# Attachment 1

## 10 CFR 50.54(q)(5) Procedure Change Summary Analysis

# Attachment 1

## 10 CFR 50.54(q)(5) Procedure Change Summary Analysis

### Procedures/Titles

Exelon Generation Company, LLC (Exelon) has issued the following Emergency Plan document revisions for the plants noted below:

- EP-AA-1000, Revision 30, *"Exelon Nuclear Standardized Radiological Emergency Plan"*

  Braidwood Station
  Byron Station
  Calvert Cliffs Nuclear Power Plant
  Clinton Power Station
  Dresden Nuclear Power Station
  James A. FitzPatrick Nuclear Power Plant
  LaSalle County Station
  Limerick Generating Station
  Nine Mile Point Nuclear Station
  Peach Bottom Atomic Power Station
  Quad Cities Nuclear Power Station
  R. E. Ginna Nuclear Power Station

- EP-AA-1007, Revision 34, *"Exelon Nuclear Radiological Emergency Plan Annex for Peach Bottom Atomic Power Station"*

- EP-AA-1008, Revision 31, *"Exelon Nuclear Radiological Emergency Plan Annex for Limerick Generating Station"*

- EP-AA-1011, Revision 3, *"Exelon Nuclear Radiological Emergency Plan Annex for Calvert Cliffs Station"*

- EP-AA-1013, Revision 6, *"Exelon Nuclear Radiological Emergency Plan Annex for Nine Mile Point Station"*

- EP-AA-1014, Revision 2, *"Exelon Nuclear Radiological Emergency Plan Annex for James A. FitzPatrick Station"*

**Description of Procedures**

EP-AA-1000

EP-AA-1000 is the Exelon fleet Standardized Radiological Emergency Plan (Standard Plan) that outlines the basis for the response actions that would be implemented during an emergency. The planning efforts common to the Exelon nuclear stations are encompassed within the Standard Plan. Each station also maintains an Emergency Plan Annex that contains emergency planning information and guidance unique to the Exelon stations. This includes facility geography, emergency response facility locations, and process and radiation monitoring instrumentation that provides a description of the station's emergency response capabilities, as well as any station unique commitments.

Emergency Plan Annexes (EP-AA-1007, 1008, 1011, 1013, and 1014)

The Emergency Plan Annexes contain emergency planning information and guidance unique to the specific stations. This includes facility geography, emergency response facility locations, and process and radiation monitoring instrumentation that provides a description of the station's emergency response capabilities, as well as any station unique commitments.

In conjunction with Emergency Plan Annexes, Exelon maintains a Nuclear Standardized Radiological Emergency Plan (i.e., EP-AA-1000) that outlines the basis for the response actions that would be implemented during an emergency. The planning efforts common to other Exelon nuclear stations are encompassed within the Standard Plan.

**Description of Changes**

EP-AA-1000

The following changes were incorporated in Revision 30 of EP-AA-1000 (Standard Plan):

- Modified the Standard Plan to remove references to Severe Accident Management Guidelines (SAMGs) consistent with the guidance contained in NEI 14-01, *"Emergency Response Procedures and Guidelines for Beyond Design Basis Events and Severe Accidents,"* which removes the commitment to put SAMGs in the Emergency Plan as discussed in an Exelon letter to the NRC dated December 4, 2015 (ML15338A125).

- Modified the Standard Plan to add the James A. FitzPatrick Nuclear Power Plant to the Exelon fleet.

- Modified the Standard Plan to remove the Three Mile Island Nuclear Station as it is de-linked from the fleet in preparation for shutdown in 2019.

- Modified the Table of Contents by revising the name of each site Annex to reflect the full document title.

- Modified Section II.A.1.i (on pages A-10 and A-11) to: 1) remove the acronym NMPNS (Nine Mile Point Nuclear Station), 2) reduce the use of the acronym NYSOEM (New York State Office of Emergency Management), and 3) list the New York stations in alphabetical order.

- Modified Section II.N, *Drill and Exercise Program*, to indicate that the exercise cycle is now eight (8) years because all stations have performed their first Hostile Action Drill.

- Modified the discussions regarding the location of the FitzPatrick and Nine Mile Point stations' Emergency Operations Facility (EOF) and Joint Information Center (JIC) to clarify that these stations share the same facilities.

- Modified the applicable section describing State Monitoring Capabilities because the State of New York does not track plumes.

- Modified the list of Supporting Emergency Response Plans to add the State of New York Emergency Plan.

- Modified Appendix 2, *Procedure Cross-Reference to NUREG-0654*, to remove reference to procedure EP-AA-130, *10CFR50 Appendix E, On-Shift Staffing Assessment,* as this procedure has been deleted.

- Modified Appendix 2 to remove references to procedure EP-CE-114, *Notifications,* as procedure EP-AA-114, *Notifications,* now contains the information for all stations.

- Modified Appendix 3, *List of Corporate Letters of Agreements*, to: 1) update the organization providing emergency met towers to Midwest Stations, 2) update the Corporate Letters of Agreement regarding stations covered by the agreements, and 3) added a Letter of Agreement from the Pennsylvania Department of Environmental Protection (DEP)/Bureau of Radiation Protection (BRP).

EP-AA-1007

The following changes were incorporated in Revision 34 of EP-AA-1007:

- Modified Table PBAPS 5-1, respiratory protection inventory for Unit 1 to allow either the use of Self-Contained Breathing Apparatus (SCBA) units or full-face filter respirators. This allows for the use of a respirator which still provides the user protection but is less of a physical burden. In addition, the full-face filter respirator is more readily available, easier to use, and more economic in that only a mask and disposable filter are required instead of a mask and air bottle, regulator, and refill capability for an SCBA unit.

- Modified Appendix 2, *Site-Specific Letters of Agreement*, with a new provider for ambulance response.

- Modified Appendix 2, to align the organization titles with the Letters of Agreement on file.

- One additional editorial change was made in accordance with the guidance in Regulatory Guide (RG) 1.219, *Guidance on Making Changes to Emergency Plans for Nuclear Power Reactors*, which specifies that editorial changes may be screened out and a 10 CFR 50.54(q) evaluation is not necessary. The editorial change was made to Section 5.2.1.a, *Onsite Meteorological Monitoring Program,* to eliminate the remnant phrase "W, Holtwood" from the following sentence: *These data are used to generate wind roses ~~W, Holtwood~~ and to provide estimates of airborne concentrations of gaseous effluents."*

EP-AA-1008

The following changes were incorporated in Revision 31 of EP-AA-1008:

- Modified Section 5.4.3 and Appendix 2, *Site-Specific Letters of Agreement*, with the new name for a local hospital.

- Modified Appendix 2 to remove the Letter of Agreement with the Limerick Township Police since primary responsibility for Emergency Response has been transferred to the Pennsylvania State Police.

EP-AA-1011

The following changes were incorporated in Revision 3 of EP-AA-1011:

- Removed Section 2.2, *Standing Review Committees,* which discusses the Standing Review Committee and Nuclear Safety Review Board because it is redundant and covered by information as described in the Standard Plan (EP-AA-1000).

- Removed Section 2.4, *Recovery Organization*, because it is redundant and covered by information described in the Standard Plan (EP-AA-1000) and as a result removes Figure 2-3, *Recovery Organization.*

- Modified Appendix 2, *Letters of Agreement,* to:

    - Removed the "update not required" statement for the Calvert Health Medical Center, Inc. Emergency Department Staff Letter of Support, because the letter designates any terms for renewal.

    - Removed the Memo from Site Vice President assigning Corporate Authority to Emergency Directors.

    - Added the Maryland Emergency Management Agency Letter of Agreement.

    - Added the following sentences to the header to align Appendix 2 to the legacy Exelon station annexes.

        *The following is a listing of letters of agreement and contracts specific to emergency response activities in support of Calvert Cliffs Nuclear Power Plant. Letters of agreement and contracts common to the multiple Exelon Nuclear stations are listed under Appendix 3 to the Exelon Nuclear Standardized Radiological Emergency Plan.*

- Modified Appendix 3, *Emergency Plan Implementing Procedures*, to reflect that the following procedures were previously cancelled/superseded under other 10 CFR 50.54(q) or 10 CFR 50.59 reviews.

    - ERPIP-B.2, *Offsite Survey Points*

    - ERPIP-600, *Severe Accident Management*

- ERPIP-730, *Radiation Protection Hospital Assistance*
- ERPIP-824, *Dose Assessment Reference*
- ERIPIP-903, *Monitoring Equipment and Instrumentation*

- Modified Appendix 3 to remove calculation BG&E-EP9, *Calvert Cliffs Nuclear Power Plant Accident Source Term.*

- Five (5) additional editorial changes were made per the guidance in RG 1.219 which indicates that editorial changes may be screened out and a 10 CFR 50.54(q) evaluation is not necessary. The editorial changes are as follows:
  - Modified the numbering in Table of Contents, Section 2, *Organizational Control of Emergencies*, and Appendix 1, *NUREG-0654 Evaluation Criteria Cross Reference,* due to the removal of Sections 2.2 and 2.4.
  - Modified the numbering after Section 2.2 due to its deletion.
  - Modified the numbering after Section 2.4 due to its deletion.
  - Modified the numbering in Appendix 1, due to the removal of Sections 2.2 and 2.4.
  - Modified Appendix 2 to align the title of the *Memorandum of Understanding Regarding Communications Between the Dominion Cove Point LNG Plant* and the Calvert Cliffs Nuclear Power Plant with the actual memorandum title.

EP-AA-1013

The following changes were incorporated in Revision 6 of EP-AA-1013:

- Modified Section 2.1, *Typical Nuclear Division/Station Organization,* to remove the reference to procedure GAP-POL-01, *Composition and Responsibility of the NMP Nuclear Station LLC Organization.* The procedure is cancelled as part of fleet integration.

- Modified Appendix 2, *Letters of Agreement*, to replace the Letter of Agreement reference to Dr. Derek Cooney with Upstate Emergency Medical Inc. Upstate Emergency Medical is a larger organization which employs Dr. Cooney.

- Modified Appendix 2 to remove the reference to a medical provider and local transportation providers. The station has contracts with these entities and Letters of Agreement are not required. There is no change in the services provided to the station.

- Modified Appendix 3, *Unit 1 Emergency Action Levels for Nine Mile Point Station*, to: 1) remove duplicate procedure entries; 2) replace a form with its entire procedure (EP-AA-112-500); 3) update Emergency Action Level (EAL) descriptions to reflect that the EALs are replaced by the EAL wallboards (EP-AA-1013, Addendum 3, Appendix 1 NMP Unit1 EAL Wallboard and EP-AA-1013, Addendum 4, Appendix 1 NMP Unit2 EAL Wallboard); 4) and alphabetize the entries. Attachment A contains the old and new wording of Appendix 3.

- The following editorial changes were made per the guidance in RG 1.219, which indicates that editorial changes may be screened out and such changes do not require further 10 CFR 50.54(q) evaluation. The editorial changes are as follows:

    - Modified Sections 4.8, 5.2.1, 5.2.7, and 6.1.1.f to replace the State University of New York University Hospital with the Upstate University Hospital as the hospital name has changed. Concurrently, modified Section 8.1 to remove the acronym SUNY. There is no change in the hospital, location, or support provided to the station.

    - Modified Appendix 2 to replace the Letter of Agreement reference to the State University of New York University Hospital with the Upstate University Hospital as the hospital name has changed. There is no change in location, response, or support provided to the station.

    - Modified the Annex to replace the acronym SEP (for Station or Site Emergency Plan) with the term Annex (or Emergency Plan) and removed the definition of the acronym SEP from Section 8.1 as there is no document titled SEP. The station Emergency Plan consists of the Station Annex (EP-AA-1013) and the Exelon Standard Plan (EP-AA-1000).

EP-AA-1014

The following changes were incorporated in Revision 2 of EP-AA-1014:

- Modified Appendix C, *Letters of Agreement*, to document a change in the vendor providing staff augmentation services.

- Two (2) additional editorial changes were made per the guidance in RG 1.219, which indicates that editorial changes may be screened out and a 10 CFR 50.54(q) evaluation is not necessary. The editorial changes are as follows:

    - Modified Appendix C to document that AREVA was renamed Framatome.

    - Modified Table of Contents to align with the contents of the body of EP-AA-1014. Some editorial changes were also made to some Section titles. In the conversion from the legacy FitzPatrick Emergency Plan, the Station Emergency Plan was converted to the Exelon Site Annex format. However, the Table of Contents was not completely converted. This revision completes the conversion. There are no resulting changes to the content of the Annex.

**Description of How the Changes Still Comply with Regulations**

The changes described above to the Standard Plan and station Annexes for Peach Bottom (EP-AA-1007), Limerick (EP-AA-1008), Calvert Cliffs (EP-AA-1011), Nine Mile Point (EP-AA-1013), and FitzPatrick (EP-AA-1014) are primarily administrative and editorial in nature. The changes do not alter the meaning or intent of the basis of the NRC-approved Emergency Plans for the affected sites. A review of existing regulatory commitments was also made to ensure that existing commitments continue to be met. Existing requirements and capabilities under the stations' Emergency Plans have not been deleted or reduced as a result of the changes and the stations' Emergency Plans continue to meet applicable regulatory requirements established in 10 CFR 50.47, 10 CFR 50, Appendix E and the program element guidance of NUREG-0654.

**Description of Why the Changes are Not a Reduction in Effectiveness (RIE)**

No existing emergency preparedness requirements have been deleted or minimized, and applicable regulations and commitments continue to be met. Emergency response capabilities are maintained and are not adversely impacted by the changes. Therefore, the changes described above do not constitute a reduction in effectiveness of the Emergency Plans for the affected sites.

**Attachment 2**

**EP-AA-1000, Revision 30, *"Exelon Nuclear Standardized Radiological Emergency Plan"***

**Emergency Plan Revision**

# EXELON NUCLEAR

# STANDARDIZED RADIOLOGICAL EMERGENCY PLAN

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**Part III: APPENDICES**



**LIST OF STATION ANNEXES**

The Station Annexes subject to the requirements of this plan are as follows:

**REVISION HISTORY**

| REVISION | EFFECTIVE DATE |
|---|---|
| 7 | March 1991 |
| 7A | July 15 1992 |
| 7B | September 15 1993 |
| 7C | January 1 1994 |
| 7D | June 24 1994 |
| 7E | September 22 1994 |
| 7F | January 25 1995 |
| 7G | March 17 1995 |
| 7H | September 15 1995 |
| 7I | February 16 1996 |
| 7J | March 3 1997 |
| 7K | January 5, 1998 |
| 7L | October 16, 1998 |
| 8 | May 13, 1999 |
| 9 | March 31, 2000 |
| 10 | January 8, 2001 |
| 11 | October 8, 2001 |
| 12 | March 22, 2002 |
| 13 | August 30, 2002 |
| 14 | February 20, 2003 |
| 15 | February 13, 2004 |
| 16 | December 22, 2004 |
| 17 | May 25, 2006 |
| 18 | October, 2007 |
| 19 | November 2007 |
| 20 | March, 2010 |
| 21 | June 2012 |
| 22 | November 2012 |
| 23 | December 2012 |
| 24 | June 2013 |
| 25 | June 2014 |
| 26 | December 2014 |
| 27 | June 2015 |
| 28 | August 2015 |
| 29 | January 2018 |
| 30 | May 2019 |

## Section A: Purpose

As required in the conditions set forth by the Nuclear Regulatory Commission (NRC) for the operating licenses for the Exelon Nuclear Stations, the management of Exelon recognizes its responsibility and authority to operate and maintain the nuclear power stations in such a manner as to provide for the safety of the general public. This document describes the Exelon Nuclear Plant Emergency Preparedness Program. The philosophy that guides the development and maintenance of this program is the protection of the health and safety of the general public in the communities around the nuclear power stations and the personnel who work at the plant.

The Exelon Nuclear Standardized Radiological Emergency Plan (E-Plan) establishes the concepts, evaluation and assessment criteria, and protective actions that are necessary in order to limit and mitigate the consequences of potential or actual radiological emergencies. It has been prepared to establish the procedures and practices for management control over unplanned or emergency events that may occur at an Exelon Nuclear Station. It also provides the necessary pre-arrangements, directions and organization so that all nuclear emergencies can be effectively and efficiently resolved.

The Exelon Emergency Preparedness Program consists of the E-Plan, Station Annexes, emergency plan implementing procedures, and associated program administrative documents. The Exelon E-Plan outlines the basis for response actions that would be implemented in an emergency. Planning efforts common to all Exelon Nuclear stations are encompassed within the E-Plan. This document is not intended to be used as a procedure.

The Station Annexes contain information and guidance that is unique to the station. The annexes address site-specific criteria, including:

- Emergency Action Levels (EALs) located in Addendum 3 to the Annex,
- Deviations from the E-Plan (such as station specific on-shift staffing, unique aspects of ERO augmentation, and so forth).
- Facility geography and location for a full understanding and representation of the station's emergency response capabilities.
- Plant specific facilities and equipment associated with the Emergency Preparedness Program.

The Station Annex and its Addendums become a part of the plan and is subject to the same review and audit requirements as the plan. In the areas where a Station Annex deviates from the general requirements of the E-Plan, the Station Annex shall serve as the controlling document.

Detailed E-Plan implementing procedures are maintained separately and are used to guide those responsible for implementing emergency actions.

## Section B: Background

In the context of this E-Plan, the Station Annexes, and implementing procedures, Exelon Nuclear manages the operations of the NRC licensed facilities designated as Braidwood, Byron, Calvert Cliffs, Clinton, Dresden, FitzPatrick, Ginna, LaSalle, Limerick, Nine Mile Point, Peach Bottom, and Quad Cities stations.

