

## ATTACHMENT 2

DATE 4-19-84

## DOCUMENT DISTRIBUTION

TO: Holder of Copy No. 103

Check one:

NAME Document Control Dept - Washington (2)

Incorporate the following material into the subject documentation:

- ☐ PM Operability Notification - Complete the action specified on Attachment 6  
☐ PM Field Revision  
☐ Plant Mod  
☒ Procedure  
☐ Technical Specifications  
☐ FSAR  
☐ Other

** Emergency Response Plan	14
** PEP-1.0	9
** PEP-2.6.4	5
** PEP-2.6.5	3
** PEP-2.6.6	3
** PEP-2.6.7	2
** PEP-2.6.8	2
** PEP-2.6.20	2
* PEP-2.6.24	0
* PEP-2.6.25	0
* PEP-3.3.1	2

\* COMPLETE PROCEDURE, INSTRUCTION, OR MOD.

\*\* PARTIAL PROCEDURE, INSTRUCTION, OR MOD.

I verify that the revisions/additions/actions stated above have been made as required and that superseded material has been destroyed or marked obsolete, an audit has been made to verify correctness per the applicable revision numbers, and that these changes will be conveyed to those affected.

RETURN THIS FORM TO: BSEP Document Control  
 P. O. Box 10429  
 Southport, NC 28461-0429

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

A045  
1/1

CAROLINA POWER & LIGHT COMPANY  
BRUNSWICK STEAM ELECTRIC PLANT

UNIT 0

EMERGENCY RESPONSE PLAN

VOLUME XIII

BOOK 1

Rev. 014

Recommended By:

*Y. C. Boyer*  
Director - Administrative Support

Date:

4/16/84

Approved By:

*C. Ding*  
General Manager

Date:

4/18/84

*201:*  
8405030138

A045

EFFECTIVE PAGE LISTING  
RADIOLOGICAL EMERGENCY PLAN

<u>Page</u>	<u>Revision</u>
i - ii	14
iii - iv	12
v - ix	11
1-1	13
1-2	8
1-3	11
1-4	8
1-5 - 1-9	11
F1.1-1 - F1.1-7	2
F2.0-1	14
2-1 - 2-4	11
3-1 - 3-2	8
3-3	10
3-4	11
3-5	8
3-6	12
3-7 - 3-23	14
T3.5-1	10
F3.1-1	7
F3.2-1	14
F3.5-1	2
4-1	9
4-2	11
4-3 - 4-4	12
4-5 - 4-6	14
4-7	10
4-8 - 4-12	14
4-13	11
4-14	14
4-15	10
4-16- 4-17	14
4-18	10
T4.3-1 (DELETED)	10
T4.4-1 - T4.4-1a	10
T4.4-2 - T4.4-4	2
F4.4-1 - F4.4-3	2
5-1	8
5-2 - 5-7	11
5-8 - 5-9	14
F5.0-1	11
T5.0-1	3
T5.7-1	3
T5.7-2	12
T5.7-3	11
T5.7-4 - T5.7-5	3
T5.8-1	3
T5.9-1	3

EFFECTIVE PAGE LISTING  
RADIOLOGICAL EMERGENCY PLAN  
(Cont'd)

<u>Page</u>	<u>Revision</u>
6-1 - 6-3	11
6-4	12
6-5	11
6-6	13
6-7	14
6-8	11
7-1	14
7-2 - 7-11	2
F7.2-1	2
8-1 - 8-2	2
A-1	14
A-2	2
A-3	14
A-4	2
B-1	11
B-5	11
B-6	2
B-7	11
B-8 - B-9	2
B-12 - B-14	11
B-15 - B-20	2
B-22 - B-26	7
B-27	11
C-1 - C-2	2
D-1	2
E-1 - E-2	14
E-3	2
F-1 - F-6	8
G-1 - G-4	14
H-1 - H-8	7



Shift Operating Supervisor learns of an off normal condition, determined by instrument readings or observation. Shift Operating Supervisor implements PEP-2.1, which flows as shown on this sheet.

Brunswick REP  
Revision 14

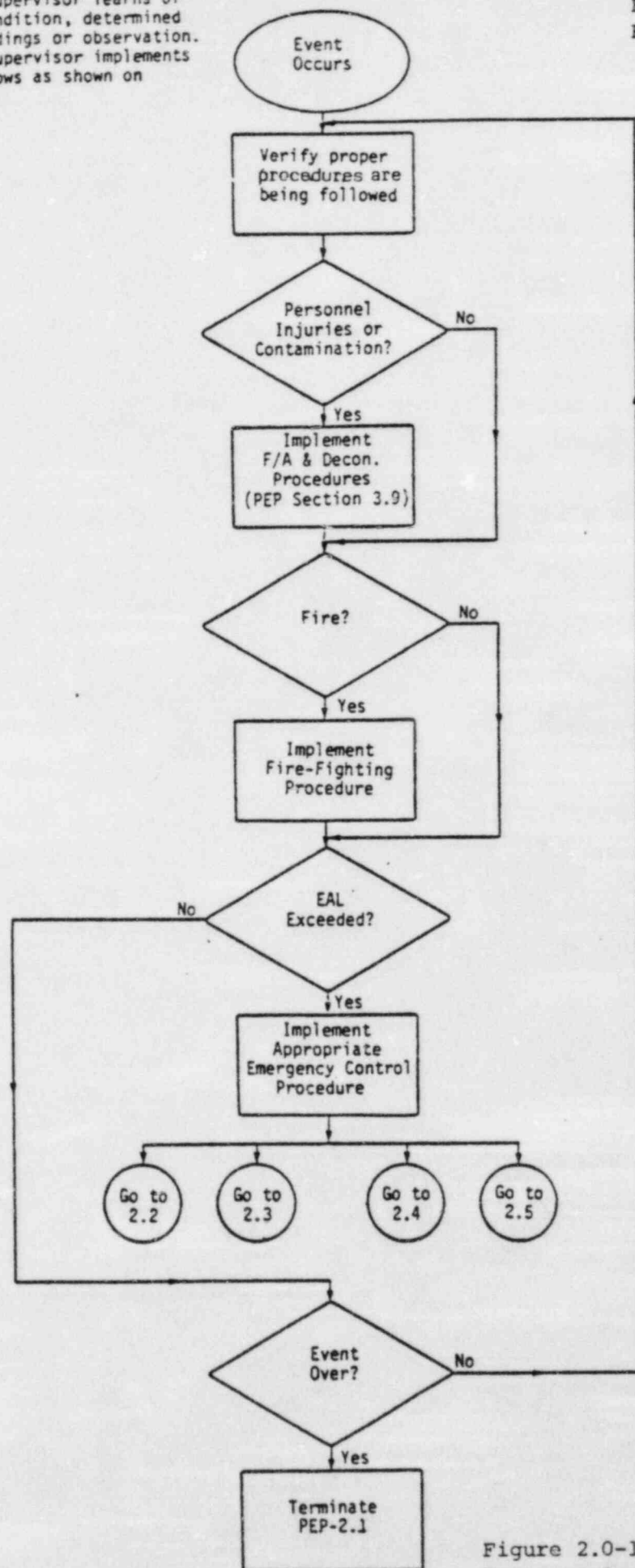


Figure 2.0-1  
Response Sequence to Off-Normal  
Conditions

The Emergency Repair Director is responsible to the Site Emergency Coordinator for the management of efforts to repair and maintain equipment during an emergency, install emergency structures, systems and components, and perform mitigation and clean-up activities during an emergency. These responsibilities include providing technical and administrative direction to any Damage Control Team that may be formed during the emergency and to the Operational Support Center Leader. Responsibilities of this position are contained in BSEP PEP-02.6.2, "Emergency Repair Director."

#### 3.2.2.3 Logistics Support Director

Primary: Director - Administrative Support  
Alternate: Materials Control Supervisor  
Interim: Site Emergency Coordinator

The Logistics Support Director is responsible to the Site Emergency Coordinator for assuring the continuity of emergency response resources including manpower, facilities, equipment, and supplies. He is responsible for providing liaison with the CP&L corporate authorities in the General Office until the Emergency Operations Facility (EOF) is activated, and with the Administrative and Logistics Manager after EOF activation. Additional responsibilities include providing technical and administrative direction to the Emergency Security Team, the Site Systems Communications Coordinator, and the Support Service Coordinator. Responsibilities of this position are contained in BSEP PEP-02.6.3, "Logistics Support Director."

#### 3.2.2.4 Radiological Control Director

Primary: Manager - Environmental & Radiation Control  
Alternates: Supervisor - Radiation Control I and II  
Principal Specialist - Radiation Control  
Supervisor - Environmental & Chemistry  
Project Specialist - Environmental & Chemistry  
Interim: Site Emergency Coordinator

The Radiological Control Director is responsible to the Site Emergency Coordinator for managing the radiological monitoring and assessment aspects of the plant during an emergency; managing activities to control radiation exposure; providing technical and administrative direction to the Radiological Emergency Teams and to the Dose Projection Coordinator; and providing liaison with corporate personnel in the Harris Energy and Environmental Facility before activation of the Emergency Operations Facility and with the Radiological Control Manager after Emergency Operations Facility activation. Responsibilities of this position are contained in BSEP PEP-02.6.4, "Radiological Control Director."

#### 3.2.2.5 Technical Assessment Director

Primary: Manager - Technical Support  
Alternates: Engineering Supervisors  
Interim: Site Emergency Coordinator

The Technical Assessment Director is responsible to the Site Emergency Coordinator for providing technical and administrative direction to the Accident Assessment Team and for providing liason with the Technical Analysis Manager after the EOF is activated. Responsibilities of this position are contained in BSEP PEP-2.6.22, Technical Assessment Director.

### 3.2.3 Representative to the State Emergency Response Team

A member of the plant staff acts as a liaison between the plant emergency organization and the agencies at the State Emergency Response Team Headquarters. He will keep agency representatives informed of conditions at the plant and relay recommendations of the Emergency Response Manager for protective actions off site as described in BSEP PEP-02.6.5, "Representative at the State Emergency Response Team Headquarters."

