; emergency planning and emergency preparedness. Responsibility for the performance of these functions is assigned to various members of the SNC Organization and coordinated as follows.

Emergency Planning:

The Vice President Regulatory Affairs reports to the president/CEO. This individual is responsible for licensing through: providing organizational support and management oversight of the sites to assure prompt and proper disposition of regulatory issues; the development of regulatory positions; advising senior management on priorities and activities affecting regulatory at the nuclear sites; and interfacing with NRC management on behalf of the sites. Other responsibilities include: developing policies, standardized processes, and procedures for the maintenance of the licensing basis; the preparation of submittals to the NRC and other regulatory organizations; and the dissemination of regulatory information. Reporting to the vice president-regulatory affairs is the fleet emergency preparedness manager, the fleet performance improvement manager, the regulatory affairs director-fleet, and the regulatory affairs director-nuclear development. The regulatory affairs director-nuclear development is functionally independent of SNC's operating fleet and is noted here for completeness only. Accordingly, the vice president-regulatory affairs is responsible for administration of the corrective action program in the corporate headquarters, the overall coordination of the corporate emergency preparedness programs (including the common Emergency Operations Facility), Emergency Plans, and site emergency response communication. His direct report, the Fleet Emergency Preparedness Manager, has the overall governance, oversight, and support of fleet emergency preparedness activities and programs.

The Fleet Emergency Preparedness Manager is responsible for overseeing emergency planning activities offsite and coordinating those activities with Licensee, Federal, State and local response organizations. The Emergency Planning Coordinator(s) reports to the Fleet Emergency Preparedness Manager in support of this effort.

The Emergency Plans are maintained by the Fleet Emergency Preparedness Manager. The Fleet Emergency Preparedness Manager provides strategic direction for SNC emergency planning and coordinates with site management through the Vice President – Fleet Operations Support.

The Emergency Planning Coordinator(s) coordinate site input and involvement in emergency planning programs with the Emergency Preparedness Supervisor. The Emergency Planning Coordinator(s) review Emergency Plan changes to determine if the effectiveness of the specific plans have been reduced. Emergency Plan changes which are judged to reduce the effectiveness of the Plan will be submitted to the NRC for approval prior to implementation.

Emergency Preparedness:

The Vice President – (Plant) is responsible for the site Emergency Preparedness aspects of the program. The Emergency Preparedness Supervisor is responsible for coordinating emergency preparedness activities onsite and supports offsite emergency preparedness activities in the vicinity of the plant. The Emergency Preparedness Supervisor reports through the Site Integration Director to the Executive Vice President of Operational Readiness and Site Integration-(Plant).

The Emergency Planning Supervisor is responsible to the Site Integration Director for implementation of emergency planning strategies.

Coordination:

The Fleet Emergency Preparedness Manager coordinates site input and involvement in emergency planning programs with the Emergency Preparedness Supervisor. The Emergency Preparedness Supervisor is responsible for the implementation of the Emergency Plan and procedure development and maintenance. Figure P-1 shows the EP Organization. The Fleet Emergency Preparedness Manager, Emergency Planning Coordinator, Emergency Preparedness Supervisor, and other individuals with emergency planning responsibilities are trained by self-study and by attending industry seminars, short courses, workshops, etc.

Onsite Emergency Plan Implementing Procedures (EPIP) are maintained by the Regulatory Affairs Manager with the Emergency Preparedness Supervisor being the principal site contact. EPIPs for the corporate emergency response organization and procedures governing fleet emergency planning activities are maintained by the Fleet Emergency Preparedness Manager. The Fleet Emergency Preparedness Manager performs a review of the site specific emergency plan annually and all onsite EPIPs biennially. The review

includes the letters of agreement, which are updated as necessary.

The Fleet Emergency Preparedness Manager performs a review of the emergency plans for Southern Nuclear once each calendar year. The review includes a comparison for consistency of all emergency plans for the specific sites including the Security Plan, State, County, and the Savannah River Site plan as appropriate.

The Emergency plans and EPIPs are revised in accordance with applicable site procedures.

Emergency Plan changes which are judged to reduce the effectiveness of the Plan will be submitted to the NRC for approval prior to implementation. The Emergency Planning Coordinator will review Emergency Plan changes to determine if the effectiveness of the site specific plan has been reduced prior to submitting the proposed change for departmental review and subsequently to the PRB for approval.

As required by 10 CFR 50.54(t), an annual independent audit of the emergency preparedness program is conducted by the SNC Nuclear Oversight Department. This audit is conducted as part of the standard audit program and will include a review of the Emergency Plan, its implementing procedures and practices, emergency preparedness training, annual exercises, equipment, and emergency response facilities. In addition, an audit of the interfaces with offsite agencies is performed by the SNC Nuclear Oversight Department.