The primary hazard consideration at the nuclear power stations is the potential unplanned release of radioactive material resulting from an accident. The probability of such a release is considered very low due to plant design and strict operational guidelines enforced by the NRC. Notwithstanding, federal regulations require that a solid emergency preparedness program exist for each commercial nuclear power station. A detailed description of each station is given in the Updated Final Safety Analysis Reports (UFSAR).

In order to minimize the number of ad-hoc decisions made during an emergency and to ensure that necessary equipment, supplies, and essential services are available to meet the needs of an emergency, Exelon Nuclear has developed this E-Plan. The E-Plan is applicable to all generating stations operated by Exelon Nuclear listed above and considers the consequences of radiological emergencies, as required by 10 CFR 50, Paragraph 50.47 and Appendix E.

Additionally, the E-Plan addresses guidance and adheres to the intent of the criteria established and provided within NUREG-0654. The E-Plan also considers the consequences of non-radiological emergencies.

## Section C: Scope

This document describes actions to be taken in the event of a radiological accident at the Exelon nuclear stations that may impact the health and safety of the general public or station employees. It also serves to limit the damage to facilities and property, and provide for the restoration of such facilities in the event of an emergency. If such an accident were to occur, the Emergency Response Organization (ERO) would be put in place and maintained until such time where the plant is returned to a stable condition and the threat to the general public or station personnel no longer exists. This plan describes the functions and operation of the ERO, including assignments of authority and responsibility. It does not, nor is it intended to, provide guidance for actual plant equipment manipulations. These instructions are contained in site-specific normal and emergency operating procedures as required by Technical Specifications and other regulatory guidance. The E-Plan provides for: identification and evaluation of emergency situations, protective measures, communications, coordination and notification of governmental authorities, document review and control, emergency preparedness assessment, and training of all emergency personnel. An emergency recovery phase is also described in this E-Plan.

## Section D: Planning Basis

The E-Plan, in conjunction with the Station Annexes and implementing and administrative procedures, documents the methods by which the Exelon Emergency Preparedness Program meets the planning standards set forth in 10 CFR 50.47(b) and the requirements of 10 CFR 50 Appendix E. Development of the E-Plan was based on NUREG-0654/FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants".

Acceptable alternate methods, which deviate from NUREG-0654, are allowed under Regulatory Guide 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors." However, deviations will be documented in the respective Station Annexes and evaluated as continuing to meet the Planning Standards of 10 CFR 50.47(b) and Appendix E to 10 CFR 50 under the 10 CFR 50.54(q) process to ensure the continued effectiveness of the E-Plan and respective Station Annexes.

Other applicable regulations, publications, and guidance were used (see Appendix 1, "References") along with site-specific documents to ensure consistency in the planning effort.

## Section E: Contiguous-Jurisdiction Governmental Emergency Planning

The E-Plan recognizes the state, in cooperation with the local EPZ communities, as the overall authority responsible for protective action directives in order to protect the health and safety of the general public.

## Section F: Integrated Emergency Planning

State and local (county level) emergency response plans were utilized in the development of this plan to ensure a consistent and integrated response to a classified event.

## Section G: Funding and Technical Assistance

Exelon Nuclear is dedicated to providing the level of support necessary, as dictated by federal regulation, to ensure appropriate integration of the state, county, and utility radiological emergency programs.

## Section H: Emergency Response Organization

Exelon Nuclear acknowledges its primary responsibility for planning and implementing emergency measures within the site boundary and for overall plant accident assessment. These emergency measures include corrective actions, protective measures, and aid for personnel onsite. To accomplish these responsibilities, advance arrangements have been made with offsite organizations for special emergency assistance such as ambulance, medical, hospital, fire, and police services.

## Section I: Federal Response

Provisions are made within the E-Plan for the integration of appropriate elements of the federal assistance activities. Arrangements have been made to accommodate a federal response organization presence in the Exelon Nuclear emergency response facilities as well as support communications between utility and federal emergency facilities. NRC response as described in NUREG-1471, "Concept of Operations: NRC Incident Response", was used in the development of the E-Plan as guidance to ensure coordination between Exelon Nuclear and NRC EROs.

## Section J: Form and Content of Plan

As required by federal regulations, the E-Plan is governed by and contained (or referenced) in the Station UFSARs. The E-Plan is administratively maintained as a separate document. The E-Plan has been formatted similar to NUREG-0654/FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." The use of this format lends itself to uncomplicated comparison with the criteria set forth in NUREG-0654/FEMA-REP-1.

Appendix 2, "Procedure Cross-Reference to NUREG-0654", provides a cross-reference between the NUREG-0654 evaluation criteria and the E-Plan implementing procedures and applicable administrative documents.

**Required Content of the Station Annexes**

Information that is in the plan need not be restated in the Annex. The Annex shall address what means, methods, and resources are used to satisfy the requirements and responsibilities set forth in the E-Plan.

Annex Format and Specific Content: As a minimum, station Annexes shall address the areas described as follows:

1. Section 1: Introduction

   The station and surrounding area are described by the inclusion of maps, drawings and/or diagrams. A summary statement describes the Annex's interface with the E-Plan.

2. Section 2: Organizational Control of Emergencies

   The agencies with which the station has independent agreements for support during an emergency are provided. Station specific differences from the E-Plan, such as on-shift staffing or ERO augmentation, shall be outlined. The justification for differences shall be provided as required under 50.54(q) documentation.

3. Section 3: Classification of Emergencies

   The Classification levels are described in this Section. Note that the Site Specific EALs are located in Addendum 3 to the Annex and are included for all emergency classes for the purpose of event classification.

4. Section 4: Emergency Measures

   Maps indicating the location of Assembly Areas, site evacuation routes, and centers for the monitoring of evacuated nonessential personnel are included. Roadway/traffic control measures of roads under control of the station are addressed.

5. Section 5: Emergency Facilities and Equipment

   - Descriptions of the station Control Room, Technical Support Center and Operational Support Center are provided.
   - A description of the specific equipment is provided.
   - A description of the capability and resources available to categorize accidents.

## Section A: Assignment of Responsibility

This section describes the primary responsibilities and organizational control of Exelon, federal, state, county, and other emergency response organizations within the Plume Exposure Pathway and the Ingestion Pathway Emergency Planning Zones (EPZs). Various supporting organizations are also described as well as staffing for initial and continuous response.

### 1. Concept of Operations

The relationships and the concept of operations for the organizations and agencies who are a part of the overall ERO are as follows:

a. Identified below are federal, state, and county organizations that are involved in a response to an emergency at an Exelon nuclear power station.

1) Federal Agencies: The National Response Framework (NRF), Nuclear/Radiological Incident Annex outlines the statutory and regulatory responsibilities. The primary federal response for supporting an emergency at an Exelon station include:

a) Nuclear Regulatory Commission (NRC): The NRC is responsible for licensing and regulating nuclear facilities and materials and for conducting research in support of the licensing and regulatory process. These responsibilities include protecting the public health and safety, protecting the environment, protecting and safeguarding materials and plants in the interest of national security and assuring conformity with antitrust laws.

The NRC Regional Office has the responsibility for auditing of nuclear power stations. It is responsible for ensuring that such activities are conducted in accordance with the terms and conditions of such NRC licenses and that as a result of such operations, there is no undue risk to the health and safety of the public.

The NRC Office of Nuclear Reactor Regulation, established by the Energy Reorganization Act of 1974, as amended, performs licensing functions associated with the construction and operation of nuclear reactors and with the receipt, possession, ownership, and use of special nuclear and byproduct materials used at reactor facilities.

With regard to emergency preparedness, the NRC shall:

- Assess licensee emergency plans for adequacy;
- Review the Federal Emergency Management Agency findings and determinations on the adequacy and capability of implementation of state and local plans; and
- Make decisions with regard to the overall state of emergency preparedness and issuance of operating licenses.

The NRC shall respond to incidents at licensed facilities or vehicular accidents involving licensed materials, including radionuclides, in transit. The NRC shall act as the lead Federal agency with regard to technical matters during a nuclear incident including radiological assistance. The NRC shall be prepared to recommend appropriate protective actions for the public and technical actions to the licensee. FEMA shall act as the lead Federal agency for offsite, non-technical concerns.

During an incident, the Chairman of the Commission is the senior NRC authority for all aspects of a response. The Chairman shall transfer control of emergency response activities to the Director of Site Operations when deemed appropriate by the Chairman.

All NRC Regions as well as Headquarters are prepared to respond to potential emergencies. All Regions and Headquarters have developed plans and procedures for responding to radiological incidents involving NRC licensees. Headquarters has developed the NRC Incident Response Plans and Implementing Procedures. Each NRC Region has developed Regional Supplements that detail how the Region will fulfill all of the responsibilities assigned in the NRC Incident Response Plan. All NRC organizations are responsible for maintaining an effective state of preparedness through periodic training, drills and exercises.

Each Region and Headquarters has established and maintains an Incident Response Center designed to centralize and coordinate the emergency response function. Adequate communications are established to link the licensee, Headquarters and the Region. The NRC has established lines of communications with local government, state government, other Federal agencies, Congress and the White House. Public information will be disseminated in a timely manner and periodically.

Each Region is prepared to send a team of qualified specialists to the scene expediently. All of the necessary supplies and equipment needed for emergency response will be provided and maintained by the NRC.

The NRC Incident Response Plan objectives are to provide for protection of the public health and safety, property, and the environment, from the effects of radiological incidents that may occur at licensed facilities or which involve licensed materials, including radio-nuclides in transit.

The objectives of the agency plan set forth the organizational and management concepts and responsibilities needed to assure that NRC has an effective emergency response program.

The plan is intended to ensure NRC preparedness:

- To receive and evaluate notification information of incidents, accidents and unusual events and determine the extent of NRC response necessary to meet NRC responsibilities for mitigating the consequences of these events;
- To determine the cause of incidents, accidents, and unusual events in order to ensure that appropriate corrective actions are taken by the licensee to minimize the consequences of these events;
- To provide onsite expertise in a timely manner, to evaluate the nature and extent of the incident, ascertain plant status (for reactors and fuel facilities), monitor licensee activities, determine compliance, make recommendations, and, if necessary, issue orders relative to the event;
- To inform the public and others of plant status and technical details concerning the incident;
- To recommend adequate protective actions to the responsible local and/or state agencies;
- To provide technical assistance;
- To ensure the plant is returned to a safe condition; and
- To return the NRC Headquarters and Regional office to normal operations.

b) Federal Emergency Management Agency (FEMA): Per the National Response Framework (NRF), FEMA is responsible for the overall coordination of a multi-agency Federal response to a significant radiological incident. The primary role of FEMA is to support the state by coordinating the delivery of Federal non-technical assistance. FEMA coordinates state requests for Federal assistance, identifying which Federal agency can best address specific needs. If deemed necessary by FEMA, it will establish a Federal Response Center from which it will manage its assistance activities.

c) Federal Radiological Preparedness Coordinating Committee (FRPCC): The FRPCC consists of the Federal Emergency Management Agency, which chairs the Committee, the Nuclear Regulatory Commission, the Environmental Protection Agency, the Department of Health and Human Services, the Department of Energy, the Department of Transportation, the Department of Defense, the Department of Agriculture, the Department of Commerce, and where appropriate and on an ad hoc basis, other Federal departments and agencies. The FRPCC shall assist FEMA in providing policy direction for the program of Federal assistance to state and local governments in their radiological emergency planning and preparedness activities.

d) U.S. Department of Energy (DOE): The Department of Energy (DOE) has extensive radiological monitoring equipment and personnel resources that it can assemble and dispatch to the scene of a radiological incident. The Department of Energy (DOE) local operations office can assist Exelon Nuclear following a radiological incident as outlined in the Federal Radiological Monitoring and Assessment Plan (FRMAP). If Exelon Nuclear, the NRC or the affected states deem that assistance from DOE is necessary or desirable, the affected state(s) would notify the appropriate DOE operations office.

e) Environmental Protection Agency (EPA): Assists with field radiological monitoring/sampling and non-plant related recovery and reentry guidance.

f) The U.S. Coast Guard (USCG): The USCG patrols and ensures the safety of navigable waterways in the United States. The USCG is promptly notified of any oil or hazardous substance discharges into rivers or lakes or radioactive contamination of rivers or lakes under its jurisdiction at levels requiring assistance to effect protective actions. The USCG is contacted by the appropriate state agencies in the event of an incident at an applicable nuclear power plant. The USCG is responsible for officially closing the waterways to all commercial traffic [Refer to the appropriate State Plan].

g) U.S. Army Corps of Engineers: The U.S. Army Corps of Engineers control barge and boat traffic at locks and dams on navigable waterways in the United States. The Corps of Engineers will be contacted by the appropriate state agencies in the event of an incident at an applicable nuclear power plant. The Corps will be responsible for closing their locks and dams to all waterway traffic leading to the affected area, allowing only traffic leaving the area [Refer to the appropriate State Plan].

h) Federal Bureau of Investigation (FBI): Support from the FBI is available through its statutory responsibility based in Public Law and the US code, and through a memorandum of understanding for cooperation with the NRC. Notification to the FBI of emergencies in which they would have an interest will be through provisions of the Nuclear Station's Security Plan, or by the NRC.

i) National Weather Service (NWS): Provides meteorological information during emergency situations, if required. Data available will include existing and forecasted wind directions, wind speed, and ambient air temperature.

2) State Agencies

a) The State of Illinois: The State of Illinois has the statutory responsibility and authority for protecting the health and safety of the public in Illinois. The State of Illinois has developed an "Illinois Plan for Radiological Accidents" (IPRA). This plan was developed in accordance with the guidance suggested by NUREG-0396 and NUREG 0654/FEMA-REP-1, Rev. 1. The IPRA has received 44 CFR 350 unconditional approvals from FEMA for all Exelon Nuclear's generating stations in the state of Illinois. Basic descriptions for the Illinois state agencies responsible for actions in the event of a nuclear power station are as follows:

- Governor of the State of Illinois: The Governor of the State of Illinois has overall command authority for both the radiological and non-radiological aspects of a nuclear incident. The Governor shall make the final recommendation for protective actions and shall serve as the state's primary spokesperson.

- Illinois Emergency Management Agency (IEMA): IEMA coordinates the operational response and recovery functions of all State agencies. IEMA proposes Protective Action Recommendations (PARs) to the Governor. IEMA also coordinates the implementation of the Governor's PARs.

  IEMA has the responsibility to inform the State of Indiana State Emergency Management Agency (SEMA) with respect to an emergency event at Dresden or Braidwood Nuclear Power Station and the State of Wisconsin Department of Emergency Government (WDEG) with respect to an emergency event at Byron Nuclear Power Station that impacts the 50-mile Ingestion Pathway Zone.

  IEMA Technical has both the command authority for radiological aspects of a nuclear incident and the responsibility for performing various radiological functions. These functions include milk, water and food control, radiation exposure control for state emergency workers, and confirmatory accident assessment. During an emergency situation, IEMA Technical shall make protective action recommendations to the Governor.

  For events that impact the 50-mile ingestion pathway for Braidwood or Dresden Nuclear Power Station, IEMA Technical will coordinate technical information with the State of Indiana. For Byron Nuclear Power Station, IEMA Technical will coordinate technical information with the State of Wisconsin.

  The IEMA Technical response to a nuclear incident utilizes two functional subgroups. They are the Radiological Emergency Assessment Center (REAC) and the Radiological Assessment Field Team (RAFT).

- Radiological Emergency Assessment Center (REAC): IEMA has established REAC in Springfield Illinois. REAC will serve as the command location for all (State related) radiological aspects of a nuclear incident. The Manager of the Office of Nuclear Facility Safety, or his/her designated alternate, is in command of REAC.

- Radiological Assessment Field Team (RAFT): RAFT has been organized to perform the field radiological functions of confirmatory accident assessments during a nuclear emergency. RAFT includes a Mobile Command Center, a Mobile Nuclear Laboratory, and monitoring and sampling teams.

b) The State of Iowa: Much of the Emergency Planning Zone for the Quad Cities Nuclear Station lies within the State of Iowa. The State of Iowa has developed an "Iowa Emergency Plan". This section provides a summary of the essential elements of the Iowa Emergency Plan, specifically outlining the specific responsibilities of certain "key" Iowa State Agency players in a response operational mode. Basic descriptions for the Iowa state agencies responsible for actions in the event of a nuclear power station are as follows:

- Iowa Emergency Management Division (IEMD): IEMD coordinates all activities of State agencies and departments, all local governments, and the utility in support of emergency response activities. These activities are coordinated from the Iowa State EOC in Des Moines.

- The Iowa Commissioner of Public Health, or his/her designee, from the Iowa Department of Public Health: The Iowa Department of Public Health shall alert the State Hygienic Lab when emergency action conditions are reported by a commercial nuclear power reactor, which impacts upon the public health and safety in Iowa, and when emergency team response has been determined to be necessary or imminent. They shall perform necessary calculations and evaluate the impact of existing and projected radioactivity releases in terms of public health risk. They shall translate the evaluation of existing and projected environmental contamination and resulting dose into terms of alternative protective actions. They shall recommend appropriate protective actions to the Governor's Office, the Iowa Emergency Management Division and other State agencies as appropriate.