### 3.2.4 Plant Operators

During an emergency, the Plant Operators (including the Shift Foreman) are the nucleus of the initial effort to control the plant and take steps to protect the public.

The Plant Operators' primary responsibility is to carry out assigned actions necessary during an emergency to provide initial emergency response per established Emergency Instructions and perform initial calculations of projected off-site consequences. Specific emergency response duties of the Plant Operators are found in the Plant Emergency Procedures which implement the Plan and in other Operations procedures.

Leader: Shift Operating Supervisor  
Alternate: Shift Foreman  
Interim: Shift Foreman of Affected Unit

### 3.2.5 Radiological Emergency Teams

The Radiological Emergency Teams consist of members of the Environmental & Radiation Control organization and of other plant or off-site personnel who have received necessary training. Members of the teams who have not completed such training may be assigned to tasks in which they assist a qualified team member under his direct guidance.

The general functions of the various Radiological Emergency Teams include:

1. Determine and report on-site radiological conditions.
2. Determine and report off-site radiological conditions.
3. Establish areas to which access should be controlled for the purpose of minimizing personnel exposures.
4. Issue protective equipment and personnel gear.
5. Provide first aid and personnel decontamination services.
6. Determine and maintain records of personnel exposure.

These functional requirements are met by the establishment of the six positions discussed in the following paragraphs. Specific team assignments and duties including on-shift priorities of assignments are included in the various procedures. The procedures also give specific direction regarding the priority of roles to perform as off-duty members of the Radiological Emergency Teams arrive on the site.

#### 3.2.5.1 Environmental Monitoring Team Leader

Leader:	Project Specialist - Environmental and Chemistry
Alternates:	Foreman - Environmental and Chemistry
Interim:	Radiological Control Director

The Environmental Monitoring Team Leader is responsible to the Radiological Control Director for providing technical and administrative direction to the Environmental Monitoring Team during a declared emergency. Upon activation of the Technical Support Center, two Environmental Monitoring Teams will be made available for deployment. Once the Emergency Operations Facility is activated, the Environmental Monitoring Team Leader will be responsible to the Radiological Control Manager in the Emergency Operations Facility. When the Harris Energy and Environmental Center Environmental Monitoring Teams arrive and become functional, plant personnel involved in off-site environmental monitoring will be released for support of the on-site effort as necessary. The responsibilities and objectives of the environmental monitoring team are contained in BSEP PEP-02.6.6, "Environmental Monitoring Team Leader."

#### 3.2.5.2 Plant Monitoring Team Leader

Leader:	Supervisor - Radiation Control I
Alternates:	Foreman - Radiation Control
Interim:	Radiological Control Director

The Plant Monitoring Team Leader is responsible to the Radiological Control Director for providing technical and administrative direction to the Plant Monitoring Team during a declared emergency. Responsibilities of the Plant Monitoring Team include on-site surveys and accompanying reentry teams. The responsibilities and objectives of the Plant Monitoring Team are contained in BSEP PEP-02.6.7, "Plant Monitoring Team Leader."

#### 3.2.5.3 Personnel Protection and Decontamination Team Leader

Leader:	Supervisor - Radiation Control II
Alternates:	Foreman - Radiation Control
Interim:	Radiological Control Director

The Personnel Protection and Decontamination Team Leader is responsible to the Radiological Control Director for providing technical and administrative direction to the Personnel Protection and Decontamination Team during a declared emergency. Responsibilities of the Personnel Protection and Decontamination Team include exposure control, on-site protective actions, and



aid to affected personnel. The responsibilities and objectives of the Personnel Protection and Decontamination Team are contained in BSEP PEP-02.6.8, "Personnel Protection and Decontamination Team Leader."

#### 3.2.5.4 Dose Projection Coordinator

Leader:	Principal Specialist - Radiation Control
Alternates:	Specialist - Radiation Control
Interim:	Radiological Control Director

The Dose Projection Team is responsible to the Radiological Control Director. Once the Emergency Operations Facility is activated, the responsibility for off-site dose assessment is transferred to the Radiological Control Manager, but the Dose Projection Team remains active in assessing source terms and advising the Dose Assessment Team in the EOF. Responsibilities of the Dose Projection Team include determining source terms and projecting on-site and off-site radiation dose commitments based on monitoring results, and receiving and distributing meteorological data to the dose assessment group in the Emergency Operations Facility as required. The responsibilities and objectives of the Dose Projection Team are contained in BSEP PEP-02.6.20, "Dose Projection Coordinator."

#### 3.2.5.5 Plant Sampling and Analysis Team Leader

Leader:	Supervisor - Environmental and Chemistry
Alternates:	Foreman - Environmental and Chemistry
Interim:	Radiological Control Director

The Plant Sampling and Analysis Team Leader is responsible to the Radiological Control Director for providing technical and administrative direction to the Plant Sampling and Analysis Team during a declared emergency. Responsibilities of the Plant Sampling and Analysis Team include source term assessments and core damage estimations based on sampling results. The responsibilities and objectives of the Plant Sampling and Analysis Team are contained in BSEP PEP-02.6.24, "Plant Sampling and Analysis Team Leader."

#### 3.2.5.6 Radiological Control Communicator

Radiological Control Communicator:	Foreman - E&RC
Alternates:	Foreman or Technician I - E&RC
Interim:	Radiological Control Director

The Radiological Control Communicator is responsible to the Radiological Control Director for expediting communications between the Director and the Radiological Emergency Teams. The responsibilities and objectives of the Radiological Control Communicator are contained in BSEP PEP-02.6.25, "Radiological Control Communicator."

#### 3.2.6 Emergency Security Team Leader

The Emergency Security Team is composed of members of the Security Force

assigned to the plant. These personnel are qualified in security, personnel accountability, and evacuation procedures and practices.

Leader:	Security Specialist
Alternates:	Chief of Security
	Lieutenant or Shift Sergeant
Interim Leader:	Senior Security Person on duty

The Emergency Security Team Leader is responsible to the Logistics Support Director for providing direction to the Emergency Security Team during a declared emergency and providing liaison with the state and local law enforcement agencies. After the Emergency Operations Facility is activated, liaison with state and local law enforcement agencies will be provided by the Administrative and Logistics Manager. Responsibilities and objectives for the Emergency Security Team are contained in BSEP PEP-02.6.10, "Emergency Security Team Leader."

### 3.2.7 Damage Control Team Leader

The Damage Control Team provides for an assessment of equipment damage and provides emergency repairs as required. The Damage Control Team Leader and members will be selected by the Site Emergency Coordinator and the Emergency Repair Director, according to the nature of the task. Different teams will be formed to carry out different missions. Responsibilities and objectives of the Damage Control Team are located in BSEP PEP-02.6.11, "Damage Control Team Leader."

### 3.2.8 Emergency Communicator

The Emergency Communicator reports to the Site Emergency Coordinator. He functions as liaison between the Site Emergency Coordinator, off-site organizations and agencies until relieved by the EOF staff, and the on-site emergency organization. Specifically, he relays messages between the Site Emergency Coordinator and the Operational Support Center, Technical Support Center, Emergency Operations Facility, and until relieved by the EOF staff, NRC, Corporate Emergency Operations Center, and the State Emergency Response Team, using the communication equipment discussed in Appendix A.

Emergency Communicator:	Director - Regulatory Compliance
Alternates:	Regulatory Compliance Specialist
Interim:	Available Plant Operator

### 3.2.9 Evacuation Assembly Area Leader

Leader:	Cost Control Specialist
Alternates:	Security Guard

If the site is evacuated, this individual reports to the Logistics Support Director from the designated assembly area. This individual is also responsible for liaison with the Emergency Security Team so that personnel



accountability can be maintained. His responsibilities and objectives are contained in BSEP PEP-02.6.12, Operational Support Center Leader/Evacuation Assembly Area Leader.

### 3.2.10 Operational Support Center Leader

Leader: Senior Specialist - Electrical/Mechanical

Upon the decision of the Site Emergency Coordinator to activate the Operational Support Center, an OSC leader will report to the Emergency Repair Director. This individual will direct the activities of those persons requested to report to the OSC. His responsibilities and objectives are contained in BSEP PEP-02.6.12, Operational Support Center Leader/Evacuation Assembly Area Leader.

### 3.2.11 Site Communications Systems Coordinator

The Logistics Support Director, in cooperation with the Corporate System Communication Coordinator, will designate an individual to serve as the Site Communications Systems Coordinator.

The Site Communications Systems Coordinator is responsible to the Logistics Support Director for providing liaison with the Corporate Systems Communications Coordinator. He also assists with the expansion of the Emergency Communications System during a declared emergency. Since no special emergency response duties are required for this position, specific emergency preparedness training is not required. His responsibilities and objectives are contained in BSEP PEP-02.6.14, "Site Communications Systems Coordinator."

### 3.2.12 Accident Assessment Team Leader

One of the principal groups housed within the Technical Support Center is the Accident Assessment Team. The specific responsibilities of the Accident Assessment Team are as follows:

1. Analyze mechanical, electrical, instrument and control problems and determine alternate solutions.
2. Analyze thermohydraulic and thermohydrodynamic problems and develop alternate courses of action to resolve them.
3. Analyze and evaluate accident conditions and develop guidance for the Site Emergency Coordinator and Operations personnel on protection of the core.

## 3.3 AUGMENTATION OF ON-SITE EMERGENCY ORGANIZATION

If conditions at the plant degrade to the extent that further on-site assistance is needed, assistance is available from the Corporate personnel, contracted services, and certain locally available service groups, as described in the following subsections.

### 3.3.1 Emergency Operations Facility

The Emergency Operations Facility is activated by and under the direction of the Vice President - Brunswick Nuclear Project (or his alternate) when he is notified by the Site Emergency Coordinator that a Site Emergency or a General Emergency condition exists at Brunswick. Activation is discretionary for lesser emergencies. Upon arrival at the Emergency Operations Facility, the Vice President - Brunswick Nuclear Project will assume the position of Emergency Response Manager.