Each audit is nominally conducted every 12 months.

Audits are performed in accordance with SNC Nuclear Oversight department procedures. Audit reports are written and distributed to management and, in addition, applicable portions of the corporate audit reports are made available to affected Federal, State, and local agencies, as appropriate, in accordance with 10 CFR 50.54(t).

Appropriate departments are responsible for implementing corrective actions resulting from the audit findings. Records of these audits and exercise findings are maintained in accordance with plant procedures.

In addition to this Plan, several other formal emergency plans have been developed to support the overall emergency response effort. These supporting plans and their sources are listed in procedure NMP-EP-300, SNC Corporate Emergency Planning Activities.

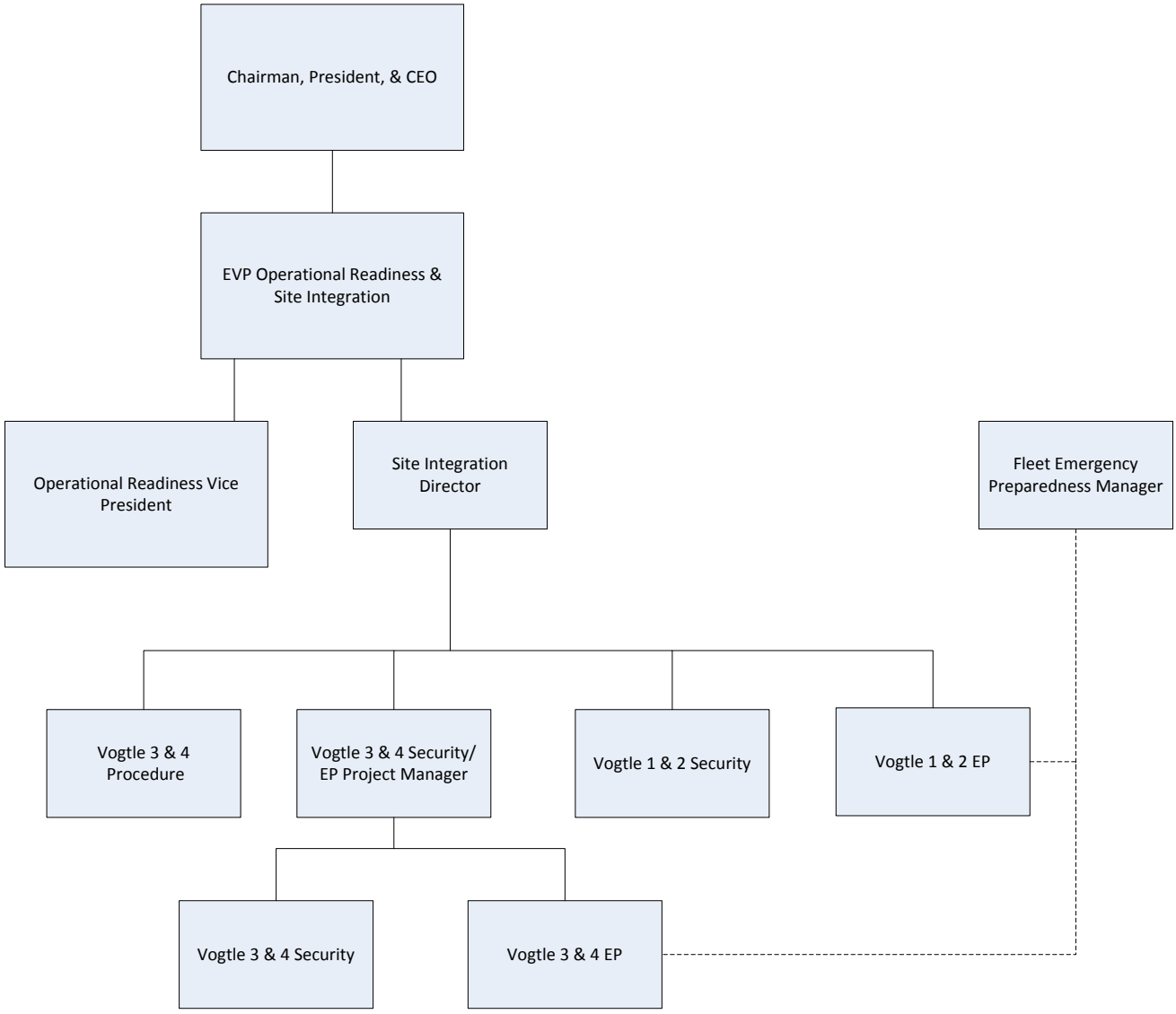

FIGURE P-1 EMERGENCY PREPAREDNESS ORGANIZATIONS