- University Hygienic Lab (UHL): The UHL, located in Iowa City, Iowa, conducts and coordinates all field surveillance and monitoring activities directed toward measuring radiation exposure and radioactivity contamination in the environment resulting from an accident at a commercial nuclear power reactor. They also communicate all relevant data and protective action recommendations to the State Department of Public Health, provide radiological laboratory support for environmental samples analysis, and provide recommendations for decontamination of contaminated area.

c) The State of Wisconsin: A portion of the 50-mile Ingestion Pathway Emergency Planning Zone for Byron Nuclear Power Station lies within the State of Wisconsin. The State of Wisconsin has developed a "State of Wisconsin Peacetime Radiological Emergency Response Plan." This section provides a summary of the essential elements of the Wisconsin emergency plan.

Initially, responsibility for responding to a radiological emergency, including evacuation, rests with local governments and their emergency services. Notification, by either local authorities or legal possessors of uncontrolled materials, to the Wisconsin Emergency Management (WEM) that a radiological emergency exists will bring in the resources of the Department of Health and Family Services, Radiation Protection Unit to assess and evaluate the situation and determine protective action. State agency notification for assistance and coordination of response operations of the state agencies in support of local government will be performed by the WEM as determined by the Governor.

- Wisconsin Emergency Management (WEM): WEM is to provide the principal support response to emergencies in the State of Wisconsin, coordinate the responses of other state agencies, brief the Governor of emergency situations and activate the State Emergency Operating Center in Madison, if necessary.

- Department of Health and Family Services (DHFS), Radiation Protection Unit: For peacetime radiological emergencies, the DHFS has designated the Chief of the Radiation Protection Unit as the State Radiological Coordinator (SRC) for the State Radiological Response (RAD RESP) Team. Team members are personnel of the section, as designated by the SRC, augmented by selected personnel from WEM and other state and local agencies trained specifically for radiological incidents.

  Environmental sampling conducted by the State of Wisconsin following a serious radiological emergency will be coordinated from the Madison EOC by the SRC or his/her designated alternate.

The State of Wisconsin utilizes guidance promulgated by the EPA and the U.S. Department of Health and Human Services as the basis for determining what protective actions are necessary during a radiological incident.

d) The State of Indiana: Portions of the 50-mile Ingestion Pathway Emergency Planning Zones for Braidwood and Dresden Nuclear Power Stations lie within the State of Indiana. The State of Indiana has developed an emergency response plan. Appendix 1 – Ingestion Pathway, to Annex L – Radiological Protection of the plan provides the essential elements of Indiana's response to an event affecting the station's Ingestion Pathway Emergency Planning Zones. IEMA will coordinate technical information as necessary with the State of Indiana.

e) The Commonwealth of Pennsylvania: The Commonwealth organizations having prime responsibility in matters of radiation hazards are the Pennsylvania Emergency Management Agency and the Bureau of Radiation Protection (BRP) of the Pennsylvania Department of Environmental Protection.

- Pennsylvania Emergency Management Agency: Responsibilities of PEMA are outlined in Annex E, "Radiological Emergency Response to Nuclear Power Plant Incidents" of the Commonwealth of Pennsylvania Emergency Operations Plan. PEMA is the primary State agency to interface with FEMA. Any BRP requests for non-technical assistance from FEMA are coordinated through PEMA.

- Department of Environmental Protection, Bureau of Radiation Protection (DEP/BRP): Responsibilities of DEP/BRP are outlined in Annex E of the Commonwealth of Pennsylvania Emergency Operations Plan.

- Pennsylvania State Police: Responsibilities of the State Police are set forth in Annex E of the Commonwealth of Pennsylvania Emergency Operations Plan.

f) The State of Maryland: Maryland state organizations having prime responsibility in matters of radiation hazards at Peach Bottom and Calvert Cliffs are the Maryland Emergency Management Agency and the Emergency Operations and Technical Support Program of the Maryland Department of the Environment. County and local governments are responsible for the protection of public health and safety within their jurisdiction.

- Maryland Emergency Management Agency (MEMA): MEMA responsibilities are outlined in Annex Q, "Radiological Emergency Plan."

- Maryland Department of the Environment, Emergency Operations and Technical Support Program: Responsibilities of MDE Emergency Operations and Technical Support Program are outlined in Annex Q, "Radiological Emergency Plan."

- Maryland State Police: Responsibilities of the State Police are set forth in Annex Q, "Radiological Emergency Plan."

g) State of Delaware: The State of Delaware border is located within the 50-mile Ingestion Pathway Zone for Calvert Cliffs, Limerick and Peach Bottom Stations. The State would be notified if protective actions were required within that area. No direct support is provided to Calvert Cliffs, Limerick or Peach Bottom.

h) State of New Jersey: The state of New Jersey, through the various state, county and local agencies, is responsible for offsite emergency response. In order to fulfill this responsibility, the state relies on OCGS to provide necessary information on plant status and radiation releases. Recognizing the joint nature of their responsibilities, OCGS and the relevant governmental agencies have coordinated their emergency planning and have provided for adequate and redundant communication systems to coordinate their response during an emergency event.

The New Jersey State Police, Office of Emergency Management, is responsible to coordinate emergency services in the State of New Jersey.

- New Jersey Office of Emergency Management: The New Jersey Office of Emergency Management (OEM) has been assigned the responsibility for developing a statewide radiation emergency response plan. Annex B to the State of New Jersey Radiological Emergency Response Plan serves as a reference document incorporating the policy, the concept of operation, the rationale for chosen guidelines, and the relevant statutory documents.

  The OEM is the lead agency and coordinates the efforts of all state support agencies, including actions and operations involving public response and furnishes resources required to support decisions affecting exposure control.

  This agency initiates communications with county and municipal authorities through the County Emergency Management Coordinator. Ocean County and each municipality have contingency plans indicating actions to be taken upon notification of an emergency condition by the OEM.

  Primary contact with state authorities is through the New Jersey State Police OEM and the Headquarters Communications Bureau. This office is responsible for notifying other State and federal agencies and

for providing assistance to state and local authorities in implementing emergency actions.

The Emergency Operations Center (EOC) for the New Jersey State Police is located at the State Police Division Headquarters in West Trenton, NJ.

- New Jersey Department of Environmental Protection, Bureau of Nuclear Engineering: The Bureau of Nuclear Engineering (BNE) is responsible for responding to a radiation incident within state boundaries. They will assess the radiological hazard and provide technical guidance and recommendations concerning the execution of protective actions for the general public.

  The BNE maintains personnel, facilities and equipment to assist in assessing the hazard and provide technical guidance and recommendations regarding the implementation of protective actions for the general public. The BNE perform both routine and emergency environmental monitoring.

The State of New Jersey's border is located within the 50-mile Ingestion Pathway Zone for Limerick, and Peach Bottom Stations. The State will be notified if protective actions are required within that area. No direct support is provided to Limerick or Peach Bottom Stations.

i) The State of New York: New York State (NYS) organizations having prime responsibility in matters of radiation hazards for FitzPatrick, Ginna, and Nine Mile Point Stations are the New York State Office of Emergency Management (NYSOEM) and the NYS Department of Health. The State of New York has developed the New York State Radiological Emergency Preparedness Plan.

   - The NYSOEM is the lead government agency for off-site coordination and response at the State level. The New York State Radiological Emergency Preparedness Plan contains provisions for:

     – Planning and coordination with local, State and Federal authorities
     – Initial response to notification by FitzPatrick, Ginna, and Nine Mile Point stations
     – Alert and warning of local political subdivisions
     – Evacuation and other protective measures for local populations
     – Emergency services
     – Situational analysis

     The purpose of the NYS Plan is to minimize the risk to the health of the inhabitants of the State in the event of a radiological emergency. This will be accomplished by identifying measures to prevent and

mitigate such an emergency; by developing mechanisms to coordinate Federal, State, local and private sector resources, during and after such an emergency; and by providing for recovery following a radiological emergency. The NYS plan also contains emergency procedures to notify the local organizations which have action and/or support responsibilities under that plan.

- The NYS Department of Health is responsible for evaluating information obtained from the FitzPatrick, Ginna, and Nine Mile Point stations, and/or other sources and recommending appropriate offsite protective actions to the OEM/OCEMO.

j) The Commonwealth of Virginia: The ingestion EPZ for Calvert Cliffs includes all or portions of the following Virginia political subdivisions:

| Counties | Cities |
|---|---|
| Accomack (Tangier Island) | Alexandria |
| Arlington | Falls Church |
| Caroline | |
| Essex | |
| Fairfax | |
| King George | |
| King and Queen | |
| Lancaster | |
| Middlesex | |
| Northumberland | |
| Prince William | |
| Richmond | |
| Stafford | |
| Westmoreland | |

Functions and activities of these agencies are described in the Virginia Radiological Emergency Response Plan.

k) District of Columbia - Functions and activities of agencies responsible for emergency response in the Washington, D.C., portion of the ingestion EPZ for Calvert Cliffs are described in the District of Columbia, District Response Plan.

3) County Government Agencies

Exelon and the surrounding communities that comprise the Plume Exposure Pathway EPZs have developed integrated emergency response programs that call upon the resources of their community. The community organizations are responsible for implementing and coordinating the community response to an emergency.

The County Emergency Operations Centers (EOCs) serve as the primary coordinating center for local government response within the county's jurisdiction and for coordination between counties.

b. During an event classified as an Alert, Site Area Emergency, or General Emergency, the Exelon Nuclear ERO replaces the normal plant organization. The Exelon Nuclear ERO consists of three major response sub-organizations:

1) The Station Organization, directed by the Station Emergency Director, provides for:

- Control and operation of the plant.
- Mitigation of the emergency condition.
- Protection of station personnel.
- Emergency event classification.
- Notification of the appropriate individuals and agencies prior to EOF taking Command and Control.
- Emergency support for operations, engineering, maintenance, fire fighting, material acquisition, security, and first aid.

2) The Corporate Organization, directed by the Corporate Emergency Director, provides for:

- Emergency notifications to Federal, state and local agencies.
- Offsite radiological accident assessment and Protective Action Recommendations to offsite authorities.
- The primary interface between Exelon Nuclear and outside organizations responsible for the protection of the public.

3) The Public Information Organization, directed by the Corporate Spokesperson, coordinates with public information officers from other organizations to provide information to the public through the news media.

c. Interrelationships between major Exelon Nuclear organizations and sub-organizations in the total response effort are illustrated in a block diagram in Figures A-1 and A-2. For a more detailed diagram of the Exelon Nuclear ERO, see Figures B-1a to B-1d.

d. The Corporate Emergency Director is a senior Exelon employee with overall responsibility for coordinating emergency response actions in support of the affected Exelon Nuclear station, Emergency Public Information Organization, and affected state(s) and local agencies.

e. Procedures for training and maintenance of the emergency organization are in place to ensure 24-hour per day staffing for emergency response, including established communication links.

**2. State and County Functions and Responsibilities**

The state and counties have emergency response plans that specify the responsibilities and functions for the major agencies, departments, and key individuals of their emergency response organizations. This information is located in their respective plans.

**3. Agreements in Planning Effort**

Written agreements establishing the concept of operations developed between Exelon Nuclear and other support organizations having an emergency response role within the EPZs have been developed. These agreements identify the emergency measures to be provided, the mutually accepted criteria for implementation, and the arrangements for exchange of information. Agreement letters are not necessary with Federal Agencies who are legally required to respond based on Federal law; however, agreements are necessary if the agency was expected to provide assistance not required by law. Letters of Agreement with private contractors and others who provide services in support of a specific nuclear station shall be obtained by the respective nuclear station. Letters of Agreement are referenced in the Station Annexes and the actual letters are maintained on file at each station respectively. Letters of Agreement, as a minimum, state that the cooperating organization will provide their normal services in support of an emergency at the affected station. A contract/purchase order with a private contractor is considered acceptable in lieu of a Letter of Agreement for the specified duration of the contract.

**4. Continuous Coverage**

Exelon Nuclear maintains 24-hour emergency response capability at each station. The normal on-shift complement provides the initial response to an emergency. This group is trained to handle emergency situations (e.g. initiate implementation of the E-Plan, make initial accident assessment, emergency classification, notifications, communications, and protective action recommendations) until the augmented ERO arrives. The ERO is composed of a broad spectrum of personnel with specialties in operations, maintenance, engineering, radiochemistry, health physics, material control, fire protection, security, and emergency planning and are available and trained to augment on-shift personnel in an emergency. Procedures for training and maintenance of the emergency organization are in place to provide the capability of continuous (24-hour) operations.

The Corporate Emergency Director, located in the EOF, has the authority and responsibility for assuring continuity of resources (technical, administrative, and material) in the event of the activation of the ERO.

## Figure A-1: Exelon Emergency Response Organization Interrelationships

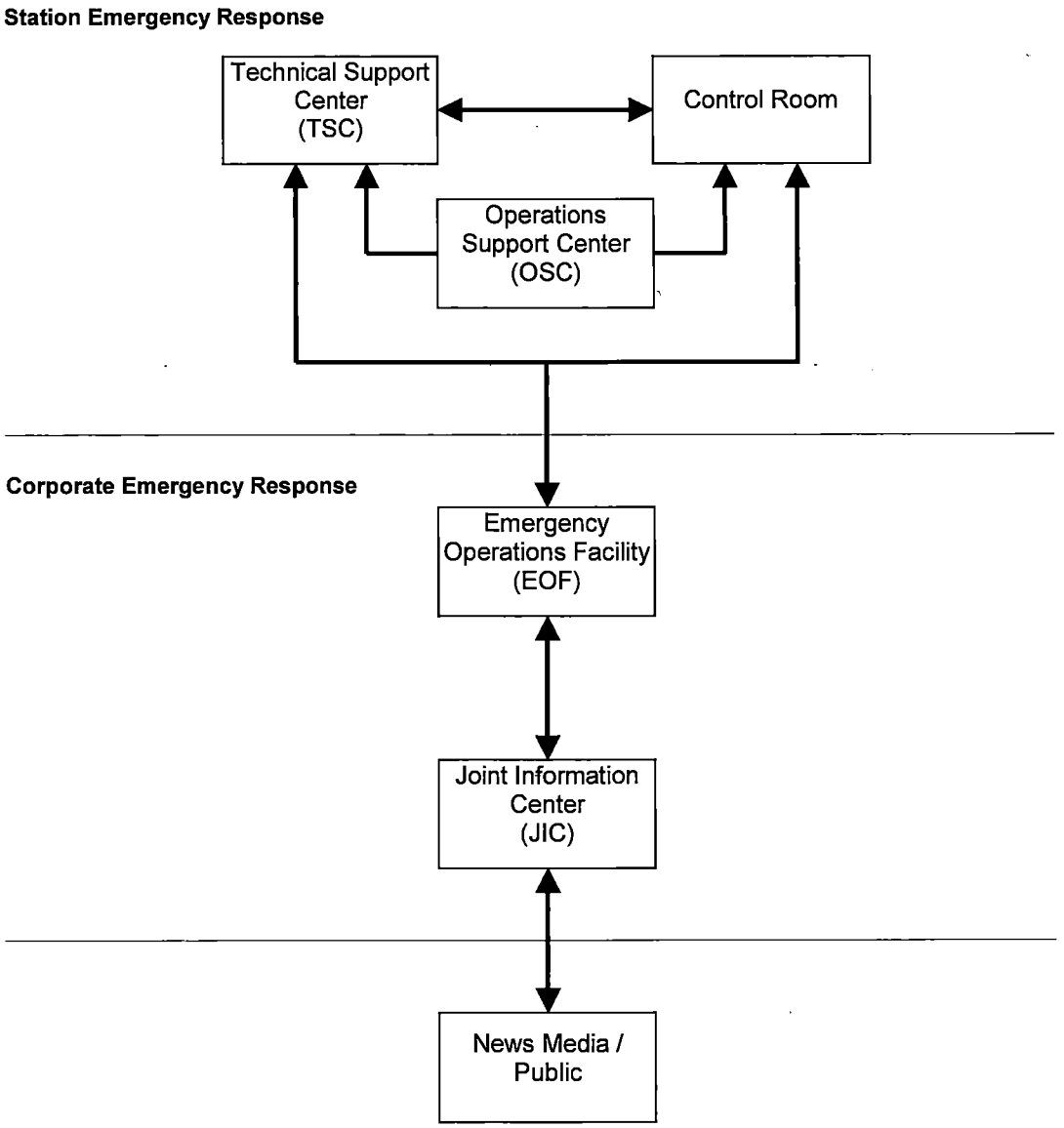
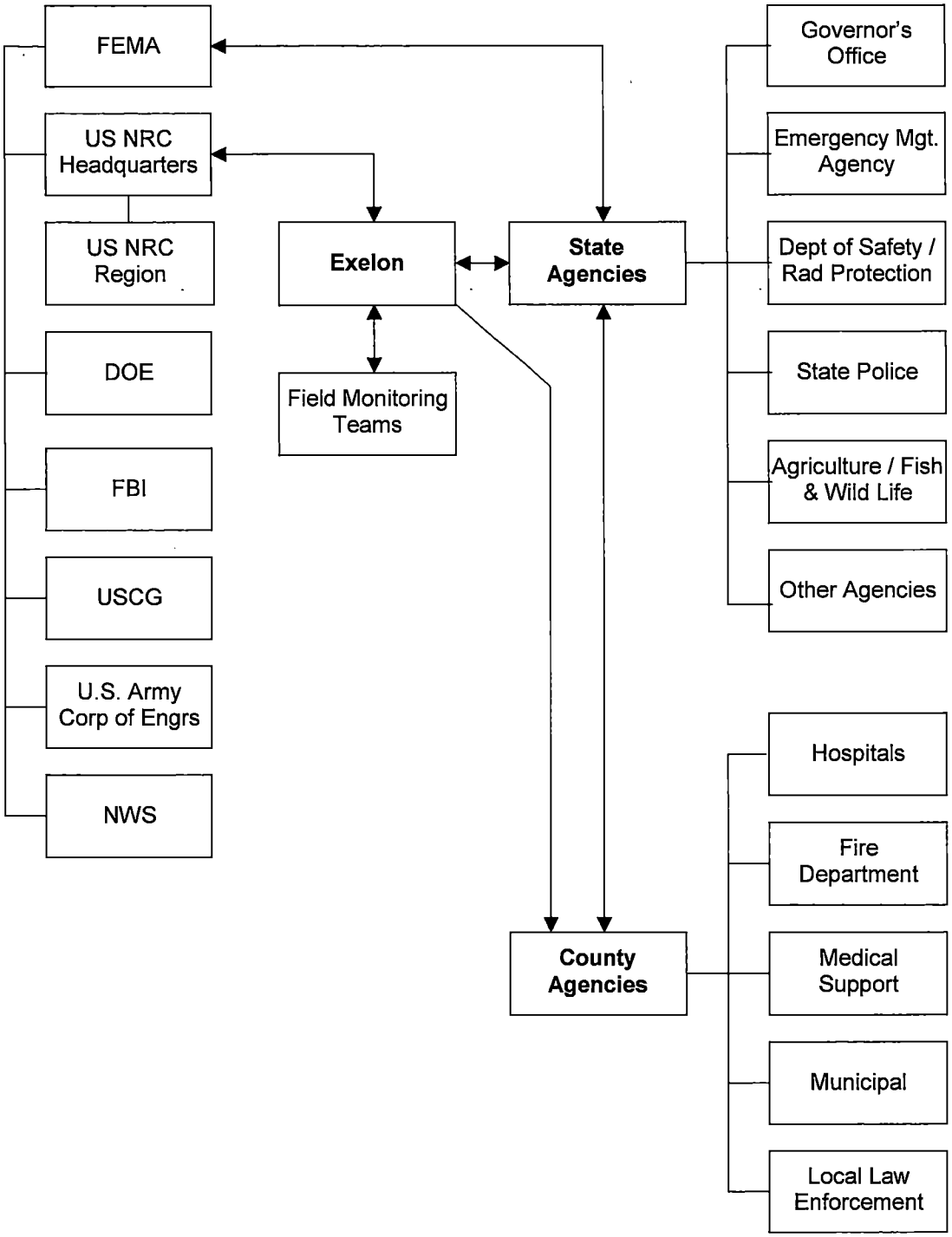