#### 3.3.1.1 Emergency Response Manager

Emergency Response Manager: Vice President-Brunswick Nuclear Project  
Alternate: Manager: Outages BNP  
Manager - Site Planning and Control

The Emergency Response Manager is responsible to the Corporate Emergency Operations Center Manager for providing liaison between the Site Emergency Coordinator and off-site support personnel (Corporate Headquarters, Corporate Spokesman, Media Team Leaders, state and federal agencies) and marshalling off-site support as required to support the Site Emergency Coordinator. The responsibilities and objectives of this position are contained in BSEP PEP-02.6.16, "Emergency Response Manager."

#### 3.3.1.2 Administrative and Logistics Manager

Administrative and  
Logistics Manager: BCU Administrative Supervisor  
Alternate: BCU Planning and Budget Supervisor

The Administrative and Logistics Manager is responsible to the Emergency Response Manager for providing assistance to the Emergency Response Manager in administrative, logistics, communications, and personnel support, and assisting the on-site Logistics Support Director as requested. The responsibilities and objectives of this position are contained in BSEP PEP-02.6.17, "Administrative and Logistics Manager."

#### 3.3.1.3 Technical Analysis Manager

Technical Analysis Manager: Manager - Site Planning and Control  
Alternate: Director - Unit Outages

The Technical Analysis Manager is responsible to the Emergency Response Manager for coordinating technical information coming from the Technical Support Center, supplying the Emergency Response Manager with an assessment of the emergency, and providing interface for the Emergency Response Manager to consultants, regulatory agencies, architect-engineers, and General Electric. The responsibilities and objectives of this position are contained in BSEP PEP-02.6.18, "Technical Analysis Manager."

#### 3.3.1.4 Radiological Control Manager

Radiological Control  
Manager:

Manager - Radiological and Chemical  
Support - Harris Energy and Environ-  
mental Center

Alternate:

Director - Health Physics - Harris Energy  
and Environmental Center

The Radiological Control Manager is responsible to the Emergency Response Manager for coordinating off-site radiological and environmental assessment and recommending to the Emergency Response Manager protective actions necessary to protect the public health and safety. The responsibilities and objectives of this position are contained in BSEP PEP-02.6.19, "Radiological Control Manager."

#### 3.3.1.5 Assistant to the Emergency Response Manager (ERM)

The Assistant to the Emergency Response Manager is responsible to the Emergency Response Manager for coordination of information within the Emergency Operations Facility. The responsibilities of this position are contained in BSEP PEP-02.6.23, "Assistant to the Emergency Response Manager."

#### 3.3.2 Corporate Emergency Operations Center

The Corporate Emergency Operations Center is activated by the Senior Vice President - Power Supply or alternate upon request of the Vice President - Nuclear Operations (or his alternate) when he is notified by the Site Emergency Coordinator that a Site or General Emergency condition exists at Brunswick. Activation is discretionary for lesser emergencies.

The Corporate Emergency Operations Center Manager is then responsible for notifying any additional local, state, and federal agencies not already notified that could become involved in the emergency, and for providing additional personnel and technical assistance from off-site Carolina Power & Light Company resources, as requested by the Site Emergency Coordinator and/or the Emergency Response Manager.

##### 3.3.2.1 Corporate Emergency Operations Center Manager

Corporate Emergency

Operations Center Manager:

Senior Vice President - Power Supply

Alternate:

Executive Vice President - Power Supply  
and Engineering & Construction

The primary responsibility of the Corporate Emergency Operations Center Manager is to assure that the full resources of the Corporation are quickly made available as may be required to safely secure the plant systems and to minimize the effects of the incident on plant personnel and the public.

### 3.3.2.2 System Communications Coordinator

System Communications Coordinator

Manager - Transmission Substation  
Maintenance

Alternate:

Manager - Relay & Electronics  
Engineering and Construction

The System Communications Coordinator reports to the Corporate Emergency Operations Center Manager and has the following responsibilities:

1. Provide communications between the Corporate Emergency Operations Center and the Brunswick Site Emergency Coordinator before the Emergency Operations Facility is activated and the Emergency Response Manager after the EOF is activated.
2. Provide, as needed, backup communications between technical support groups at the Corporate Emergency Operations Center and at the Emergency Operations Facility Technical Analysis Group.
3. Provide, as needed, additional communications capability between off-site agencies and the Emergency Operations Facility.
4. Provide, as needed, backup communications between the Corporate Media Center and the plant Media Center.
5. Complete, as required, notification of Emergency Response Team members and support personnel.
6. Provide for installation, operation, and maintenance of communications facilities and services.
7. Arrange for and coordinate the installation, operation, and maintenance of support services provided by the Bell Telephone System, as needed.
8. Arrange for personnel to operate communications equipment.
9. Coordinate activities of the System Communications organization to support the Emergency Communications System.
10. Provide items 1 - 9 (above) in cooperation with the Site Communications Systems Coordinator (if one has been designated).

### 3.3.2.3 CEOC Operations Coordinator

Operations Coordinator:

Assistant to the Group Executive - Power  
Supply

Alternate:

Principal Specialist - Nuclear Administra-  
tion



The Operations Coordinator reports to the Corporate Emergency Operations Center Manager and is responsible for coordinating the technical flow of information transmitted through the Corporate Emergency Operations Center by:

1. Providing technical personnel in the center on a 24-hour-per-day basis during an emergency.
2. Arranging for necessary operations documents, etc., to be relocated to the center for use by Nuclear Operations and other technical personnel.
3. Providing necessary equipment and services, excluding communications facilities, for the operation of the center.
4. Provide assistance to the Site Support Services Coordinator as required in arranging for additional equipment, supplies, and personnel.

3.3.2.4 Headquarters Public Information Coordinator

Headquarters Public  
Information Coordinator: Vice President - Corporate Communications

Alternates: 1. Manager - News Service  
2. Director - Media Relations

The Headquarters Public Information Coordinator has the following responsibilities:

1. Direct the activities of the Corporate Headquarters Media Center.
2. Supervise the Headquarters Media Team.
3. Coordinate with the Corporate Emergency Operations Center Manager to assure that accurate, factual information is provided to the news media for release to the public.
4. Address issues indirectly related to the emergency, such as its impact on BSEP operations.
5. Maintain regular communication with the Plant Media Center.
6. Brief the Headquarters Media Team on a regular basis concerning site developments.
7. Assure that needed information and/or materials to support the efforts of the Plant Media Center are developed and expeditiously delivered to the site.

8. Provide a representative to the State Emergency Operations Center located in Raleigh, North Carolina, should such a center be activated, and assist state public information officers in providing information to the public.
9. Keep employees informed about the emergency during its duration by publishing info bulletins, info briefs, or other employee information.

#### 3.3.2.5 Corporate Spokesman

Corporate Spokesman: Vice President - Nuclear Safety & Research  
Alternate: Vice President - Nuclear Plant Engineering Department

The Corporate Spokesman will report to the Brunswick site upon declaration of a Site or General Emergency (discretionary for Alert). He will have primary responsibility for all public statements to the media at the site concerning the effect of the emergency on the Corporation, the specific details of the emergency, and steps the Company is taking to mitigate it. Responsibilities of the Corporate Spokesman include:

1. Participate in media briefings as scheduled by the Site Public Information Coordinator.
2. Cooperate with the Site Public Information Coordinator to assure that questions of interest to the media and to the public are addressed during scheduled briefing sessions.
3. Work in close cooperation with other Corporate personnel to assure that he is fully informed of all events relating to the emergency and has the best available information to answer questions on these events for the media.
4. Assure the accuracy of statements made concerning the emergency and concerning Corporate actions during the emergency.

#### 3.3.2.6 Site Public Information Coordinator

Site Public  
Information Coordinator:      Manager - News Services

Alternates:                      Vice President - Corporate Communications  
   Director - Media Relations

Interim:                              Plant General Manager or his designee

The Site Public Information Coordinator is responsible to the Emergency Response Manager for providing liaison among the plant Media Center, and the Corporate Media Center and the Site Emergency Coordinator. He also serves as director of the plant Media Center during a declared emergency. His



responsibilities and objectives are contained in BSEP PEP-2.6.13, "Site Public Information Coordinator."

### 3.3.3 Contracted Services

A number of active outside contracts are maintained in order to ensure continuing access to qualified personnel when and if they are needed to supplement CP&L resources. These contracts provide the capability of obtaining, on an expedited basis, additional maintenance support personnel (such as mechanics, electricians, and I&C Technicians), other technical personnel (such as E&RC Technicians), and engineering and consulting services. For example, contracts are maintained with General Electric and United Engineers and Constructors (the NSSS vendor and architect-engineer for the Brunswick plant).

The Institute of Nuclear Power Operations (INPO) serves as a clearinghouse for industry wide support during an emergency. When notified of an emergency situation at a nuclear plant, INPO will provide emergency response as requested. INPO will be able to provide the following emergency support functions:

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

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

### 3.3.4 Local Services Support

The Brunswick Plant is equipped and staffed to cope with many types of emergency situations. However, if a fire or other type of incident occurs that requires outside assistance, such assistance is available as described in the following subsections.

#### 3.3.4.1 Medical Assistance

Dosher Memorial Hospital has medical facilities immediately available for the treatment of contaminated and non-contaminated injured personnel.

In addition, medical assistance is available on or off site from physicians in the Southport area, all of whom are on the staff of Doshier Memorial Hospital and who have agreed to provide medical assistance to contaminated patients. (See Appendix E, Medical Treatment and Assistance, for more details.)

#### 3.3.4.2 Ambulance Service

The Southport Volunteer Rescue Squad has agreed to respond to all emergency calls from the plant, just as they respond to other calls from the Southport area. A copy of the response agreement with the Southport Volunteer Rescue Squad is included in Appendix B.

#### 3.3.4.3 Fire Assistance

Agencies with fire protection resources in the vicinity of Brunswick are as follows:

- Southport Fire Department.
- Boiling Springs Fire Department.
- Sunny Point Fire Department
- Yaupon Beach Fire Department.

The Southport Fire Department is the primary fire protection response agency for the Brunswick Plant and will coordinate assistance activities, if required, of the other above agencies. Copies of agreements with local fire departments are contained in Appendix B. In addition, Section II of the North Carolina Fire Protection Law makes provisions for volunteer fire departments to furnish fire protection in rural areas.