**Figure A-2: Agency Response Organization Interrelationships**



## Section B: Exelon Nuclear Emergency Response Organization

This section describes the Exelon Nuclear Emergency Response Organization (ERO), its key positions and associated responsibilities. It outlines the staffing requirements which provide initial emergency response actions and provisions for timely augmentation of on-shift personnel when required. It also describes interfaces among Exelon Nuclear emergency response personnel and specifies the offsite support available to respond to the nuclear generating stations.

### 1. On-Shift Emergency Response Organization Assignments

The normal plant personnel complement is established with the Station Vice President having overall authority for station operations. The Station Vice President directs the site organization in the management of the various departments while the Shift Manager retains the responsibility for actual operation of plant systems. Emergency Preparedness must consider the capabilities of the normal plant organization, the Station and Corporate Emergency Response Organizations of Exelon Nuclear, and the non-Exelon Nuclear Emergency Response agencies. The initial phases of an emergency situation at a nuclear station will most likely involve a relatively small number of individuals. These individuals must be capable of (1) determining that an emergency exists; (2) providing initial classification and assessment; and (3) promptly notifying other groups and individuals in the emergency organization. The subsequent phases of the emergency situation may require an increasing augmentation of the emergency organization.

All Exelon Nuclear Stations have personnel on shift at all times that can provide an initial response to an emergency event. ERO staffing tables, contained within the station specific Annex, outlines the plant on-shift emergency organization and its relation to the normal staff complement. Members of the on-shift organization are trained on their responsibilities and duties in the event of an emergency and are capable of performing all response actions in an Unusual Event or the initial actions of higher classifications.

On Shift Personnel

All Exelon Nuclear stations have the capability at all times to perform detection, mitigation, classification, and notification functions required in the early phases of an emergency. Shift augmentation and further ERO involvement will be determined by the extent and magnitude of the event.

Shift Manager: While acting as Shift Emergency Director, will take immediate action during an emergency and will activate the Station ERO, as appropriate. In the Shift Manager's absence or incapacitation, the line of succession is defined by each Station's procedures.

Shift Technical Advisor (STA): During normal plant operations, the Senior Reactor Operators report to the Shift Manager and directly supervise the licensed Reactor Operators and all activities in the Control Room. During an abnormal condition, the Shift Manager assumes direct supervision of personnel and all activities in the Control Room while a qualified individual steps back and assumes an overview role as an STA with the specific responsibility of monitoring the maintenance of core cooling and containment integrity. An individual assigned the duty as the STA shall be available to the Control Room at all times.

Radiation Protection: The Station Radiation Protection personnel are responsible for the handling and monitoring of radioactive materials. Included in this organization are Health Physicists, Radiation Protection Supervisors and Technicians.

Chemistry: The Station Chemistry personnel are responsible for sampling of system effluents, and the chemical and radio-analytical analysis of those samples. Included in this organization are Chemists, Chemistry Supervisors and Technicians.

Security: The Station Security personnel are responsible for the physical security of the site. Included in this organization are Security Supervisors and Security Guards.

**2. Authority Over the Emergency Response Organization**

The Emergency Director in Command and Control is the designated Exelon Nuclear individual who has overall authority and responsibility, management ability, and technical knowledge for coordinating all emergency response activities at the nuclear power station.

- Control Room: Shift Emergency Director (Shift Manager)
- TSC: Station Emergency Director
- EOF: Corporate Emergency Director

**3. Criteria for Assuming Command and Control (Succession)**

Emergency personnel assume responsibility for their positions upon receiving notification to activate. The responsibility for initial assessment of and response to an emergency rests with the Shift Manager. The Shift Manager is the Shift Emergency Director and has the Station Emergency Director's responsibilities and authority until relieved by a qualified Station Emergency Director. The Station Emergency Director, once having relieved the Shift Manager of the Emergency Director responsibilities, is responsible for continued assessment of the severity of the emergency and for the necessary functions as described in the E-Plan, the Station Annex, and the emergency implementing procedures. Final succession is achieved when the Corporate Emergency Director assumes overall Command and Control, and directs Exelon Nuclear's Emergency Response activities.

The Shift Emergency Director is relieved of Command and Control as soon as possible after the declaration of an Alert (or higher classification if Alert not declared). Command and Control may be transferred directly to the Corporate Emergency Director, or transferred to the Station Emergency Director on an interim basis. Command and Control does not transfer until the following criteria have been met:

- Adequate staff levels are present in support of the non-delegable responsibilities.
- The staff has been fully briefed as to the status of the event and the currently proposed plan of action.
- A turnover between the Emergency Director relinquishing Command and Control and the Emergency Director assuming Command and Control has been made.

Although Exelon Nuclear's ERO fulfills all regulatory requirements for emergency response, it may be altered by the Emergency Director. This type of alteration will be based upon identified needs within the ERO, event dependent criteria, and identified needs of the company as a whole.

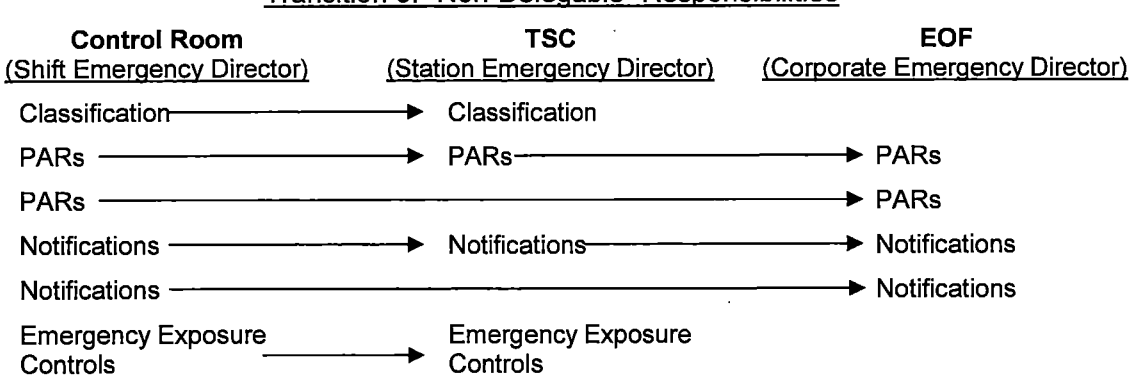
**4. Non-Delegable Responsibilities**

Non-delegable responsibilities include the following functions:

- Event classification.
- Protective Action Recommendations (PARs) for the general public.
- Notification of offsite authorities (approval of state/local and NRC notifications).
- Authorization of emergency exposure controls in excess of 5 Rem TEDE and the issuance of potassium iodide (KI), for Exelon Nuclear emergency workers per EPA-400.

The Shift Manager is responsible for the initial classification of an event and assumes the position as Shift Emergency Director. In this capacity, the Shift Manager has responsibility for performing the non-delegable responsibilities until relieved. The Shift Emergency Director is relieved of Command and Control as soon as possible after the declaration of an Alert (or higher classification if Alert not declared). Command and Control is transferred to the Station Emergency Director but may be transferred directly to the Corporate Emergency Director.

When the Station Emergency Director assumes overall authority and responsibility for performing all the non-delegable duties from the Shift Manager, the Corporate Emergency Director (EOF) will subsequently relieve the Station Emergency Director (TSC) of overall Command and Control and assume the non-delegable responsibilities for PAR determination and notifications to offsite authorities.




## 5. Emergency Response Organization Positional Responsibilities

ERO staffing tables contained within the station specific Annex, outlines ERO positions required to meet minimum staffing and full augmentation of the on-shift complement at an Alert or higher classification, and the major tasks assigned to each position. The full augmentation staffing levels are used as a planning basis to cover a wide range of possible events. For extended events (one which lasts for more than 24 hours), actual staffing will be established by the Emergency Director based on the event and personnel availability. However, additional staffing or reduced staffing will only occur after discussion concerning the impact on plant operations and emergency response.

In addition to maintaining adequate documentation of the event, responsibilities for each position are as follows:

a. Station Emergency Response Organization: The Station ERO is the onsite group that is activated during an emergency. It functions under the Station Emergency Director, who is responsible for organizing and coordinating the emergency efforts at and within the immediate vicinity of the station (including carrying out all onsite emergency efforts and the initial offsite environs monitoring efforts necessary to assess plant releases).

   The Station ERO consists of station personnel who are involved with emergency response efforts necessary to control the plant during an incident. This organization operates out of the Control Room, the Technical Support Center (TSC) and the Operations Support Center (OSC). Collectively, members of the Station ERO provide for the following activities during an emergency:

   - Plant systems operations
   - Radiological survey and monitoring (including Environs Monitoring)
   - Firefighting
   - Rescue operations and First Aid
   - Decontamination
   - Security of plant and access control

- Repair and damage control
- Personnel protection including Assembly, Accountability and Evacuation
- Communications
- Initial Liaison responsibilities with Federal, state and local authorities

All Station ERO personnel shall have the authority to perform assigned duties in a manner consistent with the objectives of this plan.

1) Shift Manager (Shift Emergency Director) Control Room

A Shift Manager is on duty 24 hours a day and is the Shift Emergency Director in a declared emergency until relieved of this function. While serving in this capacity the Shift Manager is responsible for:

- Activating the ERO (as deemed appropriate or as procedurally required).
- Performing those duties outlined in Section B.5.a.2 for the Station Emergency Director. The responsibilities described for the Station Emergency Director applies to either the Shift Emergency Director or the Station Emergency Director depending on which individual is in Command and Control.

The on-duty Shift Manager directs the activities of the operating crew and is responsible for the safe operation of the plant in compliance with the station NRC operating license and the station operating procedures. The Shift Manager, after relinquishing Command and Control, functionally reports to the Operations Manager in the TSC.

The Shift Manager's responsibilities, when not in Command and Control, are described below:

- The authority and responsibility to shutdown the reactor when determined that the safety of the reactor is in jeopardy or when operating parameters exceed any of the reactor protection circuit set-points and automatic shutdown does not occur;
- To ensure a review has been completed to determine the circumstance, cause, and limits under which operations can safely proceed before the reactor is returned to power following a trip or an unscheduled or unexplained power reduction;
- The responsibility to be present at the plant and to provide direction for returning the reactor to power following a trip or an unscheduled or unexplained power reduction;
- The responsibility to adhere to the station Technical Specifications and to review routine operating data to assure safe operation;

- The responsibility to identify applicable EALs and emergency classifications; and

- The responsibility to adhere to plant operating procedures and the requirements for their use. During an emergency, operations personnel may depart from approved procedures where necessary to prevent injury to personnel, including the public, or damage to the facility consistent with the requirements of 10 CFR 50.54(x) and (y).

- Supervise the activities of the Control Room Crew, Operations Communicator and Damage Control Communicator in the Control Room.

2) Station Emergency Director TSC

The Station Emergency Director reports to the Corporate Emergency Director and supervises and directs the Station ERO. The Station Emergency Director's responsibilities include organizing and coordinating the onsite emergency efforts. Additionally, the Station Emergency Director has the requisite authority, plant operating experience and qualifications to implement in-plant recovery operations.

a) Station Emergency Director Responsibilities while in Command and Control:

- Perform all non-delegable responsibilities as the Emergency Director in Command and Control until relieved by the EOF.

- Conduct personnel assembly/accountability and evacuation of non-essential personnel at Site Area Emergency, General Emergency or as conditions warrant.

- If the emergency involves a hazardous substance and/or oil discharges, ensure that appropriate notifications and responses have been made.

- Determine if the OSC is to remain activated at the Alert Classification.

b) Station Emergency Director Responsibilities while not in Command and Control:

- Event classification.

- Emergency exposure controls.

- Protective actions for all onsite personnel.

- Supervision of the Station ERO.

- Inform the Corporate Emergency Director and onsite NRC as to the status of the plant.

- Assist the Corporate Emergency Director in the acquisition of information for the state/local notifications, NRC notifications and offsite agency updates.
- Provide information and recommendations to the Corporate Emergency Director.
- Implement plans, procedures and schedules to meet emergency response objectives as directed by the Corporate Emergency Director.
- Request from the Corporate ERO any additional material, personnel resources or equipment needed to implement response plans and operations.

3) TSC Director TSC

The TSC Director reports to the Station Emergency Director and is responsible for the content of information transmitted from the TSC to other agencies (or facilities) and for documenting information received at the TSC in coordination with the Station Emergency Director. Responsibilities include:

- Verify that qualified individuals are filling Communicator positions in the Control Room, TSC and OSC.
- Supervise the activities of the Logistics Coordinator and state/local Communicator.
- Ensure that communications are established with appropriate parties as directed by the Station Emergency Director.
- Ensure that all required notifications to offsite governmental agencies (state/local and NRC) are timely and accurate.
- Act as the Exelon Nuclear Liaison to any NRC Site Team Representatives.
- Ensure that the NRC Site Team Representatives are directed to their appropriate counterparts.
- Assist the Corporate Emergency Director in the acquisition of information for off-site agency updates.
- Record and relay inquiries to the Station Emergency Director. In addition, record responses to such inquiries prior to transmission.
- Assist the Station Emergency Director in maintaining proper records.

4) Communicators CR/TSC/OSC

The Communicators are responsible for transmitting/receiving information to and from the TSC, OSC and Control Room. General responsibilities assigned to all Communicators include:

- Establish communications with appropriate parties as directed.
- Transmit information that has been reviewed and/or approved by the responsible Manager or Coordinator.
- Document time, date and information being transmitted or received on appropriate forms.
- Record and relay inquiries and the responses to those inquiries.
- Assist appropriate Managers and Coordinators in maintaining proper records and logs of emergency related activities.
- Gather, record and post appropriate information.

a) Specific responsibilities assigned to the State/Local Communicator include:

- Communicate and receive information via the Nuclear Accident Reporting System (NARS) circuit or commercial telephone line with appropriate agencies prior to the EOF accepting Command and Control.
- Monitor NARS communications until released by the TSC Director.

b) Specific responsibilities assigned to the Damage Control Communicator include:

- Relay requests from the Control Room and TSC for the dispatching of OSC Teams.
- Apprise the station emergency response facilities of the status of OSC Team activities.

c) Specific responsibilities assigned to the Operations Communicator include:

- Apprise the TSC and EOF staff of the overall plant condition and significant changes to system and equipment status.
- Inform the Control Room, TSC, and EOF of significant changes in event status (e.g. changes in classification, command and control, initiation of station assembly, accountability, evacuation, etc.).

d) Specific responsibilities assigned to the TSC Technical Communicator include:

- Establish and maintain contact with the EOF Technical Advisor.
- Provide EOF with updates on technical support activities and priorities.

e) Specific responsibilities assigned to the ENS Communicator include:

- Notify the NRC of changes in event classification, prior to the EOF accepting Command and Control, and assist the EOF ENS Communicator in completing the NRC Event Notification Worksheet and responding to NRC inquiries.
- Provide real time updates of significant changes to plant and system status and responses to NRC inquiries.
- Maintain continuous communications with the NRC, if requested, via the NRC ENS phone or commercial telephone line.

f) Specific responsibilities assigned to the HPN Communicator include:

- Maintain continuous communications with the NRC, if requested, via the NRC Health Physics Network (HPN) phone or commercial telephone line.
- Communicate current Health Physics information to NRC representatives, as requested.
- Coordinate the communications of radiological information to the NRC with the EOF HPN Communicator (onsite vs. environmental data).

5) Operations Manager TSC

The Operations Manager reports to the Station Emergency Director. Major functions include determining the extent of station emergencies, initiating corrective actions, and implementing protective actions for onsite personnel. In the event that the Station Emergency Director becomes incapacitated and can no longer fulfill the designated responsibilities, the Operations Manager will normally assume the responsibilities until relieved by another qualified Station Emergency Director. Responsibilities include:

- Coordinate TSC efforts in determining the nature and extent of emergencies pertaining to equipment and plant facilities in support of Control Room actions.
- Initiate immediate corrective actions to limit or contain the emergency invoking the provisions of 10 CFR 50.54(x) if appropriate.

- Recommend equipment operations checks and miscellaneous actions to the Control Room in support of restoration and accident mitigation.
- Approve emergency special procedures, and implement as required under the provisions of 10 CFR 50.54(x).
- Assist the Maintenance Manager in determining the priority assigned to OSC activities.
- Organize and direct medical response efforts for injured personnel.
- Ensure adequate staffing of the Control Room and TSC subordinates.
- Ensure the Shift Manager is informed of OSC staffing utilization and activities.
- Identify steps or procedures that the Operations staff should be utilizing to properly respond to the emergency condition.
- Assist the Station Emergency Director in evaluating changes in event classification.
- Supervise the activities of the Operations Communicator and the ENS Communicator in the TSC.
- Act as the TSC liaison with the appropriate NRC Site Team Representative.

6) Technical Manager TSC

The Technical Manager reports to the Station Emergency Director and directs a staff in performing technical assessments of station emergencies and assists in recovery planning. Responsibilities include:

- Accumulate, tabulate and evaluate data on plant conditions.
- Evaluate plant parameters during an emergency to determine the overall plant condition.
- Coordinate core damage assessment activities.
- Identify data points and control parameters that the Operations staff should monitor.
- Ensure that current and adequate technical information is depicted on status boards.
- Identify and direct staff in the development of special procedures needed to effect long-term safe shutdown or to mitigate a release.

- Supervise the total onsite technical staff effort.
- Act as the TSC liaison with state and appropriate NRC Site Team representatives.
- Assist the Radiation Protection Manager for onsite radiological/technical matters.
- Assist the Station Emergency Director in evaluating plant-based PARs (prior to Corporate Emergency Director accepting command and control) and changes in event classification.
- Supervise the activities of the TSC Technical Communicator.

7) Technical Support Staff TSC

The TSC Technical Support Staff consists of the following minimum staff engineering positions:

- Electrical Engineer
- Mechanical Engineer
- Core/Thermal Hydraulic Engineer - serves as Core Damage Assessment Methodology (CDAM) Evaluator, as applicable.

In addition, station Engineering support will be augmented on an as needed basis to support accident assessment and mitigation activities.

8) Logistics Coordinator TSC

The Logistics Coordinator reports to the TSC Director and provides administrative services in support of emergency/recovery operations. Responsibilities include:

- Coordinate shift relief and continual staffing of the station.
- Arrange for clerical staff at the TSC, OSC and Control Room.
- Assist the Security Coordinator in coordinating ERO and station activities in support of on-going security contingency, accountability or site/area evacuation efforts.
- Support the processing of special procedures and interim reports during an emergency.
- Ensure that event status and priority logs are being maintained in the TSC.
- Coordinate record-keeping efforts at the station.

- Arrange for food, sleeping facilities and other necessary accommodations for onsite emergency workers.

- Arrange for specialized training of Emergency Response personnel as needed.

9) Radiation Protection Manager (RPM) TSC

The Radiation Protection Manager reports to the Station Emergency Director and supervises the activities of the Radiation Controls Coordinator and Radiation Controls Engineer. The TSC RPM directs a staff in determining the extent and nature of radiological or hazardous material problems onsite. Responsibilities include:

- Accumulate, tabulate and evaluate data on plant conditions such as meteorological and radiological monitoring readings, and other pertinent data.

- Act as the TSC liaison with the appropriate NRC Site Team representative.

- Ensure use of protective clothing, respiratory protection, and access control within the plant as deemed appropriate to control personnel exposures.

- Ensure that appropriate bioassay procedures have been implemented for onsite personnel when a radioactivity incident has occurred.

- Ensure that personnel are decontaminated, if necessary.

- Authorize personnel exposures below 5 Rem TEDE (EPA-400 lower limit).

- Assist the Station Emergency Director in determining if exposures in excess of the 5 Rem TEDE (EPA-400 lower limit) are necessary.

- Advise the Station Emergency Director of situations when the use of KI should be considered.

- Assist the Station Emergency Director in evaluating dose-based PARs (prior to Corporate Emergency Director accepting command and control) and changes in radiological event classification.

- Advise the Station Emergency Director and EOF Radiation Protection Manager of changes in radiological release status.

- Assist the Operations Manager in planning rescue operations and provide monitoring services as required, including the transfer of injured and/or contaminated personnel.

- Coordinate with the Security Coordinator to determine the routes to be used for evacuation of non-essential personnel.
- Assure additional radiation protection personnel and/or equipment is arranged for, as necessary.

10) Radiation Controls Engineer (RCE) TSC

The Radiation Controls Engineer reports to the Radiation Protection Manager and coordinates the radiological and chemistry interface between the technical support engineering efforts. Responsibilities include:

- Monitor area and process radiation monitors to identify trends and potential hazards within the station.
- Evaluate plant environmental factors regarding radiological and other hazardous material conditions.
- Evaluate radiological and hazardous material surveys and chemistry sample results as appropriate.
- Direct the performance of sampling activities through coordination with the OSC Chemistry Lead in support of operations and core damage estimates as necessary.
- Coordinate radiological and chemistry information with the Core/Thermal Hydraulic Engineer in support of core damage assessment.

11) Radiation Controls Coordinator (RCC) TSC

The Radiation Controls Coordinator reports to the Radiation Protection Manager. The RCC coordinates site and in-plant Radiation Protection response activities through the OSC Radiation Protection Lead. Responsibilities include:

- Support the OSC Radiation Protection Lead in the dispatching of OSC Teams.
- Assist the Operations Manager in planning radiological controls for personnel dispatched from the Control Room.
- Ensure the proper use of protective clothing, respiratory protection, and access controls in the plant as appropriate to control personnel exposure.
- Monitor habitability concerns impacting access to plant and site areas.
- In coordination with the OSC Radiation Protection Lead, assemble and dispatch the Field Monitoring Teams as required.
- Supervise the activities of the HPN Communicator in the TSC.

- Request additional Radiation Protection personnel and/or equipment, as necessary in support of station activities and staff relief.
- Prior to EOF Protective Measures Group staffing:
  - Perform dose assessments and provide appropriate dose-based PARs.
  - Coordinate Field Monitoring Team activities.
  - Monitor meteorological conditions and remain cognizant of forecast data.
- Following EOF Protective Measures Group staffing:
  - Transfer control of the Field Monitoring Teams to the EOF Environmental Coordinator when appropriate.
  - Transfer responsibility of dose assessment activities to the EOF Dose Assessment Coordinator.
  - Assist the EOF Environmental Coordinator in the acquisition of information for the off-site agency updates.

12) Maintenance Manager TSC

The Maintenance Manager reports to the Station Emergency Director and directs a staff in providing labor, tools, protective equipment and parts needed for emergency repair, damage control and recovery efforts to place the plant in a safe condition or return the plant to its pre-accident status. Responsibilities include:

- Direct the total onsite maintenance and equipment restoration effort.
- Request additional equipment in order to expedite recovery and restoration.
- Supervise the activities of the OSC Director and the TSC Damage Control Communicator.
- Ensure the Operations Manager is informed of OSC staffing utilization and activities.
- In coordination with the Operations Manager, determine the priority assigned to OSC activities.
- Ensure adequate staffing of the OSC.
- Assist in rescue operations.

- Identify required procedures that need to be written or implemented in support of the response efforts.

13) Security Coordinator TSC

The Security Coordinator reports to the Station Emergency Director and maintains plant security and personnel accountability at the nuclear station. Responsibilities include:

- Maintain plant security and account for all personnel within the protected area.
- Assist the Station Emergency Director in evaluating changes in security related threats and event classifications.
- Identify any non-routine security procedures and/or contingencies that are in effect or that require a response.
- Expedite ingress and egress of emergency response personnel.
- Coordinate with the Radiation Protection Manager in controlling ingress and egress to and from the Protected Area if radiological concerns are present.
- Provide for access control to the Control Room, TSC and OSC, as appropriate.
- Expedite entry into the Protected Area, as necessary, for the NRC Site Team.
- Act as the TSC liaison with the appropriate NRC Site Team representative.
- Assist the Radiation Protection Manager in determining personnel evacuation routes as necessary.
- Coordinate the evacuation of station non-essential personnel with the appropriate Local Law Enforcement Agencies (LLEAs).

14) Operations Support Center Director OSC

The OSC Director reports to the Maintenance Manager and supervises the activities of OSC personnel. Responsibilities include:

- Assign tasks to designated Leads as available:
  - Operations
  - Mechanical Maintenance

- Electrical/I&C Maintenance
- Radiation Protection
- Chemistry

- Coordinate with the OSC Operations Lead in the dispatch of Operations personnel to support Control Room and OSC Team activities.
- Notify the Control Room and TSC prior to dispatch of any OSC teams into the plant.
- Maintain OSC resources including personnel, material, and equipment.
- Maintain accountability for all individuals dispatched from the OSC.
- Conduct periodic briefings on the overall plant status, emergency response activities, and station priorities.

15) Assistant Operations Support Center Director OSC

The Assistant OSC Director reports to the OSC Director and supports the OSC Director in supervising the activities of personnel reporting to the OSC. The Assistant OSC Director may be filled by an OSC Lead, normally the Radiation Protection Lead. Responsibilities include:

- Assist the OSC Director in supervising personnel assigned to the OSC.
- Assist in formation of Field Monitoring Teams as directed by the TSC.
- Assist in formation of sampling teams.
- Ensure that records of in-plant survey information and radiochemistry results are maintained.
- Ensure that accumulated exposure records for all essential onsite personnel are maintained.
- Coordinate with the OSC Leads to organize in-plant teams to support station priorities.
- Ensure that in-plant team dispatch briefings include expected activities and radiological hazards.
- Ensure that periodic facility briefings are conducted on plant radiological conditions.

16) OSC Leads OSC

OSC Leads report to the OSC Director and are assigned from the following station departments:

- Mechanical Maintenance
- Electrical / Instrument and Control
- Radiation Protection
- Chemistry
- Operations (on-shift Supervising Operator or designated Operations representative)

The OSC Lead assigned to an OSC team is responsible at all times for the safety of team personnel and to keep the OSC Director apprised of team status. Specifically, the OSC Leads are responsible for the managing and supervising OSC team personnel, including:

- Conduct of adequate pre-dispatch briefings.
- Ensuring adequate protective equipment and measures have been identified.
- Tracking of OSC team activities while dispatched.
- Debriefing of team personnel upon return to the OSC.

b. Corporate Emergency Response Organization

1) Nuclear Duty Officer (NDO)

The NDO is the Exelon Nuclear individual who acts as the initial Corporate contact for declared events. Responsibilities include:

a) Actions for all classified events:

- Contact the affected station to verify and obtain updated information concerning emergency response actions and event status.
- Notify Exelon Nuclear Executives of event.
- Provide information on the event to State Duty Officers, if requested.
- Notify the on-call Exelon Communications and Public Affairs Representative.
- Prior to EOF activation, review any news releases for accuracy.

b) Actions for Alert classifications and above:

- Complete all actions as listed above.
- Notify American Nuclear Insurers (ANI) prior to being transferred to the EOF.

2) Corporate Emergency Director EOF

a) When the Station Emergency Director has Command and Control, the ongoing responsibilities include:

- Coordinate all Exelon Nuclear activities involved with the emergency response.
- Ensure off-site agency updates are periodically communicated as required/requested.
- Coordinate Exelon Nuclear press releases with the Nuclear Duty Officer and Exelon Communications and Public Affairs.
- Request assistance from non-Exelon Nuclear emergency response organizations, as necessary.

b) Following assumption of Command and Control, the additional responsibilities assigned to the Corporate Emergency Director include:

- Assumes overall Command and Control of emergency response activities and the non-delegable responsibilities for PAR determination and the notification of offsite authorities.
- Ensure that Federal, state and local authorities and industry support agencies remain cognizant of the status of the emergency situation. If requested, dispatch informed individuals to offsite governmental Emergency Operation Centers (EOCs).
- Approve the technical content of Exelon Nuclear press releases prior to their being released to the media.

3) EOF Director EOF

The EOF Director reports to the Corporate Emergency Director and has the authority, management ability and technical knowledge to assist the Corporate Emergency Director in the management of Exelon Nuclear's offsite ERO.

In the event that the Corporate Emergency Director becomes incapacitated, the EOF Director shall assume the responsibilities of the Corporate Emergency Director until a transfer of Command and Control can be affected either back to the station or to another qualified Corporate Emergency Director. Responsibilities include:

- Direct and coordinate the activation and response efforts of the EOF staff in support of the Corporate Emergency Director.
- Evaluate the need to augment the EOF staff based on events in progress.
- Assess the effectiveness of ongoing EOF working relationships.
- Monitor information flow within the EOF to ensure that facility activities remain coordinated.
- Prepare state/local notification forms with the assistance of the EOF Radiation Protection Manager and the Technical Support Manager.
- Coordinate services as necessary to support EOF operations.
- Coordinate with the Administrative Coordinator for continual shift staffing requirements.
- Assist in the conduct of Corporate Emergency Director duties.
- Act as the designated alternate for approval of the technical content of Exelon Nuclear Press Releases and information released to the News Media.
- Act as purchasing agent in support of the TSC for contract negotiation/administration.

4) Technical Support Manager EOF

The Technical Support Manager reports to the EOF Director and directs the activities of the Technical Support Group. Responsibilities include:

- Assist the Corporate Emergency Director in monitoring changes in event classification.
- Assist the Corporate Emergency Director in determining plant-based PARs when necessary.

- Provide information to the EOF Director for completing the state/local notification form.
- Provide the Corporate Emergency Director information concerning the status of plant operations, and recommendations for mitigating the consequences of the accident.
- Coordinate the overall Exelon Nuclear engineering support from corporate staff and unaffected stations.
- Interface with Industry and contractor engineering support organizations.
- Ensure that the EOF Radiation Protection Manager is informed of changes in plant status that impacts or potentially impacts the offsite environment or PARs.
- Provide technical information on facility and system design.
- Assist in the development of post-accident recovery measures.

5) Operations Advisor EOF

The Operations Advisor reports to the Technical Support Manager, directs the ENS Communicator, and is responsible for obtaining and analyzing plant status information and ensuring that it is disseminated. Specific responsibilities include:

- Monitor the Operations Status Line to keep apprised of:
  - Control Room activities including progress on Emergency Operating Procedures.
  - Significant changes in plant system/equipment status and critical parameters.
  - Possible changes in event classification.
- Identify and track critical parameters for the identification and trending of current plant status information.
- Assist the station in identifying Operations resources from corporate staff or unaffected stations for direct support of plant shift operations personnel.
- Assist the ENS Communicator in the completion of the NRC Event Notification Worksheet and in responding to NRC inquiries.
- Ensure that the EOF Radiation Protection Manager is informed of changes in plant status that impact or potentially impact the offsite environment or PARs.

6) ENS Communicator EOF

The ENS Communicator reports to the Operations Advisor. Specific responsibilities include:

- Notify the NRC of changes in event classification. Generally, the TSC ENS Communicator focuses on real time plant operations and the EOF ENS Communicator focuses on notifications following changes in event classification and overall changes in event response or status.
- Establish and maintain continuous communications with the NRC, if requested, via the NRC ENS phone or commercial telephone line.
- Coordinate NRC communications with the ENS Communicator in the TSC.

7) Technical Advisor EOF

The Technical Advisor reports to the Technical Support Manager and is responsible for obtaining and analyzing technical support information, accident mitigating activities and priorities and ensuring that it is disseminated. Responsibilities include:

- Monitor the Technical Conference Line to remain aware of TSC technical support activities, strategies and priorities.
- Assist the Dose Assessment Coordinator in acquiring technical information pertaining to release pathway and core damage assessment.
- Supervise the activities of the Events Recorder.

8) Events Recorder EOF

The Events Recorder reports to the Technical Advisor. Responsibilities include:

- Gather/record approved information on status boards as requested.
- Maintain an event chronology/status log.

9) Radiation Protection Manager EOF

The Radiation Protection Manager reports to the EOF Director and directs the activities of the EOF Radiation Protection staff. Specific responsibilities include:

- Recommend changes in event classification and PARs based upon effluent releases or dose projections.
- Assist the EOF Director in the evaluation of the significance of an emergency with respect to the public.

- Notify the EOF Director of meteorological changes that may impact identification of downwind areas.
- Advise the Corporate Emergency Director of protective actions taken by the station for plant personnel.
- Assist the TSC in the planning and coordination of activities associated with the evacuation of non-essential personnel.
- Advise the Corporate Emergency Director on the need for emergency exposures or for issuance of KI to the Field Monitoring Teams or Exelon personnel required to enter the plume.
- Determine the need for and contact Occupational Health/Industrial Safety Services personnel for assistance.
- Monitor plant radiological conditions and advise the TSC Radiation Protection Manager of any adverse trends or potential release pathways that may impact existing event classification.
- Assist in the completion and review of the state/local notification form.
- Maintain cognizance of environmental sampling activities.
- Ensure state authorities are provided information pertaining to Exelon Field Monitoring Team activities and sample results.
- Assist the affected station in the following areas:
  - Planning and coordination of activities associated with the evacuation of non-essential personnel.
  - Acquisition of additional instrumentation, dosimetry, protective equipment and radiological support personnel.
- Assist and interface with the EOF Technical Support Group and the station in the development of plans for plant surveys, sampling, shielding, and special tools in support of waste systems processing and design modification activities.
- Upon request, provide in-plant health physics data to Emergency Public Information personnel and the HPN Communicator.