### 3.4 COORDINATION WITH PARTICIPATING GOVERNMENTAL AGENCIES

A summary of each governmental organization having major responsibilities for the planning and response to Brunswick Plant radiological emergencies is described below; comprehensive summary tables of emergency response organizations are included in Appendix C; and a detailed description of the authority, responsibilities, and duties of each organization is presented in their respective emergency plans. Each of these organizations having response duties is capable of providing such on a 24-hour-per-day basis.

#### 3.4.1 State of North Carolina

##### 3.4.1.1 Governor's Office

The Governor has the authority to direct and control the State Emergency Management Program. During a declared State of Disaster, he has the authority to utilize all available state resources reasonably necessary to cope with emergencies. His representatives coordinate as necessary with the Carolina Power and Light Company, the Governor of South Carolina, and with local government officials.

3.4.1.2 Department of Crime Control and Public Safety

The Department of Crime Control and Public Safety functions as the State of North Carolina Emergency Planning Coordinator. In that capacity the Department has overall management responsibility for North Carolina's radiological emergency response planning, development, and updating of North Carolina's emergency response plan, and coordination with Carolina Power & Light Company. The Department coordinates emergency response activities for the State of North Carolina and other government response agencies.

3.4.1.3 Department of Human Resources, Division of Facility Services,  
Radiation Protection Section

The Radiation Protection Section, within the Department of Human Resources performs radiological field monitoring and laboratory analysis of field samples. This section is responsible for dose assessments and projections and personnel radiological monitoring outside the Brunswick site, and other functions as described in the State Emergency Plan.

3.4.2 Brunswick County

3.4.2.1 Emergency Management Agency

The Brunswick County Emergency Management Agency has overall responsibility for Brunswick County's radiological emergency response planning, development, and updating of Brunswick County's emergency response plan, and coordination between the county and Carolina Power & Light Company and other local government response agencies. It functions as the lead county agency for radiological monitoring and decontamination activities as directed by the North Carolina State's Radiation Protection Section.

3.4.2.2 Brunswick County Sheriff's Department

The Sheriff's Department emergency response functions are:

- a. Coordinate all local law enforcement and traffic control.
- b. Operate the county warning point on a 24-hour basis.
- c. Provide immediate assistance to facility management and local authorities during initial onset of the emergency.
- d. Provide traffic control in support of evacuation.
- e. Re-route traffic around contaminated areas and report traffic problems to the County Emergency Operations Center.
- f. Provide traffic control in the vicinity of shelter areas.
- g. Establish road blocks, re-route traffic, and prevent entry into contaminated zones.

- h. Provide assistance to municipal law enforcement agencies in warning and evacuating persons in designated zones.
- i. Provide security for county property.

3.4.3 New Hanover County

3.4.3.1 Emergency Management Agency

The New Hanover County Emergency Management Agency has overall responsibility for New Hanover County's radiological emergency response planning, development, and updating of New Hanover County's emergency response plan, and coordination between the County, Carolina Power & Light Company, and other local government response agencies. It functions as the lead county radiological response agency and provides any required radiological monitoring and decontamination activities as directed by the North Carolina Radiation Protection Section.

3.4.3.2 New Hanover County Sheriff's Department

The Sheriff's Department emergency response functions are:

- a. Coordinate all local law enforcement and traffic control.
- b. Operate the county warning point on a 24-hour basis.
- c. Provide immediate assistance to facility management and local authorities during initial onset of the emergency.
- d. Provide traffic control in support of evacuation.
- e. Re-route traffic around contaminated areas and report traffic problems to the County Emergency Operations Center.
- f. Provide traffic control in the vicinity of shelter areas.
- g. Establish road blocks, re-route traffic, and prevent entry into contaminated zones.
- h. Provide assistance to municipal law enforcement agencies in warning and evacuating persons in designated zones.
- i. Provide security for county property.

3.4.4 Federal Agencies

3.4.4.1 Department of Energy, Savannah River Operations Office

The Savannah River Operations Office coordinates, under the Interagency Radiological Assistance Plan (IRAP), federal resources as required to: minimize accidental radiation exposure; minimize the spread of radioactive materials into the environment; and carry out countermeasures to control and eliminate radiation hazards. Upon request of the Site Emergency Coordinator



(or the Emergency Response Manager after the Emergency Operations Facility is activated) or of the State of North Carolina, Department of Human Resources, Radiation Protection Section, Department of Energy will: provide equipment, supplies, and personnel to evaluate radiological hazards and to minimize radiation exposures; assist in carrying out emergency response operations and implementing protective actions; and provide an aerial radiological measuring system for mapping radioactive plumes. Resources available in the area to facilitate federal assistance include the New Hanover County Airport, located approximately twenty miles from the Brunswick Plant near Wilmington, North Carolina, which has two runways capable of supporting large commercial aircraft. Also located at the New Hanover County Airport is a National Guard Armory which houses the State Emergency Response Team during emergencies. This area could be used as a Federal Command Post meeting the requirements of IRAP.

#### 3.4.4.2 Federal Emergency Management Agency (FEMA)

The Federal Emergency Management Agency coordinates, through the Atlanta, Georgia Regional IV Office, federal response as required to supplement that provided by IRAP. A representative from FEMA Region IV will be present at the SERT to coordinate any federal response requested by the state.

#### 3.4.4.3 Nuclear Regulatory Commission (NRC)

The Nuclear Regulatory Commission provides resident inspectors at Brunswick. At the request of Carolina Power & Light Company, NRC provides additional technical advice, technical assistance, and personnel during and following a radiological emergency. The Director of Regulatory Operations will be notified of radiation incidents in accordance with 10CFR20.403 and will conduct appropriate investigative activities.

#### 3.4.4.4 U. S. Coast Guard (USCG)

The Coast Guard controls access of navigable waterways in the vicinity of the Brunswick Plant and provides public warning and notification as described in the State Emergency Plan.

#### 3.4.4.5 Weather Service

The National Weather Service in Wilmington, North Carolina will provide meteorological information during emergency situations, if required. Data available will include existing and forecasted surface wind directions, wind speed with azimuth variability, and ambient surface air temperature.

#### 3.4.5 Agreements

Appendix B presents copies of letters of agreement with agencies that would not normally be available for assistance through existing state or federal plans but will make certain services available.

### 3.5 NOTIFICATION AND ACTIVATION

Notification and activation of the on-site and off-site emergency response organizations is dependent upon the emergency classification and is listed in Table 3.5-1. Each of these organizations provides 24-hour-per-day staffing of communication links. Details of notification responsibilities are described in the Plan's implementing procedures. The communications systems utilized to make these notifications are described in Appendix A. Information to be transmitted to off-site agencies and notification verification techniques are included in BSEP PEP-02.6.21, "Emergency Communicator." Additional individuals and organizations who might be required to activate are contained in PEP Appendix A.

Any time that an emergency is reclassified, the initial notification scheme will apply.

The State of North Carolina and the Counties of Brunswick and New Hanover are responsible for the process of notification of the public. The initial instructions to the public will consist of preestablished emergency messages which will be tailored to reflect whether the event is a Site Emergency or General Emergency. The following information is typical of that which would be provided in the initial message:

1. Identification of the agency issuing the information.
2. A statement that an emergency condition exists at the Brunswick Steam Electric Plant.
3. Brief description of the type of emergency and the nature of the hazard.
4. Identification of the communities or geographical areas affected by the emergency.
5. Instructions with regard to specific protective measures to be taken by residents of the affected areas.
6. A statement concerning how the public will receive further emergency information.

Prewritten emergency messages to be used for public notification are contained in the procedures of the State of North Carolina, and Brunswick and New Hanover Counties.