10) Environmental Coordinator EOF

The Environmental Coordinator reports to the EOF Radiation Protection Manager and directs the Field Team Communicator, Field Monitoring Teams and the State Environs Communicator. Responsibilities include:

- Coordinate the transfer of control of the Field Monitoring Teams if initially under the direction of the TSC Radiological Controls Coordinator.
- Ensure communications are established with the TSC to obtain information on the accident conditions, meteorological conditions and estimates of radioactive material releases.
- Maintain cognizance of Field Monitoring Team exposure. When warranted, ask the Dose Assessment Coordinator to initiate an evaluation of the need for administering KI to Exelon nuclear workers.
- Determine needs of the Dose Assessment Coordinator, the Dose Assessor, the HPN Communicator and the State Environs Communicator(s) for updates on Field Monitoring Team data and ensure distribution of new data to them in accordance with those needs.
- Upon request, provide environmental data to Emergency Public Information personnel.
- Evaluate and coordinate additional equipment and personnel as necessary from unaffected stations to augment and/or relieve station Field Monitoring Teams.

11) State Environs Communicator EOF

The State Environs Communicator is staffed as requested by the applicable state agencies. The State Environs Communicator reports to the Environmental Coordinator. Responsibilities include:

- As needed, obtain release and dose assessment data from the Dose Assessment Coordinator and Field Monitoring Team data from the Environmental Coordinator.
- Coordinate activities and information flow between the EOF Protective Measures Group and the affected state(s) environmental authorities, including periodic updates on meteorological conditions, Field Monitoring Team activities and survey/sample results.
- Ensure that the Environmental Coordinator is aware of state environmental activities and sample results.

12) Field Team Communicator EOF

The Field Team Communicator reports to the Environmental Coordinator. Responsibilities include:

- Establish and maintain contact with the dispatched Field Monitoring Teams.
- Document the Environmental Coordinator's instructions and then relay this information to the Field Monitoring Teams.
- Document environmental data reported by the Field Monitoring Teams.
- Periodically obtain and document information on Field Monitoring Team radiological exposure.
- Promptly report new environmental or Field Monitoring Team exposure data to the Environmental Coordinator.
- Document questions and answers directed to and received from the Field Monitoring Teams. Ensure the Environmental Coordinator is cognizant of these information requests and relay replies to these requests.

13) Dose Assessment Coordinator EOF

The Dose Assessment Coordinator reports to the EOF Radiation Protection Manager and directs the activities of the Dose Assessor and the HPN Communicator. Responsibilities include:

- Interpret radiological data and provide PARs based upon dose projections to the EOF Radiation Protection Manager.
- Advise the EOF Radiation Protection Manager of changes in event classification based on effluent releases or dose projections.
- Initiate evaluation of the need for administering KI to Exelon nuclear workers when requested by the Environmental Coordinator.
- Remain cognizant of forecast and meteorological data and ensure the status is updated periodically.
- Notify the EOF Radiation Protection Manager of meteorological changes that may impact identification of downwind areas.
- Upon request, provide release and dose assessment data to Emergency Public Information personnel, the HPN Communicator, and the State Environs Communicators.

14) Dose Assessor EOF

The Dose Assessor reports to the Dose Assessment Coordinator. Responsibilities include:

- Perform dose projections using the Dose Assessment computer models as directed by the Dose Assessment Coordinator.
- Monitor meteorological and plant effluent conditions.
- Notify the Dose Assessment Coordinator of meteorological changes that may impact identification of downwind areas.
- Evaluate the need for administering KI to Exelon nuclear workers when requested by the Dose Assessment Coordinator.

15) HPN Communicator EOF

The HPN Communicator reports to the Environmental Coordinator. Responsibilities include:

- Provide updates and respond to inquiries from the NRC on offsite environmental data, release status, dose projections and changes to PARs for the general public.
- Obtain release and dose assessment data from the Dose Assessment Coordinator and Field Monitoring Team data from the Environmental Coordinator.
- Maintain continuous communications with the NRC, if requested, via the NRC HPN phone or commercial telephone line.
- Communicate current Health Physics information to NRC representatives, as requested.

16) Logistics Manager EOF

The Logistics Manager reports to the EOF Director and directs the activities of the administrative, security and liaison personnel. Responsibilities include:

- Ensure contact is made and communications are maintained with appropriate Non-Exelon Nuclear personnel whose assistance may be required to terminate the emergency conditions and to expedite the recovery.
- Advise the EOF Director concerning the status of activities relating to governmental interfaces.
- Obtain support from Human Resources, the Comptroller's Office, the Legal Department, Accounting Department and others as required.

- Coordinate with the Nuclear Duty Officer to maintain communications with ANI and INPO.
- Ensure that access to the EOF is limited to Emergency Responders and authorize admittance to non-Exelon personnel.
- Implement the Exelon Nuclear Fitness for Duty Program.
- Ensure that NRC Site Team Representatives are directed to the Regulatory Liaison upon arrival at the EOF.
- Ensure that updates and information are provided to the EOC Liaisons and to offsite officials present in the EOF.
- Assist in obtaining and coordinating additional equipment/materials and /or technical expertise to support station requests, including Exelon Corporate staff, unaffected stations and vendor/contractors.
- Coordinate maintenance of EOF equipment as necessary.
- Ensure shift relief and continual staffing for the EOF.

17) Administrative Coordinator EOF

The Administrative Coordinator reports to the Logistics Manager. Responsibilities include:

- Direct the activities of the Computer Specialist.
- Direct the clerical staff and ensure the clerical requirements for the other EOF and JIC staff are met.
- Obtain clerical support for the EOF and JIC.
- Coordinate shift relief and continual staffing for the EOF.
- Obtain services as appropriate to support operation of the EOF.

18) Computer Specialist EOF

The Computer Specialist reports to the Administrative Coordinator. Responsibilities include:

- Assist any personnel in logging in, initializing or using a desired computer program.
- Investigate and repair problems encountered with communications equipment and computer equipment/applications.

19) Security Coordinator EOF

The Security Coordinator reports to the Logistics Manager. Responsibilities include:

- Provide and interpret information on security events.
- Assist with access control activities at the EOF and JIC.
- Perform the following in support of the TSC Security Coordinator:
  - Provide assistance in resolving security events.
  - Assist as a liaison for local, state and federal law enforcement agencies during security related events.
  - Serve as the primary contact to the security force for additional support, if necessary, during a security event.
- Obtain additional resources to support access control measures needed at the EOF and JIC.

20) State/Local Communicator EOF

The State/Local Communicator reports to the Logistics Manager. Responsibilities include:

- Communicate and receive information via the Nuclear Accident Reporting System (NARS) circuit or commercial telephone line with appropriate state and county agencies.
- Ensure that the Logistics Manager is made aware of issues and questions raised by offsite agencies and then relay the replies to these requests.

21) EOC Communicator EOF

The EOC Communicator reports to the Logistics Manager. Responsibilities include:

- Coordinate and dispatch EOC Liaisons as needed or requested.
- Establish and maintain periodic contact with each location where Exelon Nuclear EOC Liaisons have been dispatched.
- Ensure EOC Liaisons are provided event information and notifications.
- Ensure that the Logistics Manager is made aware of issues and questions raised by offsite agencies and then relay the replies to these requests.

22) County EOC Liaison(s) — County EOCs

The County EOC Liaison(s) will be dispatched to County Emergency Operations Centers (EOCs) based on established agreements with the counties. The County EOC Liaisons use the EOC Communicator as their contact at the EOF. Responsibilities include:

- Monitor and report County EOC activities to the EOF.
- Conduct briefings and answer questions.
- Provide simplified explanations to EOC personnel of technical details distributed through approved channels.
- Assist with confirmation/verification of information distributed through approved channels.
- Provide media at the EOC with approved Exelon Nuclear press releases.
- Assist Emergency Public Information personnel in rumor control and media monitoring.

23) State EOC Liaison(s) — State EOCs

At the request of state officials and/or at the discretion of the Corporate Emergency Director, Exelon Nuclear will provide Liaison personnel to state Emergency Operation Centers (EOCs). The state EOC Liaisons use the EOC Communicator as their contact at the EOF. Responsibilities include:

- Monitor and report state EOC activities to the EOF.
- Conduct briefings and answer questions as requested.
- Assist Emergency Public Information personnel in rumor control and media monitoring.

24) Regulatory Liaison — EOF

The Regulatory Liaison reports to the Logistics Manager. Responsibilities include:

- Coordinate interfaces between Exelon Nuclear personnel and governmental agencies within the EOF.
- Obtain necessary equipment and supplies to support activities of governmental agencies located in the EOF.
- Act as the Exelon Nuclear Liaison to the NRC Site Team representatives.

c. Public Information Emergency Response Organization

1) Corporate Spokesperson JIC

The Corporate Spokesperson reports to the Corporate Emergency Director and is responsible for directing the Exelon Emergency Public Information Organization and providing news information to the media. Responsibilities include:

- Maintain command and control of the Joint Information Center.
- Coordinate with Federal, state and local agencies, as well as with other organizations involved in the emergency response, to maintain factual consistency of information to be conveyed to the news media/public.
- Conduct periodic briefings with the news media.
- Interface with the Public Information Director.
- Coordinate and direct responses to media inquiries.
- Ensure that the composition and timeliness of Exelon News Releases are adequate.
- Provide for timely exchange of information between other spokespersons.

2) Technical Spokesperson JIC

The Technical Spokesperson reports to the Corporate Spokesperson. Responsibilities include:

- Assist in development of technical and plant status information for use in news releases and media briefings.
- Assist the Events Recorder in the preparation of a chronological event description log.
- Prepare briefing papers which contain additional detail and background not found in the news releases.
- Provide answers as soon as possible to media questions.
- Provide a follow-up explanation that corrects misinformation as soon as practicable.

3) Radiation Protection Spokesperson JIC

The Radiation Protection Spokesperson reports to the Corporate Spokesperson. Responsibilities include.

- Assist in development of environmental and health physics information for use in news releases and media briefings.
- Assist the Events Recorder in the preparation of a chronological event description log.
- Prepare briefing papers which contain additional detail and background not found in the news releases.
- Provide answers as soon as possible to media questions.
- Provide a follow-up explanation that corrects misinformation as soon as practicable.

4) JIC Director JIC

The JIC Director reports the Corporate Spokesperson to ensure the operability of and to supervise the activities in the JIC. Responsibilities include:

- Maintain cognizance of conditions of the plant and environment, and the actions of Exelon Nuclear and governmental support personnel.
- Coordinate with Federal, state and local agencies, as well as with other organizations involved in the emergency response, to maintain factual consistency of information to be conveyed to the news media/public.
- Participate, as needed, in rumor control activities.
- Ensure that adequate information flow between the EOF and the JIC is coordinated through the Public Information Director.
- Authorize admittance of non-Exelon Nuclear officials to the JIC.

5) JIC Coordinator JIC

The JIC Coordinator reports to the JIC Director and supervises the facilities support staff. Responsibilities include:

- Ensure the JIC is activated and operational. This includes the availability of communications and visual aids.
- Ensure that access to the JIC areas occupied by Exelon personnel is controlled.
- Establish a minimum frequency for addressing news media/public representatives and ensure that some form of communication occurs within that time frame (i.e., an update at least hourly.)

- Ensure that approved News Releases and Chronological Event Description Logs are made available in the JIC.
- Document unanswered questions and serious public misinformation issues. Follow-up on these questions and issues to ensure that they are being adequately addressed.
- Coordinate the interface between Exelon Nuclear and the news media/public, including, as necessary, briefings, news conferences, interviews and responses to information requests.

7) Administrative Coordinator — JIC

The Administrative Coordinator reports to the JIC Director. Responsibilities include:

- Coordinate with the EOF Administrative Coordinator to ensure the clerical requirements for the other JIC staff are met.
- Coordinate shift relief and continual staffing for the JIC.
- Obtain services as appropriate to support operation of the JIC.

8) Access Controller — JIC

The Access Controller reports to the JIC Director and is responsible for controlling facility access and obtaining authorization prior to admitting non-Exelon Nuclear officials into the JIC.

9) Public Information Director (PID) — JIC

When the Emergency Public Information Organization is activated, the Public Information Director reports to the Corporate Spokesperson and is responsible for all emergency event related information intended to be conveyed from Exelon Nuclear to the news media/public. The Public Information Director supervises the activities of the, News Writer, Events Recorder and media monitoring and rumor control personnel. Responsibilities include:

- Provide the Corporate Emergency Director with an overview of the public and media impacts resulting from the Exelon Nuclear and governmental activities.
- Participate with the Corporate Emergency Director regarding information to be released to the public.
- Authorize the issuance of news releases.
- Interface with the Corporate Spokesperson at the JIC.

- Act as a liaison between the ERO and Exelon Nuclear's corporate executives.
- Maintain cognizance of conditions of the plant and environment, and the actions of Exelon Nuclear and governmental support personnel.
- Coordinate information flow between the EOF and the JIC.
- Coordinate with the Media Monitoring Staff to review and access media coverage of the emergency event.

10) News Writer — JIC

The News Writer reports to the Public Information Director. Responsibilities include:

- Compose draft news releases with assistance from the Technical Spokesperson and the Radiation Protection Spokesperson.
- Provide the drafted news releases to the Corporate Emergency Director for technical review prior to Public Information Director approval.

11) Events Recorder — JIC

The Events Recorder reports to the Public Information Director. Responsibilities include:

- Develop a chronological event description log.

12) Media Monitoring Staff — JIC

The Media Monitor reports to the Public Information Director. Responsibilities include:

- Ensure that the media is being monitored and that Exelon Nuclear personnel review the information detailed or contained in media releases.
- Inform the Public Information Director of all media reports and of actions taken to correct any misinformation or rumors.
- Direct the activities of the Rumor Control Staff with respect to the function of monitoring rumors from sources other than the media.

13) Rumor Control Staff — JIC

The Rumor Control Staff reports to the Public Information Director and acts in support of the Media Monitors. Responsibilities include:

- Ensure that rumors are reviewed, documented and responded to by Exelon Nuclear personnel as deemed appropriate.

- Until the JIC is fully activated, document and respond to rumors as quickly as possible, through the Exelon Communications and Public Affairs.

- Inform the Media Monitors when rumors representing serious misinformation are encountered.

**6. Exelon Emergency Response Organization Block Diagram**

ERO staffing tables contained within the station specific Annex, lists the key positions of the ERO and the supporting positions assigned to interface with federal, state, and county authorities. Figures B-1a through B-1d illustrates the overall emergency response organization. Section B.5 discusses specific responsibilities and the interrelationships for key positions.

**7. Exelon Corporate Emergency Response Organization**

The Corporate ERO consists of the EOF Organization and the Emergency Public Information Organization. Personnel staffing these corporate organizations are covered in detail in Section B.5 of this plan.

The Corporate Emergency Response Organization is staffed by Exelon personnel, and operates out of the Emergency Operations Facility (EOF) and the Joint Information Center (JIC). The Corporate ERO is supported by News Media Spokespersons, environmental assessment staff and monitoring teams that provide long-term support to the affected station. Additionally, the Corporate ERO has long term liaison responsibilities with federal, state, and local authorities.

The Emergency News Center (ENC) function is responsible for the collection and analysis of event information and status, and development of Company news statements. This information is then communicated to the JIC Spokespersons. The ENC function may be located at either the EOF or the JIC.

The Corporate ERO is activated at an Alert. The EOF Organization is responsible for evaluating, coordinating and directing the overall company activities involved in the emergency response. Within the EOF, the Corporate Emergency Director shall assume Command and Control from the Station Emergency Director when classification escalates to an Alert or higher, unless the EOF capabilities are limited such that the overall control and responsibility for PARs and offsite notifications cannot be assumed. The EOF may also function in a supporting role to the station when the Station Emergency Director maintains Command and Control.

**8. Industry/Private Support Organizations**

Exelon Nuclear retains contractors to provide supporting services to nuclear generating stations. A contract/purchase order with a private contractor is acceptable in lieu of an agreement letter for the specified duration of the contract. Among services currently provided are the following:

a. Institute of Nuclear Power Operations (INPO): Experience has shown that a utility may need resources beyond in-house capabilities for the recovery from a nuclear plant emergency. One of the roles of the Institute of Nuclear Power Operations (INPO) is to assist affected utilities by quickly applying the resources of the nuclear industry to meet the needs of an emergency. INPO has an emergency response plan that enables it to provide the following emergency support functions:

- Assistance to the affected utility in locating sources of emergency personnel, equipment and operational analysis.
- INPO, Electric Power Research Institute (EPRI) and Nuclear Energy Institute (NEI) maintain a coordination agreement on emergency information with their member utilities.
- INPO provides the "Nuclear Network", or its replacement, electronic communications system to its members, participants, NEI, and EPRI to coordinate the flow of media and technical information about the emergency.
- Exelon Nuclear may obtain utility industry information and assistance from any party to this agreement through the coordination of INPO.

To support these functions, INPO maintains the following emergency support capabilities:

- A dedicated emergency call number.
- Designated INPO representative(s) who can be quickly dispatched to the utility emergency response organization to coordinate INPO support activities and information flow.
- The 24-hour per day operation of an Emergency Response Center at INPO headquarters.

Exelon Nuclear will notify INPO (via the designated emergency call number) for all situations involving an Alert, Site Area Emergency, or General Emergency declaration per the Exelon Nuclear Reportability Manual.

INPO has coordinated the preparation of a Voluntary Assistance Agreement for Transportation Accidents. Exelon Nuclear has signed this agreement which establishes the rights and responsibilities of electric utilities in requesting or providing assistance for response to a nuclear materials Transportation Accident.

b. American Nuclear Insurers (ANI): In early 1982, ANI issued Bulletin #5B (1981) "Accident Notification Procedures for Liability Insurers" which provides revised criteria for the notification of the Pools in the event of a nuclear emergency at one of the liability insured nuclear power reactor sites. This revision brings the ANI/MAELU (Mutual Atomic Energy Liability Underwriters) notification criteria into alignment with the standard emergency classification system adopted by the nuclear industry. This document also identifies a suitable channel for follow-up communication by ANI after initial notification.

- ANI/MAELU Emergency Assistance: In the event of an extraordinary nuclear occurrence (as defined in the Price-Anderson Law) ANI and MAELU (the insurance pools) have plans prepared to provide prompt emergency funding to affected members of the public.

- ANI/MAELU Emergency Assistance (Claims Handling Procedures): The pools' emergency assistance arrangements contemplate the mobilization and dispatch of emergency claims teams to directly dispense emergency assistance funds to affected members of the public.

  The pools should be notified in the event of a nuclear emergency requiring notification of state or Federal governmental agencies, or if the insured believes that offsite persons may be affected and financial assistance of a nature discussed may be required. In these instances, ANI expects notification as soon as possible after the initiation of the emergency. Exelon notification to the pools in the event of an Alert, Site Area Emergency, or General Emergency will be in accordance with the Exelon Nuclear Reportability Manual.

  Even if it appears to be remote that offsite persons will be affected, the pools should be notified in order that response plans can be initiated to the point of alerting teams of adjusters to stand by. Response activity can be discontinued if it proves less severe and does not require pool response.

  All nuclear occurrences of an emergency or non-emergency nature that fall under the nuclear liability policy should be reported formally in writing to ANI by the Exelon Nuclear Insurance Administrator.

- Emergency Notification and Follow-up Procedures: Pre-established lines of communication exist between each utility and ANI in order to exchange all required information during a developing emergency situation.

  ANI maintains 24-hour coverage of an emergency notification number. During normal office hours (8:00 am - 4:00 pm) their number will be answered by the receptionist who will transfer an incoming emergency call to an appropriate individual in the office. Outside of normal office hours, this telephone line is covered by an answering service. The answering service will intercept the call and obtain the name, affiliation and telephone number of the caller. They will then notify a designated ANI staff member who will in turn call back the utility to obtain appropriate information regarding the nuclear accident.

In order that follow-up information is available to the Insurance Pool Exelon Nuclear has established the Corporate Emergency Director or their designee as a Point of Contact that ANI personnel may use to update themselves regarding the status of the emergency.

**NOTE:** For the below listed support services, the specific contractors may change but the functions are maintained.

c. Environmental Monitoring Services:

Environmental Inc.: Environmental Inc. provides emergency Radiological Environmental Monitoring Program (REMP) services. These services include:

- Sample collection
- Handling, packaging and storage of test samples
- Sample shipment
- Chain of Custody

The Environmental Inc. Midwest Laboratory in Northbrook, Illinois analyzes environmental samples for their radioactivity content and reports results to Exelon Nuclear. The REMP sample collection activities at certain Mid-Atlantic and Northeast stations have been subcontracted to Normandeau and Associates or Exelon Industrial Services (also referred to as Fort Smallwood) while others are performed by Exelon station personnel.

d. Teledyne Brown Engineering: Teledyne Brown Engineering provides bioassay analysis and radiochemical analysis services.

e. Department Of Energy (DOE) Radiation Emergency Assistance Center/Training Site (REAC/TS): DOE REAC/TS provides services of medical and health physics support. REAC/TS advises on the health physics aspects of situations requiring medical assistance.

f. Murray and Trettel, Inc.: Murray and Trettel, Inc. provide meteorological monitoring services, including weather forecasts. Murray and Trettel maintain all Exelon Nuclear station meteorological facilities. Murray and Trettel have computer capability to poll remotely the meteorological facilities to ascertain local conditions and to detect instrument failure.

g. Landauer, Inc.: Landauer provides extremity dosimetry services. In an emergency Landauer would provide additional dosimetry to the affected nuclear station and EOF, if needed.

h. Manufacturer Design and Engineering Support: Under established contracts, the following will provide available engineering expertise, specialized equipment and other services identified as needed and deemed appropriate to assist in an emergency situation:

- General Electric (GE) Nuclear Energy
- Westinghouse Electric Company

**9. Supplemental Emergency Assistance to the ERO**

Agreements are maintained (for each nuclear station) with outside support agencies who do not take part in the organizational control of the emergency that provide assistance when called on during an emergency or during the recovery phase. These agreements identify the emergency measures to be provided, the mutually accepted criteria for implementation, and the arrangements for exchange of information. These support agencies (to be named in each Station Annex) provide services of:

a. Law enforcement;

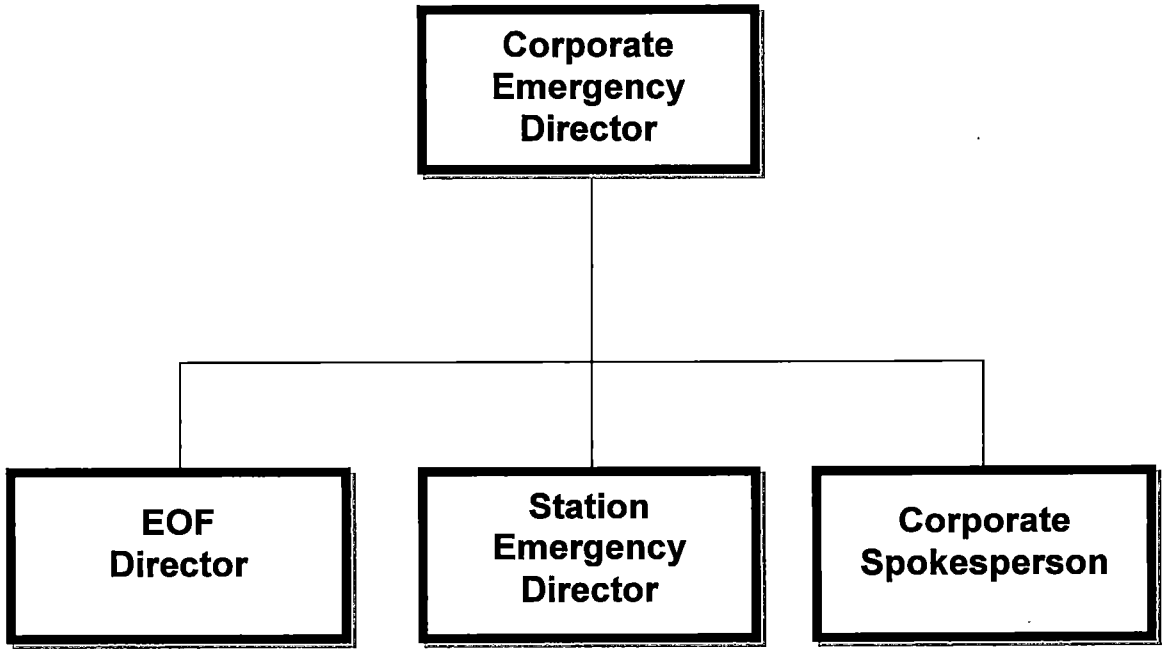
b. Fire protection;

c. Ambulance services;

d. Medical and hospital support

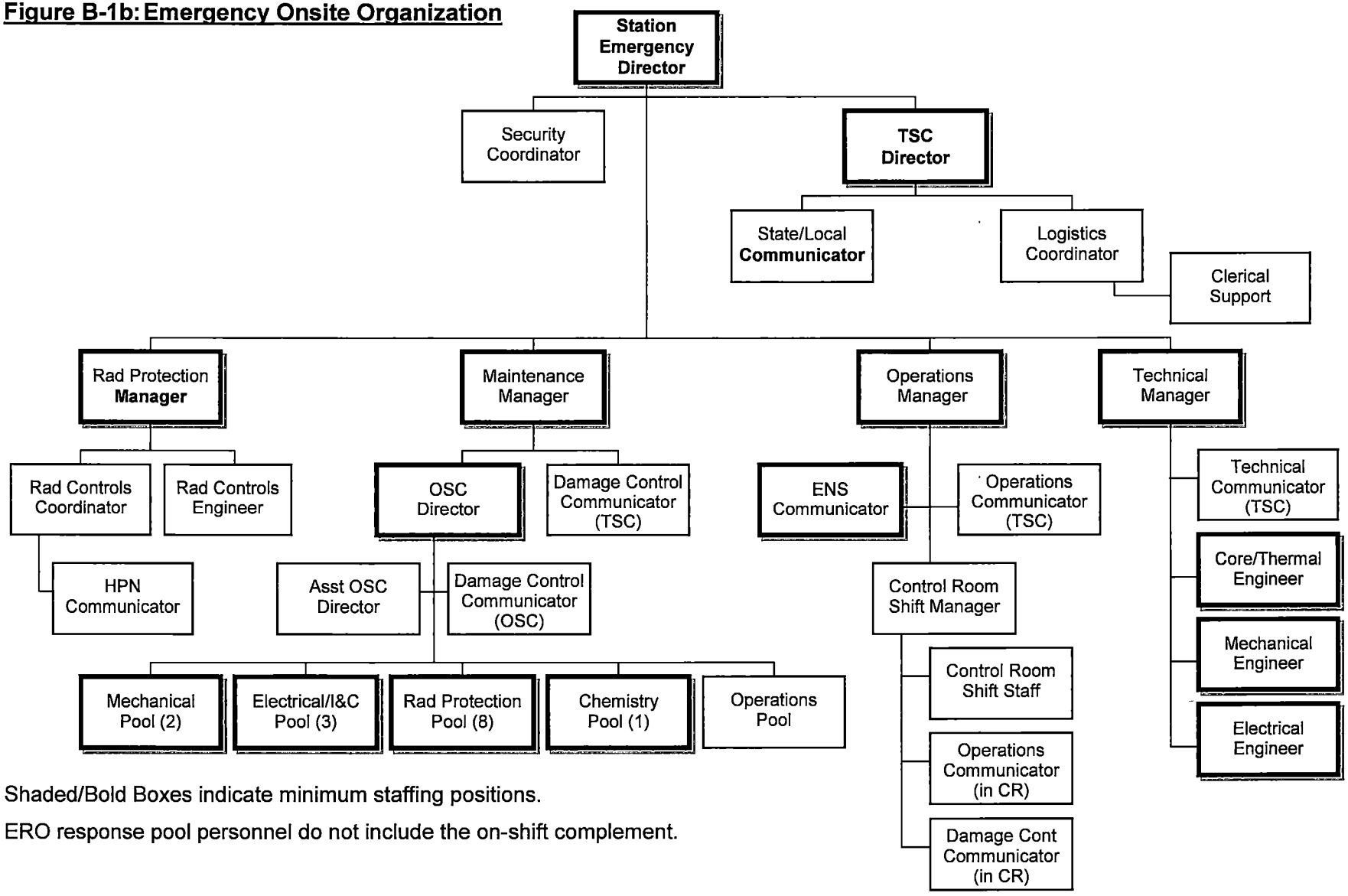
Support groups providing transportation and treatment of injured station personnel are described in Section L of this plan.

**Figure B-1a: Exelon Overall ERO Command Structure**




Shaded/Bold Boxes indicate minimum staffing positions.

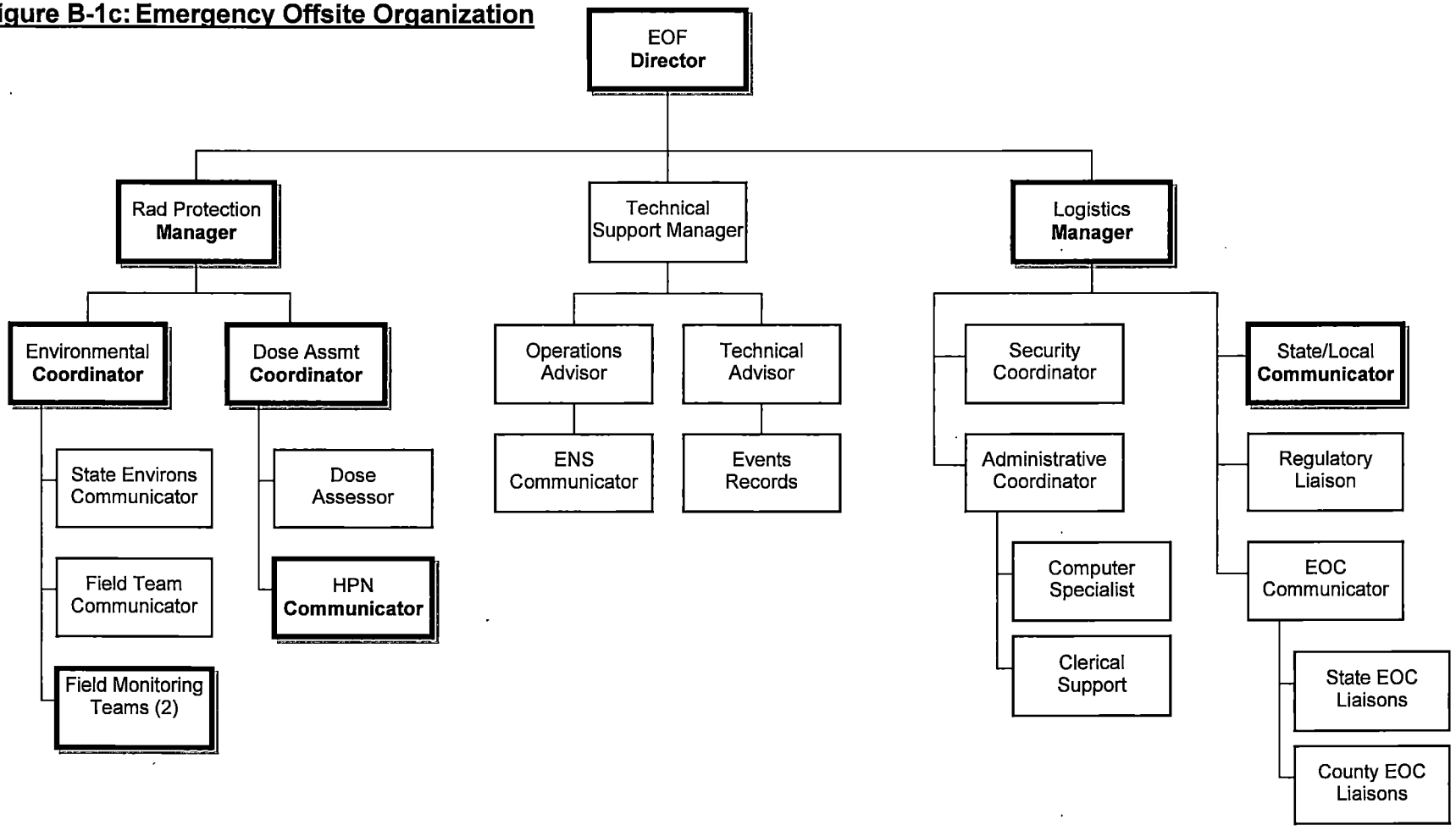
## Figure B-1b: Emergency Onsite Organization




Shaded/Bold Boxes indicate minimum staffing positions.