CAROLINA POWER LIGHT COMPANY  
Emergency Response Organization

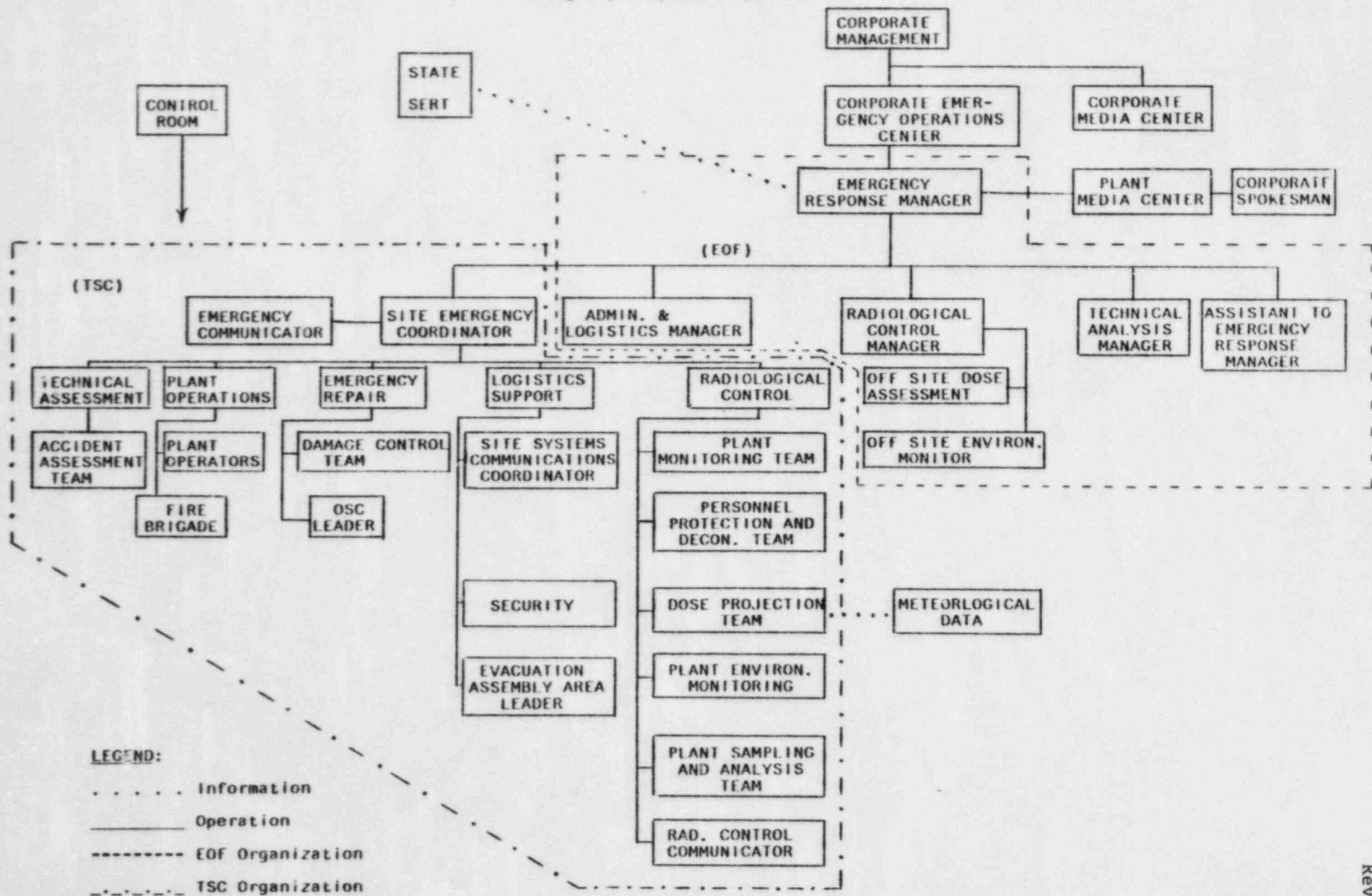


FIGURE 3.2-1 Brunswick Emergency Organization

3. Access to the plant area involved would be restricted.
4. All plant personnel directly involved would be monitored for contamination.
5. A determination would be made of the potential for an off-site release.
6. The BSEP Plant Emergency Procedures would be activated if conditions so indicate.

#### 4.2.2.2 Potential Consequences Based on In-Plant Conditions

If a situation entails a release of radioactive materials into the environment, the magnitude of the release and projected exposures (and thus the emergency class) could be determined directly from effluent monitor readings.

However, if the initiating event is a plant condition that threatens to involve, but has not yet involved, a release of radioactive material, the assessment involves a greater degree of judgment. There are two basic situations of this type: one where radioactivity has been released from the core and one where core damage has not occurred but is predicted. The latter situation involves the greater degree of judgment, but it also entails no present public hazard. Even when no release of radioactive material is predicted to occur, if a General Emergency is declared, consideration will be given to making protective action recommendations to off-site authorities responsible for implementing protective measures within the plume exposure pathway emergency planning zone.

If releases from the core have taken place, the potential environmental impact and possible off-site exposures can be estimated by use of pre-established methods which relate projected releases to radiation levels in the primary coolant system, in the containment, or in various locations in the plant. The source term for the situation where core damage has not yet occurred has to be inferred from prior safety analyses or from predicted core damage which in turn can be related to fission product release estimates. These assessments can be used to help determine the need for, and extent of, any precautionary protective measures.

#### 4.2.2.3 Post-Accident Sampling and Analysis of Reactor and Containment

To aid in the assessment of core damage, capabilities have been provided to permit sampling for chemical and radioanalysis under a wide range of accident conditions. The collection and analysis of samples can be performed without incurring radiation exposures to individuals in excess of 10CFR20.101 limits.

The procedures for obtaining samples of gases and liquids during normal operation (such as a sample of primary coolant) can also be

safely used during a wide spectrum of accident conditions. However, there are situations involving gross damage to the core where access to the sampling stations and handling of samples may be limited due to high radiation levels. Procedures have been developed and equipment has been installed at the sample panels to minimize the time required to obtain samples and to reduce the radiation levels during transport and analysis of samples. Beyond these measures, post-accident sampling stations are located in the breezeway on the 20-foot level. This permits the collection of samples even if access to the Reactor Building is lost. This station can be used to safely withdraw samples of reactor coolant from the recirculation instrument racks in parallel with the jet pump flow indicator and to withdraw samples of water in the torus.

In addition to the liquid samples, area-type monitors utilizing ion chamber detectors are available to monitor radiation levels in the drywell. These monitors have a range of up to  $10^7$  R/hr. The range of monitoring equipment in various locations of the plant has also been extended (e.g., high range noble gas vent monitor and improved procedures for iodine analyses). This information can be used, together with the analyses of primary coolant system contamination levels, to develop an assessment of the types and quantities of various materials that have been released.

#### 4.2.3 Dose Projection and Meteorological Systems

Once the source term is estimated, exposures to on-site and off-site individuals can be estimated as described in BSEP PEP Section 3.4. The technical basis for the methodology for performing dose projection is described in Appendix F. Prior to receipt of information from the emergency radiation monitoring teams, exposure rates at various locations on site and off site will be estimated from the airborne concentrations of radioactive material as calculated from plant radiation monitors and the atmospheric dispersion characteristics.

Meteorological measurements, specifically the change in temperature with height, wind velocity, and wind direction, are used to determine the atmospheric dispersion conditions. Normally, the plant computer will provide an immediate readout of the stability condition, but alternate methods are available. Rapid evaluation of potential radiation levels of any downwind area can be made through the use of precalculated dispersion factors and the calculated release rate of airborne radioactive material from the plant.

The Brunswick plant has an on-site meteorological station with a backup source of additional meteorological data to provide sufficient information for utilization in a dose assessment capability, to meet the optional alternative schedule of Annex 1 to Appendix 2 of NUREG-0654.

initial environmental surveys involve simple-to-perform measurements so that the dose assessments based on plant parameters can be quickly confirmed or modified.

Subsequent environmental monitoring efforts will be aimed at further defining the off-site consequences including estimates of total population exposure and instituting an expanded program to enable prompt assessments of any subsequent releases from the plant. The agencies identified in Section 3.4 that are to assist in this expanded radiological monitoring effort will coordinate their efforts with those of the CP&L Environmental Monitoring Team.

Field monitoring equipment will have at least the capability to detect and measure radioiodine in the vicinity of the plant site as low as  $5 \times 10^{-8} \mu\text{Ci}/\text{cm}^3$ . An individual exposed to this concentration for a period of one hour would receive an exposure of about 0.1 Rem or less, a value well below PAG levels. A standard high volume air sampler can collect about  $1/2 \mu\text{Ci}$  of  $\text{I-131}$  in a charcoal cartridge in 10 minutes at a concentration of  $5 \times 10^{-8} \mu\text{Ci}/\text{cm}^3$ . One-half  $\mu\text{Ci}$  can easily be measured by hand held survey meters, a simple test that can serve as an initial check of projected releases based on plant data and can confirm that significant quantities of elemental iodine have been released (the chemical form that would pose a health hazard). More detailed measurements (e.g., Sodium Iodide scintillation counters) can be quickly brought into service to provide the longer term higher capabilities to detect and measure very low levels of contamination in the environment, as would be planned for subsequent radiation monitoring efforts.

At least two environmental monitoring teams will initially be activated from the plant staff upon activation of the TSC. Additional teams from the Harris E&E Center can be called upon for support and require approximately four hours for deployment.

#### 4.3 CORRECTIVE ACTIONS

Corrective actions that may be taken to mitigate the circumstances of various levels and types of emergencies identified in this plan are given in the plant Operating Manual. Generally, corrective actions include any actions that are taken to repair damaged equipment, to install emergency structures, systems, and components, or to reduce the releases of radioactivity.

In order to maintain proficiency in implementing the various procedures and plans, there are training and retraining programs which in some cases are augmented by periodic drills and exercises. A description of this specialized training is given in Section 6.1.1.

#### 4.4 PROTECTIVE ACTIONS

Protective actions are defined for each emergency class. Protective actions must take into consideration the potential risks of implementing such measures versus the reduction of the radiological risk achieved by their use. Analyses of the spectrum of emergencies show that only those in the General Emergency class are expected to have consequences in excess of one Rem whole body, but events in this category generally progress so slowly that some hours are available to alert and take measures to protect the public.

Protective action guides for whole body and thyroid exposures to airborne radioactive material and protective action guides for exposure to the public via the food pathway are described in BSEP PEP-02.5, "General Emergency." Protective actions planned for on-site personnel are described in Section 4.4.2. Protective actions for the off-site population-at-risk are the responsibility of state and local agencies; however, representative actions at various dose levels are described in Section 4.4.6 and Section 4.4.7.

##### 4.4.1 Criteria For Requesting Outside Assistance

Notification of off-site agencies will take place when EALs are exceeded (see Section 3.5); and for situations where major releases are occurring, or will soon occur, it will be recommended that the process of public notification begin. Any incident that is projected to result in radiation doses to the general public in excess of the Protective action guides listed in BSEP PEP-02.5, "General Emergency," requires the Site Emergency Coordinator (Emergency Response Manager after the EOF is activated) to declare a General Emergency and request assistance from various outside agencies in taking protective measures on behalf of the public.

##### 4.4.2 Protective Action - On Site

###### 4.4.2.1 Warning and Notification

The on-site PA system and appropriate alarms will be used to alert/ warn and notify on-site personnel of an emergency and necessary protective actions as described in BSEP PEP-02.2, "Unusual Event"; BSEP PEP-02.3, "Alert"; BSEP PEP-02.4, "Site Emergency"; and BSEP PEP-02.5, "General Emergency." Such warning and notification, to be accomplished within 45 minutes, will include persons at the Visitors Center and the recreation area. Outside the plant protected area, warning will be accomplished as described in Section 4.4.6 for the public.



#### 4.4.2.2 Evacuation & Personnel Accountability

For emergencies requiring protective actions in accordance with BSEP Plant Emergency Procedure Section 3.8, personnel will proceed by the safest, most direct routes to the assembly location as directed by the Shift Operating Supervisor.

- a. Shift operating personnel will assemble in the Control Room.
- b. All in-plant personnel not specifically involved in responding to the emergency will assemble as directed.
- c. Construction personnel shall assemble just outside the gate and the plant protected area on the southeast side of the plant site.
- d. All visitors will report to the Evacuation Assembly Area Leader in the parking lot.

A personnel accountability check will be carried out at the assembly locations in accordance with BSEP PEP-03.8.2, "Personnel Accountability," and all personnel will return dosimeters and be checked for radioactive contamination. Contaminated and/or injured individuals will be directed to an area set aside for decontamination and/or medical aid as described in BSEP PEP-03.9.2, "First Aid and Medical Care," and BSEP PEP-03.9.3, "Transporting of Contaminated Injured Personnel."

Search for missing persons and rescue will be performed as described in BSEP PEP-03.9.6, "Search and Rescue."

On-site personnel will evacuate the area when directed using transportation that was employed to arrive at the site. Personnel without transportation will be identified during the assembly phase and provided transportation.

The construction access road and the main plant access road will be used as appropriate to depart from the site as advised, and evacuation from the 10-mile EPZ will be by way of appropriate evacuation routes identified in Figures 1.1-1, 1.1-2 and 4.4-1.

#### 4.4.3 Control of Personnel Radiation Exposures

Although an emergency situation transcends the normal requirements for limiting exposures to ionizing radiation, guideline levels are established in BSEP PEP-03.3.5, "Emergency Radiation Work Permits," for exposures that may be acceptable in emergencies. The maximum whole body dose received by any worker should not exceed established regulatory limits. Every reasonable effort will be used to ensure that an emergency is handled in such a manner that no worker exceeds these limits.



When recommended by expert medical opinion, the administration of radioprotective drugs such as potassium iodide (KI) to CP&L personnel may also be useful in mitigating the consequences of inhalation of radioactive materials such as radioiodines during an emergency.

Procedures for the administration of radioprotective drugs to CP&L and vendor employees are described in BSEP PEP-03.8.3, "Administration of Radioprotective Drugs."

Decision-making is based on conditions at the time of an emergency and should always consider the probable effects of an exposure prior to allowing any individual to be exposed to radiation levels exceeding the established occupational limits. The probable high radiation exposure effects are:

1. Up to 50 Rem in 1 day - no physiological changes are likely to be observed.
2. 50 to 100 Rem - no impairment likely but some physiological changes, including possible temporary blood changes, may occur. Medical observations would be required after exposure.
3. 100 to 300 Rem - some physical impairment possible. Some lethal exposures possible.

The following subsections describe the criteria to be considered for life-saving and facility protection actions.

#### NOTE

The following guidelines - Lifesaving Actions and Exposures During Repair/Reentry Efforts - apply to the removal of injured persons if the saving of life is possible, or entry to prevent conditions that, if left uncorrected, could lead to damage or releases that would probably injure numbers of people on or off site.

#### 4.4.3.1 Lifesaving Actions

In emergency situations that require personnel to search for and remove injured persons or entry to prevent conditions that would probably injure numbers of people, a planned dose shall not exceed 100 Rem to the whole body and a planned additional dose of up to 200 Rem (i.e., a total of 300 Rem) to the hands, forearms, feet, and ankles. The following additional criteria should be considered:

1. Rescue personnel should be volunteers or professional rescue personnel (e.g., fire fighters or first-aid and rescue personnel who volunteer by choice of employment.)

2. Rescue personnel should be broadly familiar with the probable consequence of exposure.
3. Women capable of reproduction should not take part in these actions.
4. Other things being equal, volunteers above the age of 45 should be selected whenever possible for the purpose of avoiding unnecessary genetic effects.
5. Internal exposure should be minimized by the use of the most appropriate respiratory protection, and contamination should be controlled by the use of protective clothing when practical.
6. Exposures under these conditions shall be limited to once in a lifetime.
7. Persons receiving exposures as indicated above should avoid procreation for a period up to a few months.

#### 4.4.3.2 Exposures During Repair/Reentry Efforts

There may be situations where saving of life is not at issue but where it is necessary to enter a hazardous area to protect valuable installations or to make the facility more secure against events which could lead to radioactivity releases (e.g., entry of damage repair parties who are to repair valve leaks or add iodine fixing chemicals to spilled liquids). In such instances, planned dose to emergency workers should not exceed 25 Rem to the whole body, 125 Rem to the thyroid, or 100 Rem to the extremities. The following additional criteria should also be considered:

1. Persons performing the planned actions should be volunteers broadly familiar with exposure consequences.
2. Women capable of reproduction should not take part in these actions.
3. Internal exposures shall be minimized by respiratory protection and contamination controlled by the use of protective clothing.
4. If the retrospective dose from these actions is a substantial fraction of the prospective limits, the actions shall be limited to once in a lifetime.
5. Entry into high radiation areas shall not be permitted unless instrumentation capable of reading radiation levels of up to 1,000 Rem/hour (gamma) is provided.

Contaminated clothing or personal articles will be decontaminated. Drinking water and food supplies will be monitored and, during an emergency, permitted only in specified clean areas. Contamination on personnel will be removed in accordance with established E&RC procedures. If normal decontamination procedures do not reduce contamination to acceptable levels, the case will be referred to a competent medical authority.

#### 4.4.4.2 Equipment and Vehicles

Equipment and tools will be released for use outside of the contaminated areas only if loose surface radioactive contamination is within acceptable limits. All tools and items of equipment must be checked for contamination before being taken from a known contaminated area. If the item is found to be contaminated and decontamination is not practical, the item must remain in that area. In the event of a site evacuation, all vehicles will be surveyed for contamination before they are allowed to leave the plant site. Contaminated vehicles will be driven to a roped-off area and decontaminated before being released.

#### 4.4.5 Treatment of Injured and Contaminated Persons

Personnel showers and chemical decontamination agents are available on site and, except in cases of life-threatening injury, established decontamination procedures will be employed on site prior to medical treatment. Decontamination showers and supplies are provided adjacent to the controlled area first-aid room with additional personnel decontamination equipment located in the first-aid room. All shower and sink drains in the controlled area are routed to the miscellaneous waste processing system where the liquid is processed and monitored prior to discharge.

Ambulance service is available. It is anticipated, however, that in cases not involving severe injury, one of the plant vehicles would normally be used to transport individuals to the hospital, especially if radioactive contamination is present. Private automobiles of on-duty personnel could also be used.

Arrangements and facilities for medical treatment of injured plant personnel are described in detail in Appendix E - Medical Treatment and Assistance and in BSEP PEP-03.9.2, "First Aid and Medical Care." Depending on the nature and severity of injury, injured personnel may be treated in-plant by individuals trained in first aid, treated in-plant by a physician, or transported to the hospital for treatment (see BSEP PEP-03.9.3, "Transporting of Contaminated Injured Personnel").

Sirens will not be sited in the Sunny Point Army Terminal. Brunswick County will notify the terminal which will alert its personnel using on-site warning methods.

Sirens will not be sited in areas of no population. Large areas of Brunswick County consists of swamps and forests with no population. These areas include such tracks as the Orton Plantation, the western section of Boiling Springs Lakes, and the area south of Route 211. These tracks are often owned by a few local individuals or lumber companies. Based on land use history, they show little promise of development. However, the warning system will be reviewed annually and upgraded when conditions warrant.

Activation of the sirens will be accomplished from the Sheriff's Office of Brunswick and New Hanover Counties for warning of people in the respective counties. The sirens in each county are independently controlled by radio. The U.S. Coast Guard will perform the warning of people on bodies of water under their jurisdiction.

The population at risk in the 10-mile Emergency Planning Zone (EPZ) is subdivided into three general categories: resident (permanent) population, transient population, and special facility population as described in "Evacuation Time Estimates - Brunswick Steam Electric Plant," July, 1981, prepared by CP&L and NUTECH. The total resident population within the 10-mile EPZ is approximately 11,300. During the summer months, June through August, the daytime population of the EPZ is approximately 58,000 (see Figure 1.1-6). The population is concentrated along the coast and a relatively few inland roads.

#### 4.4.7 Protective Actions - Off Site/Public

##### 4.4.7.1 Public Education and Information

Occupants including emergency services organizations in the plume exposure pathway Emergency Planning Zone (EPZ) will be provided information prepared by Carolina Power & Light Company in conjunction with the state and county agencies on how the emergency plans provide for notification to them and how they can expect to be advised of what to do in an emergency. This will be accomplished by yearly



dissemination of basic emergency planning information and a description of the warning systems to the occupants including the transient population of the plume exposure pathway EPZ using brochures, radio, TV, newspapers, the CP&L speakers bureau, etc. The procedure for carrying out the public information and education program is further described in Section 6.1.4, in BSEP PEP-04.5, "Public Education and Information," and in the North Carolina Emergency Response Plan in Support of BSEP.

During an actual emergency, provisions will be established through the Plant Media Center and the Corporate Media Center to make available and distribute information to the news media. The Corporate Media Center will also implement provisions for a number of telephones which members of the public, who hear rumors of various types, can call for factual information.

#### 4.4.7.2 General

For emergencies requiring protective actions for the general public in designated off-site areas, state agencies will determine the advisability of any necessary evacuation or sheltering. A decision tree for determining whether to shelter or evacuate is given in Figure 4.4-2. Local agencies will conduct the protective actions as warranted. Assembly points would vary depending on the severity of the incident and on the prevailing weather conditions. To assist in this effort, CP&L will provide up-to-date assessments of the condition of the plant and of the quantity and rate of release of radioactivity. CP&L will also assist by performing dose assessments which can be compared to preplanned protective action thresholds.

The protective actions that CP&L recommend to the state will be based upon current meteorology data such as wind direction, speed and stability class, and other factors.

Releases affecting off-site areas may not be of the magnitude requiring evacuation, but other public protection measures may be taken at the discretion of the appropriate agencies. These measures may include radio broadcasts warning people to avoid designated areas, to remain indoors, close windows, and avoid consuming uncovered food or drink.

Detailed procedures for public protective action are contained in the North Carolina Emergency Response Plan in Support of BSEP.

#### 4.4.7.3 Evacuation

In the event that evacuation of the 10-mile EPZ is required, the evacuation routes shown in Figure 1.1-2 and Figure 4.4-1 will be used by on-site and off-site personnel.

Equipment used to analyze the type and amount of radioactivity in filters, smears, etc., is located adjacent to the chemistry lab. This includes a multichannel analyzer (Ge-Li) used to determine the isotopic content in a sample, a liquid scintillation counter for tritium analyses, and gas proportional counter for gross alpha, and gross beta activity.

Much of this equipment is rack mounted; some is readily portable. Additional facilities for counting and analyses of Brunswick samples can be provided by laboratory facilities at the Shearon Harris Energy and Environmental Center (SHEEC) located near New Hill, North Carolina, and by the H. B. Robinson Plant. A mobile environmental monitoring laboratory (van) located at the SHEEC can be dispatched to the BSEP to measure environmental radioactivity and also act as a backup facility in the event the plant's counting rooms and labs become unusable during an emergency. The equipment contained in the van allows a complete assessment of environmental radioactivity in areas surrounding the plant on a completely independent basis as described in the Corporate Emergency Plan.

As described in the State of North Carolina Radiological Emergency Response Plan, the Radiation Protection Section maintains a mobile radiological laboratory.

The NRC mobile laboratory may be made available for site and general emergencies. Parking space for the mobile laboratory is reserved between the Maintenance Building and the Fire Equipment Storage Building. A 120 Vac receptacle box mounted on the northwest exterior wall of the Fire Equipment Storage Building has been reserved for the mobile laboratory. Panel A in the Fire Equipment Storage Building is the source for this receptacle box. The Radiological Control Director shall coordinate setting up of the mobile laboratory.

#### 5.7.7 Dose Projection

The magnitude of releases of radioactive material can be determined from effluent and process monitors based on procedures contained in BSEP PEP Section 3.4. Additionally, an independent confirmation of the magnitude of a release can be obtained by environmental monitoring as described in BSEP PEP Section 3.5. Given a source term, or the magnitude and rate of release to the environment, and meteorological data previously described, the Control Room will make the initial dose projections and is capable of performing this function on a 24-hour-per-day basis. The Radiological Control Director described in Section 3 is responsible to the Site Emergency Coordinator for determining initial dose projections from readily available data. BSEP PEP-03.4.5 and PEP-03.4.7, "Automation of Dose Projection Procedures," describe computer programs which automate dose projection calculations when used in conjunction with the BSEP meteorological systems.

#### 5.8 FIRE DETECTION

The Fire Detection System is designed to quickly detect visible or invisible smoke (or other products of combustion) and/or heat in designated areas of the plant.

The Fire Detection System consists primarily of fire detectors, control panel units, and annunciator panels. A fire signal initiated by a detector flows through a control panel unit to an annunciator panel. The control panel unit is located in the same building as the detector. The annunciator panel is located in the Control Room.

The types and number of detectors have been selected in accordance with the combustible materials and electrical equipment present in the area and the physical surroundings of each area. Ionization detectors sense the presence of products of combustion before they are visible in the form of smoke. Thermal detectors are sensitive to both temperature and the rate of rise of increasing temperature. Table 1.2.1 of SD-42 provides a description of detector types, numbers, and locations.

#### 5.9 PROTECTIVE FACILITIES AND EQUIPMENT

Table 5.9-1 lists emergency equipment that is typically available for the various Brunswick emergency facilities.

Complete personnel decontamination facilities are included in the change room area of the Service Building. These facilities include two decontamination showers. Alternate means for decontamination are also available.

#### 5.10 FIRST AID AND MEDICAL FACILITIES

A first aid room is located in the Service Building. First aid kits and supplies are also placed at various locations throughout the plant.

Off-site medical facilities which have agreed to accept personnel are described in Appendix E, Medical Treatment and Assistance.

#### 5.11 DAMAGE CONTROL EQUIPMENT AND SUPPLIES

In the event of an emergency, certain immediate repairs may be necessary to minimize the further release of radioactivity and also insure the protection of plant equipment. Damage control equipment and supplies that would be used to effect repair would depend on the nature of the repairs to be performed.

Damage control equipment and supplies are located in the tool room and the maintenance shops.

#### 5.12 OFF-SITE ENVIRONMENTAL MONITORING EQUIPMENT AND SUPPLIES

In the event of an emergency, the plant has the capability to deploy two off-site environmental monitoring teams as described in BSEP PEP-02.6.4 and PEP-02.6.6. Two environmental monitoring kits with the necessary equipment and supplies for off-site radiological monitoring are designated for use in the event of an emergency. Transportation for off-site environmental monitoring teams will be supplied by plant environmental vehicles and other Company trucks as available or private autos at the site.

TABLE 5.9-1

## TYPICAL EMERGENCY SUPPLIES AVAILABLE FOR EMERGENCY FACILITIES

	ON-SITE FACILITIES				
	Control Room Center	Tech. Support Center	Plant* Media Center	Oper. Support Center	EOF
A supply of food and water adequate for 30 days	X				
Protective Clothing	X	X	X	X	
High and low range portable radiation survey instruments	X	X	X	X	X
Air sampling equipment	X	X	X	X	
Emergency personnel monitoring equipment such as high and low range self-reading dosimeters and TLDs	X	X	X	X	
Area maps	X	X	X		X
Miscellaneous contamination control supplies such as signs, tags, rope, tape, various forms, etc.	X		X	X	
First Aid Kit	X	X	X	X	X
Portable Emergency Communication Equipment	X	X			X
Full face respirators	X	X	X	X	
Self-contained breathing equipment	X	X		X	
Megaphone				X**	
Decontamination supplies				X	
Copy of appropriate implementing procedures	X	X	X	X	X

\*Supplies located in Visitors Center.

\*\*To be obtained from Security.



#### 6.2.2 Independent Audit and Review

In addition to the reviews conducted at the plant, an independent audit of the Plan will be conducted every year by the Corporate Quality Assurance Department. Written reports of the findings of these audits and reviews will be provided to Corporate Management. Each report will specifically address the adequacy of interfaces with state and local governments, of drills and exercises, and of emergency response capabilities and procedures. The reports will be retained for five years. Corrective actions deemed necessary from the audit will be implemented similarly to those required by the annual review (see Section 6.2.1).

#### 6.2.3 Off-site Agreements and Plans

Emergency response plans and agreements with supporting organizations are reviewed and updated by the cognizant organization at least every two years and incorporated in the annual revision.

### 6.3 MAINTENANCE AND INVENTORY OF EMERGENCY EQUIPMENT AND SUPPLIES

To ensure that equipment and supplies are maintained in a readiness state, periodic maintenance and inventories are performed as described in the following sections.

#### 6.3.1 Emergency Equipment and Supplies

A listing of emergency equipment and supplies to be inventoried is included in E&RC procedures. This listing provides information on location and availability of emergency equipment and supplies.

An inventory of emergency equipment and supplies is held in accordance with existing E&RC procedures. During this inventory, radiation monitoring equipment is checked to verify that required calibration and location are in accordance with the inventory lists. Respiratory protection equipment, maintained for emergency purposes, is also inspected and inventoried in accordance with E&RC procedures.

#### 6.3.2 Medical Equipment and Supplies

At least twice each year and immediately after use in an emergency, the contents of emergency medical equipment and supplies located in the First Aid Room is to be inventoried, inspected, replaced, replenished and/or resterilized as necessary. Company personnel inspect and inventory emergency medical supplies required to support a medical emergency at the plant, and the plant personnel use the checklist in the applicable procedures to inspect other emergency items located in the First Aid Room.

BRUNSWICK STEAM ELECTRIC PLANT  
RADIOLOGICAL EMERGENCY PLAN

7.0 RECOVERY

7.1 GENERAL

Once the Site Emergency Coordinator has declared that the emergency condition has passed, steps will be taken to recover from the incident. The Emergency Response Manager will advise appropriate organizations that recovery operations are initiated and that the Recovery Organization as shown in Figure 7.2.1 will be assembled in the EOF. All recovery actions will be preplanned in order to minimize radiation exposure or other hazards to recovery personnel. Recovery operations are classified as described in Section 7.3.

The overall goals of the recovery effort are to assess the in-plant consequences of the emergency and perform cleanup and repair operations. This effort includes marshaling of the Corporate resources and interfacing with outside agencies.

7.2 RECOVERY ORGANIZATION

The recovery organization consists of the Recovery Manager, managers of support functions who are responsible to the Recovery Manager, and supporting personnel. This organization may be modified during the recovery process to better respond to the conditions at the plant. Recovery activities will be directed from the Recovery Center.

The Recovery Center at Brunswick will be established in the existing Training Building. Provisions have been made for expansion into construction buildings and mobile facilities, if required to support an extensive recovery effort.

Activation of the recovery organization will be initiated by the Vice President - Brunswick Nuclear Project (or his alternate) after consultation with the Plant General Manager (or his alternate). The recovery organization will then be established at Brunswick to provide for recovery of the facility. The recovery organization may begin to develop plans for recovery of the facility while the emergency is still in progress. However, these efforts will not be permitted to interfere with or detract from the efforts to control the emergency situation. During the emergency phases of the incident, the recovery organization resources will be available to assist and provide support for the Site Emergency Coordinator. A block diagram of the recovery organization is presented in Figure 7.2-1.

Table 7.2-1 indicates the personnel designated to assume responsibility of each of the activities shown in the block diagram.

APPENDIX ABRUNSWICK COMMUNICATIONS SYSTEMA.0 INTRODUCTION

Communications systems are designed to facilitate emergency communications within the Brunswick Plant and between Brunswick and emergency facilities. Redundant means of communication are provided to locations which provide a vital emergency response role.

A.1 PLANT COMMUNICATION SYSTEMSA.1.1 Public Address System

The Brunswick Plant public address system provides paging and party line communications between stations located throughout the plant. Inside and outside type wall and desk-mounted stations are used to communicate between roaming personnel and fixed work locations. Plant-wide instructions are issued using the paging feature. This system is powered from the plant uninterruptible power supply which employs battery reserve as well as diesel generator emergency supply.

A.1.2 PBX Telephone System

The Brunswick Plant PBX telephone system provides communication capability between telephone stations located within the plant by dialing the three-digit telephone station code. The PBX telephone system also provides for outside communications as discussed in Sections A.2.1 and A.2.2.

A.1.3 Key System Telephones

In addition to the PBX telephone system, key systems which supply communications to multibutton telephones are provided at select locations within the plant. Some of these key systems are equipped with an intercom feature which allows direct communications between stations served by the same key system. This intercom feature operates independently of the PBX system.

A.1.4 Sound Powered Telephone System

The sound powered telephone system is a communications system which uses the mechanical energy in the human voice to generate electrical pulses to power the system. It requires no outside source of power and is therefore very reliable. The system consists of phone jacks, wiring, and the sound-powered handsets. There is no separation in the circuits. A handset plugged into a jack is connected to all other handsets plugged into that circuit. Additional temporary circuits may be easily set up by attaching phone jacks to any unused

Southern Bell provides primary and secondary power for their lines at the Central Office.

#### A.2.3 Dedicated Telephone System to Load Dispatcher

This system provides direct links between the Control Room and the load dispatcher. Transmission facilities are microwave radio. These lines appear on several phones in the Control Room and are selected by pushing the appropriate button on a multibutton phone. The lines are automatically rung at the load dispatcher identifying Brunswick as the caller. Primary and secondary power is supplied at both ends.

#### A.2.4 Corporate Emergency Communications Network

The Corporate Emergency Communications Network is a system, separate from other communications systems, which provides back-up dedicated telephone and radio facilities between emergency response centers. The purpose of these facilities is to ensure priority communications at any time from Brunswick Plant to emergency response personnel at the federal, state, local governments, and other Carolina Power & Light facilities, as well as United Engineers and Constructors and General Electric Company.

#### A.2.5 Plant Security

The plant security radio control station, which is a part of the system discussed in Section A.1.7, provides for radio communications to the Brunswick County Sheriff's Office. Primary and secondary power is supplied.

#### A.2.6 Load Dispatcher Radio Communications

This system allows the load dispatcher to communicate with the Brunswick Control Room and mobile/portable units in the plant vicinity. The load dispatcher can also communicate with the Brunswick Plant via microwave facilities and a repeater. Primary and secondary power sources are located throughout this system.

#### A.2.7 Corporate Informational Data Communications

Large central computers are located at the Corporate headquarters. Smaller special purpose computers are located at other Corporate facilities, including the Brunswick Plant. The communications link between the Brunswick Plant and Corporate headquarters allows the interchange, storage, and processing of information.

#### A.2.8 NRC Emergency Notification System

The NRC operates a dedicated telephone system which allows direct telephone communications from all nuclear power plants to NRC regional and national offices. Telephones connected to this network are located in the Brunswick Control Room, Technical Support Center, and Emergency Operations Facility. Primary and secondary sources of power are supplied.



APPENDIX E  
MEDICAL TREATMENT AND ASSISTANCE

E.1. INTRODUCTION

The Medical Treatment and Assistance Plan provides for several levels of treatment based on the severity of injury and degree of radioactive contamination involved, if any.

The first level of assistance will be given on site in the plant First Aid Room. In this facility, initial evaluation of the severity of the injury will be made by first-aid and medical personnel, and emergency treatment started. In many cases, it may be possible to provide complete treatment at this location.

Concomitantly, the degree of radiation exposure and/or contamination will be assessed by radiation safety personnel and decontamination begun. All injuries occurring in a contaminated area will be considered as contaminated until monitored and cleared.

If the severity of the injury requires more extensive or prolonged treatment, the patient can be transported to the second level of assistance located at the Doshier Memorial Hospital where special facilities for treatment of contaminated patients have been provided (see Section E.2.2).

Transfer from any level of assistance to the next higher level will be effected only after medical evaluation (unless the urgency of the patient's condition requires immediate action) and will be under the control of the attending physician or his alternate senior physician.

E.2. MEDICAL EMERGENCIES

E.2.1 ON-SITE FIRST AID FACILITIES

It is anticipated that contaminated personnel will not leave the facility for medical treatment except for cases thought to require immediate hospitalization. Emergency medical treatment of contaminated personnel will be handled at the plant first aid room by medical personnel called to the site. This includes all injuries thought not to require immediate hospitalization.

E.2.2 HOSPITALIZATION

If emergency medical treatment can best be given at Doshier Memorial Hospital in Southport (or another facility as may be advised by a competent medical authority), the injured person may be transported to Doshier Hospital. E&RC Procedure 0610, "Emergency Medical Treatment of Contaminated Patients," will be followed to prevent the spread of radioactive contamination to off-site areas and facilities. If possible, contaminated clothing and equipment should be removed from the patient, or he should be wrapped in clean sheets or clothing to prevent contamination of the transporting personnel and vehicle.

Medical assistance is immediately available at the Southport area from two general practitioners, both of whom are on the staff of Dosher Memorial Hospital, and who have agreed to provide medical assistance for contaminated patients. Also, the U. S. Department of Energy Radiological Assistance Team will provide medical assistance, if required.

#### E.2.3 TREATMENT FACILITY

A specially designated emergency area is maintained in readiness at Dosher Memorial Hospital for CP&L's use for the treatment of contaminated patients. Although this area will be utilized by the hospital when not required by CP&L, it will be made immediately available to CP&L when required. Equipment is available in the hospital for the emergency treatment of patients. With the facilities and equipment available, extensive decontamination and treatment of an injured patient could be performed, including surgical treatment that may be required.

#### E.2.4 ON-SITE MEDICAL SERVICES

Agreement has been reached with doctors in Southport who will provide medical services at the plant site when required. Personnel who are contaminated and who require medical treatment may be treated by a doctor in the plant's first aid room.

#### E.2.5 EMERGENCY EQUIPMENT

An emergency kit is maintained at Dosher Memorial Hospital containing supplies and equipment for personnel monitoring and the control of radioactive contamination. This kit contains the following:

- a. Radiation monitoring instruments, one low-level instrument for determining contamination levels, and one intermediate-range instrument for determining dose rates.
- b. Personnel monitoring equipment such as TLDs and self-reading dosimeters.
- c. Decontamination equipment and supplies for both personnel and facility.
- d. Contamination control equipment and supplies such as protective clothing, signs, ropes, tags, plastic bags, etc.

APPENDIX G

PROCEDURES REQUIRED TO IMPLEMENT THE  
SECTIONS OF THE PLAN

<u>PLAN</u>	<u>PROCEDURES</u>
Section 1: Introduction	N/A
Section 2: Emergency Classifications	PEP-02.1 Initial Emergency Actions
	PEP-02.2 Emergency Control - Unusual Event
	PEP-02.3 Emergency Control - Alert
	PEP-02.4 Emergency Control - Site Emergency
	PEP-02.5 Emergency Control - General Emergency
Section 3: Emergency Response Organization	PEP-02.6.1 Plant Operations Director
	PEP-02.6.2 Emergency Repair Director
	PEP-02.6.3 Logistics Support Director
	PEP-02.6.4 Radiological Control Director
	PEP-02.6.5 Representative to the SERT
	PEP-02.6.6 Environmental Monitoring Team Leader
	PEP-02.6.7 Plant Monitoring Team
	PEP-02.6.8 Personnel Protection and Decontamination Team Leader
	PEP-02.6.10 Emergency Security Team Leader
	PEP-02.6.11 Damage Control Team Leader
	PEP-02.6.12 Operational Support Center/Evacuation Assembly Area Leader
	PEP-02.6.14 Site Communications System Coordinator

APPENDIX G (cont'd)

PLAN

Section 3: (cont'd)

PROCEDURES

PEP-02.6.16      Emergency Response Manager

PEP-02.6.17      Administrative and Logistics  
Manager

PEP-02.6.18      Technical Analysis Manager

PEP-02.6.19      Radiological Control Manager

PEP-02.6.20      Dose Projection Coordinator

PEP-02.6.21      Emergency Communicator

PEP-02.6.22      Technical Assessment Director

PEP-02.6.23      Assistant to the Emergency  
Response Manager

PEP-02.6.24      Plant Sampling and Analysis Team  
Leader

PEP-02.6.25      Radiological Control Communicator

PEP-02.2          Emergency Control - Unusual Event

PEP-02.3          Emergency Control - Alert

PEP-02.4          Emergency Control - Site  
Emergency

PEP-02.5          Emergency Control - General  
Emergency

Section 4: Emergency  
Measures

PEP-02.1          Initial Emergency Actions

PEP-02.2          Emergency Control - Unusual Event

PEP-02.3          Emergency Control - Alert

PEP-02.4          Emergency Control - Site  
Emergency

PEP-02.5          Emergency Control - General  
Emergency



APPENDIX G (cont'd)

PLAN

Section 4: (cont'd)

PROCEDURES

PEP-03.1            Communications Procedures

PEP-03.3.5        Emergency Radiation Work Permits

PEP-03.4.5        Automation of Dose Assessment

PEP-03.4.7        Automation of Dose Assessment  
                    Using IBM PC

PEP-03.7.4        Monitoring and Surveys for  
                    Personnel Habitability

PEP-03.8.2        Personnel Accountability

PEP-03.9.2        First Aid and Medical Care

PEP-03.9.3        Transporting of Contaminated  
                    Injured Personnel

PEP-03.9.6        Search and Rescue

PEP-03.8.3        Administration of Radioprotective  
                    Drugs

Section 5: Emergency  
            Facilities and  
            Equipment

PEP-04.5           Public Education and Information

PEP-03.4.1        Initial Dose Projections

PEP-03.4.2        Whole Body Dose Projections

PEP-03.4.3        Thyroid Dose Projections

PEP-03.4.5        Automation of Dose Assessment

PEP-03.4.7        Automation of Dose Assessment  
                    Using IBM PC

PEP-03.5.1        Confirmation of Initial Dose  
                    Projections

PEP-03.5.2        Expanded Environmental Monitoring

PEP-03.5.3        Plume Tracking by Actual  
                    Measurement

APPENDIX G (cont'd)

PLAN

PROCEDURES

Section 4: (cont'd)	PEP-04.2	Emergency Facilities and Equipment
Section 6: Maintaining Emergency Preparedness	PEP-04.1	Record Keeping and Documentation
	PEP-04.2	Emergency Facilities and Equipment
	PEP-04.3	Performance of Training, Exercises, and Drills
	PEP-04.5	Public Education and Information
Section 7: Recovery	PEP-02.6.21	Emergency Communicator