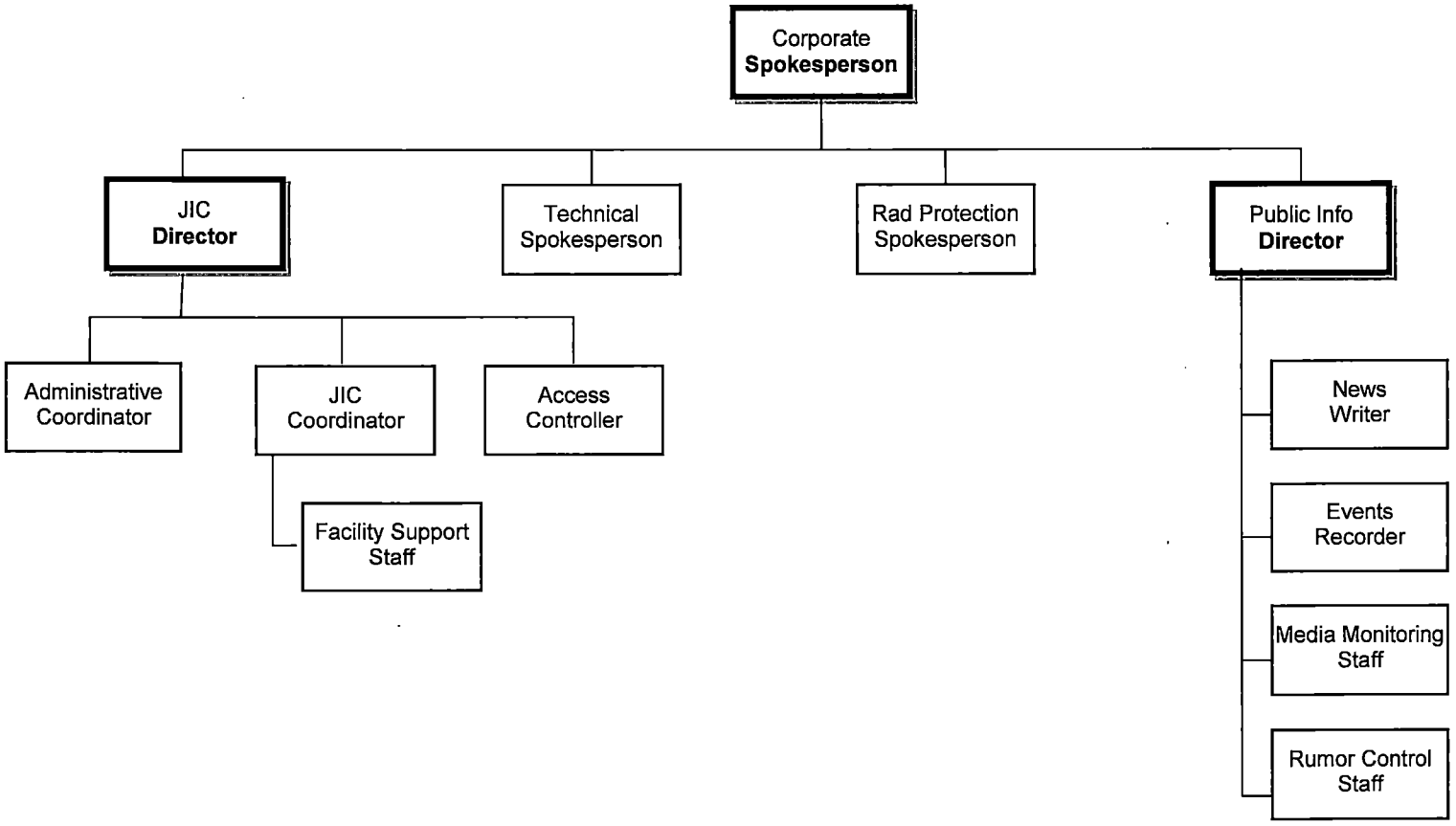
ERO response pool personnel do not include the on-shift complement.

**Figure B-1c: Emergency Offsite Organization**




Shaded/Bolded Boxes indicate minimum staffing positions.

**Figure B-1d: Emergency Public Information Organization**




Shaded/Bolded Boxes indicate minimum staffing positions.

## Section C: Emergency Response Support and Resources

This section describes the provisions for requesting and effectively utilizing support resources and for accommodating offsite officials at the Exelon Nuclear emergency response facilities.

### 1. Federal Response Support and Resources

Assistance is available from federal agencies through the National Response Framework (NRF). The lead federal agency who provides direct assistance to Exelon during an emergency is the Nuclear Regulatory Commission (NRC). Other federal agencies, such as the Federal Emergency Management Agency (FEMA) and the Department of Energy (DOE), provide assistance to the state through implementation of the NRF.

a. Sections A and B of this plan identify the specific individuals by title who are authorized to request federal assistance.

b. Federal agencies that may provide assistance in direct support of Exelon Nuclear in the event of an accident are identified in Section A of this plan. If needed, federal resources are made available to Exelon Nuclear in an expeditious and timely manner.

c. Each emergency response facility has the equipment and communications capability necessary for a continuous high level of response, interaction, and communication among key personnel during emergency conditions. The emergency facilities are able to accommodate federal representatives with working areas provided for their use. Accommodations for the expected NRC site response team assume the following approximate numbers for each facility:

| | Initial Activation (minimum) | Full Activation |
|---|---|---|
| EOF | 9 | 16 |
| TSC | 3 | 5 |
| CR | 1 | 1 |
| JIC | 1 | 10 |

The Exelon Emergency Response Organization will provide senior management support for site response teams and communications over a Management Counterpart Link to federal response headquarters.

### 2. Liaisons

a. The NRC, FEMA, and the state(s) may dispatch representatives to the EOF where accommodations have been provided.

b. At the Alert level and above, Exelon Nuclear personnel may be assigned as liaisons to the requesting state and/or county Emergency Operations Center (EOC). These representatives act as technical liaisons to interpret emergency action levels and protective action recommendations made by Exelon.

### 3. Radiological Laboratories

Support of the radiation monitoring and analysis effort is provided by an onsite laboratory. The onsite laboratory is the central point for receipt and analysis of all onsite samples and includes equipment for chemical analyses and for the analysis of radioactivity. Additional facilities for counting and analyzing samples can be provided by the other Exelon Nuclear generating stations, state, federal or contracted laboratory services. These laboratories can act as backup facilities in the event that the plant's counting room and laboratory become unusable or the offsite radiological monitoring and environmental sampling operation exceeds the capacity or capability of the station laboratory during an emergency. Additional outside analytical assistance may be requested from contracted vendors or state and federal agencies. The equipment and analytical capabilities for each station's laboratories are listed in the station's E-Plan Annex. The state, federal and contract laboratories maintain independent evaluation and certification processes and have the capability of quantitative analysis of terrestrial, marine and air samples.

### 4. Other Assistance

Any unaffected Exelon Nuclear Generating station is available to provide certain types of assistance and support, including engineering, design, consultation, whole body counting, and dosimetry evaluation and equipment. Additional facilities, organizations, and individuals, as listed in the Emergency Response Facilities (ERF) Telephone Directory, are available and may be used in support of emergency response. In addition, American Nuclear Insurers (ANI) provides insurance to cover Exelon legal liability up to the limits imposed by the Price-Anderson Act, for bodily injury and/or property damage caused by the nuclear energy hazard resulting from an incident at the plant. Written agreements which describe the level of assistance and resources provided to Exelon Nuclear by external sources are included in Appendix 3 as applicable.

## Section D: Emergency Classification System

This section describes the classification and emergency action level scheme used to determine the minimum response to an abnormal event at the stations. This scheme is based on plant systems, effluent parameters, and operating procedures. The initial response of federal, state, and county agencies is dependent upon information provided by the ERO. Exelon works closely with the state and county agencies to ensure consistency in classification schemes and procedural interfaces.

### 1. Emergency Classification System

The E-Plan provides for classification of emergencies into five (5) categories or conditions, covering the postulated spectrum of emergency situations. The first four (4) categories: Notification of Unusual Event (referred to as Unusual Event), Alert, Site Area Emergency, and General Emergency, are characterized by Emergency Action Levels (EALs) or event initiating conditions and address emergencies of increasing severity. The fifth, the Recovery classification, is unique in that it may be viewed as a phase of the emergency requiring specific criteria to be met and/or considered prior to its declaration. Recovery is that period when the emergency phase is over and activities are in progress to return the situation to a normal state (acceptable condition).

a. Unusual Event - 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.

This is the least severe of the four (4) levels. The purpose of this classification is to bring response personnel and offsite agencies to a state of readiness in the event the situation degrades and to provide systematic handling of information and decision making. The Shift Manager, as Shift Emergency Director will classify an Unusual Event.

Required actions at this classification include:

- Notifications to station management and the NDO.
- Notification, within 15 minutes, of the state and local communities.
- At the discretion of the Emergency Director, station management or the Nuclear Duty Officer (NDO), full or selective staffing of the TSC, OSC and EOF may be initiated.
- Notification of the NRC immediately after notification of the appropriate State and local agencies and not later than 60 minutes of classification.
- Assessment of the situation and response as necessary, which may include escalating to a higher classification if conditions warrant.

- When the event is terminated, close-out is performed over communication links to offsite authorities participating in the response (i.e., NRC, state, county), followed by formal transmission of a state/local notification form within 24 hours.

b. Alert - Events are in process or have occurred which indicate 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 EPA Protective Action Guideline exposure levels.

The purpose of this classification is to ensure that emergency response personnel are readily available and to provide offsite authorities with current status information. An Alert will be classified as the initiating event or as escalation from an Unusual Event. In either case, the classification will most likely made by the Shift Manager (Shift Emergency Director) prior to the transfer of Command and Control.

Required actions at this classification include:

- Notifications to station management and the NDO.
- Notification, within 15 minutes, of the state and local communities. The EOF will assume state update responsibilities.
- Activation of the TSC, OSC, EOF, and the JIC organizations.
- Transfer of Command and Control.
- Notification of the NRC immediately after notification of the appropriate State and local agencies and not later than 60 minutes of classification.
- Notification of INPO and ANI.
- Assessment of the situation and response as necessary, which may include escalating to a higher classification if conditions warrant.
- On-site and off-site Field Monitoring Teams are sent to staging areas or dispatched to monitor for releases of radiation to the environment.
- Keeping offsite authorities informed of plant status by providing periodic updates to include meteorological and radiological data.
- When the event is terminated, notification is performed over communication links followed by an Initial Incident Report to offsite authorities participating in the response (i.e., NRC, state, county) within 8 hours.

c. Site Area Emergency - Events are in process or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts; 1) toward site personnel or equipment that could lead to the likely failure of or; 2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary.

   The purpose of this classification, in addition to those of the Alert level, is to ensure that all emergency response centers are staffed and provisions are made for information updates to the public through offsite authorities and the news media. The classification will most likely be made by the Station Emergency Director following activation of the TSC.

   Required actions at this classification, in addition to those listed under the Alert level, include:

   - If not previously performed, Assembly/Accountability shall be performed and Site Evacuation of non-essential personnel shall be initiated.
   - Keeping offsite authorities informed of plant status by providing periodic updates to include meteorological data and projected or actual doses for any releases that have occurred.

d. General Emergency - Event(s) 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.

   The purpose of this classification, in addition to those of the Site Area Emergency level, is to initiate predetermined protective actions for the public and provide continuous assessment of information from monitoring groups. The classification will most likely be made by the Station Emergency Director following activation of the TSC.

   Required actions at this classification, in addition to those listed under the Alert and Site Area Emergency, include:

   - A Protective Action Recommendation will be determined.
   - Assessment of the situation and response as necessary.

e. Recovery: That period when the emergency phase is over and activities are being taken to return the situation to a normal state (acceptable condition). The plant is under control and no potential for further degradation to the plant or the environment is believed to exist.

   Recovery will be classified by the Station Emergency Director after obtaining authorization from the Corporate Emergency Director.

   Required actions at this classification include:

   - The affected state(s) and the NRC should be consulted prior to entry into Recovery.
   - Notifications will be made to station management, the NDO, state(s) and NRC.
   - A Recovery organization will be established to manage repairs to return the Unit to an acceptable condition, and support environmental monitoring activities as requested in coordination with Federal and state efforts.
   - INPO and ANI are notified of Recovery classification.

f. Classification Downgrading: Exelon Nuclear policy is that emergency classifications shall not be downgraded to a lower classification. Once declared, the event shall remain in effect until no Classification is warranted or until such time as conditions warrant classification to Recovery.

g. Guidance for Termination of an Emergency: The purpose of terminating an emergency is to provide an orderly turnover of plant control from the Emergency Response Organizations to the normal Exelon Nuclear plant organization. Termination of the emergency is authorized by the Emergency Director in Command and Control. The considerations provided in the Recovery/Termination Checklist in the emergency implementing procedures must be performed prior to exiting the emergency event. Consultation with governmental agencies and other parties should be conducted prior to termination of an event classified as Site Area or General Emergency. Notifications shall be transmitted to appropriate agencies to terminate an event.

h. Station Nuclear Security Plan: Each nuclear station has a Security Plan that complies with the requirements of 10 CFR 73. The interface between the E-Plan and the Security Plan is one of parallel operation. The plans are compatible. The E-Plan response measures, once initiated, are executed in parallel with measures taken in accordance with the Security Plan.

Threats made to Exelon Nuclear facilities are evaluated in accordance with established threat assessment procedures and the respective Security Plans. The Security Plan, Appendix C, Contingency Events, identifies situations that could be initiating conditions for EAL classifications. Contingency events include bomb threats, attack threats, civil disturbances, protected area intrusions, loss of guard/post contact, vital area intrusions, bomb devices discovered, loss of guard force, hostages, extortion, fire/explosions, internal disturbances, security communications failure, and obvious attempts of tampering. The Security Plan provides guidance for decisions and actions to be taken for each security contingency event. As guidance, the Security Plan allows for differing responses depending upon the assessment of the actual situation within each contingency event classification.

The assessment of any security contingency event and the decision to initiate, or not to implement the E-Plan, will be the responsibility of the Shift or Station Emergency Director. All identified security contingency events have the potential of being assessed as initiating conditions for a radiological emergency declaration.

Determination of a credible security threat may require the staffing of emergency response facilities based on the classification of an Unusual Event per the Emergency Action Levels (EALs).

**2. Emergency Action Level Technical Bases**

Addendum 3 to the Station Annexes include Site Specific Emergency Action Levels (EALs) consistent with the general class descriptions and provided in NEI guidance documentation in accordance with Regulatory Guide 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors." Where possible, these EALs will be related to plant instrumentation readings.

Emergency classifications are characterized by Emergency Action Levels (EALs). The Threshold Values are referenced whenever an Initiating Condition is reached. An Initiating Condition is one of a predetermined subset of unit conditions where either the potential exists for a radiological emergency, or such an emergency has occurred. Defined in this manner, an Initiating Condition is 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. Initiating Conditions are arranged in one of the Recognition Categories.

EALs are for unplanned events. A planned evolution involves preplanning to address the limitations imposed by the condition, the performance of required surveillance testing, and the implementation of specific controls prior to knowingly entering the condition. Planned evolutions to test, manipulate, repair, perform maintenance or modifications to systems and equipment that result in an EAL Threshold Value being met or exceeded are not subject to classification and activation requirements as long as the evolution proceeds as planned. However, these conditions may be subject to the reporting requirements of 10 CFR 50.72.

An emergency is classified after assessing abnormal plant conditions and comparing them to EAL Threshold Values for the appropriate Initiating Conditions. Classifications are based on the evaluation of each unit for multi-reactor sites. Matrix tables organized by recognition categories are used to facilitate the comparison. The matrix tables are used when the unit is in the Technical Specification defined modes of Power Operations, Hot Standby, Hot Shutdown (for classifications purposes, startup evolutions are included in the Power Operations mode) and Cold Shutdown or Refueling (for classification purposes a defueled plant will be considered in the Refueling mode).

All recognition categories should be reviewed for applicability prior to classification. The initiating conditions are coded with a letter and/or number designator. All initiating conditions, which describe the severity of a common condition (series), have the same initial designator.

### 3. Timely Classification of Events

Classification of an emergency condition occurs within 15 minutes after the availability of indications from plant instrumentation, plant alarms, computer displays, or incoming verbal reports that an EAL has been exceeded and, is then promptly made upon identification of the appropriate EAL. The 15-minute period encompasses all assessment, classification, and declaration actions associated with making an emergency declaration from the first availability of a plant indication or receipt of a report up to and including the declaration of the emergency.

Validation or confirmation of plant indications or reports of the condition are to be accomplished within the 15-minute period as part of the assessment. Since this validation or confirmation is being performed to determine the validity of an alarm, indication, or report, the 15-minute period starts with the availability of the alarm, indication, or report to any qualified EAL assessor, and not the completion of the validation or confirmation, because the former is the time that the information was first available.

A qualified EAL assessor means any member of the plant staff who, by training and experience, is qualified to assess the indications or reports for validity and to compare the same to the EALs. A qualified EAL assessor may be, but need not be, a licensed operator or member of the ERO. Qualified EAL assessors may be in the MCR or in another facility where emergency declarations are performed. A qualified EAL assessor does not include personnel such as chemists, radiation protection technicians, craft personnel, security personnel, and others whose positions require they report, rather than assess, abnormal conditions to the MCR.

The 15-minute criterion ends as soon it is determined that an EAL has been exceeded and upon identification of the appropriate Emergency Classification Level (ECL) and when the Emergency Director makes the emergency declaration. The emergency condition should be declared as soon as possible following the identification of the appropriate ECL. As used here, "promptly" means the next available opportunity unimpeded by activities not related to the emergency declaration, unless such activities are necessary for protecting health and safety.

The 15-minute criterion is not to be construed as a grace period in which attempts to restore plant conditions are taken to avoid declaring an EAL that has already been exceeded. This statement does not preclude taking actions to correct or mitigate an off-normal condition, but once an EAL has been recognized as being exceeded, the emergency declaration shall be made promptly without waiting for the 15-minute period to elapse. The 15-minute criterion shall not prevent the implementation of response actions deemed necessary to protect public health and safety provided that any delay in the declaration would not deny the State and local authorities the opportunity to implement measures necessary to protect the public health and safety.

For EAL thresholds that specify duration of the condition, the emergency declaration process runs concurrently with the specified threshold duration. Once the condition has existed for the duration specified in the EAL or it is determined that the duration time will likely be exceeded, no further assessment is necessary—the EAL has been exceeded.

**4. Offsite Classification Systems**

Exelon Nuclear works with the state to ensure consistency between classification schemes. The content of the EALs is reviewed with the state and county authorities on an annual basis.

**5. Offsite Emergency Procedures**

Exelon Nuclear works with the state and county authorities to ensure that procedures are in place that provide for emergency actions to be taken which are consistent with the protective actions recommended by Exelon accounting for local offsite conditions that exist at the time of the emergency.

## Section E: Notification Methods and Procedures

This section describes the notification of state and county response organizations and Exelon emergency response personnel. It outlines the content of initial and follow-up messages to response organizations within the Plume Exposure Pathway Emergency Planning Zone (EPZ).

### 1. Bases for Emergency Response Organization Notification

Exelon Nuclear, in cooperation with state and county authorities, has established mutually agreeable methods and procedures for notification of offsite response organizations consistent with the emergency classification and action level scheme. Notifications to offsite agencies include a means of verification or authentication such as the use of dedicated communications networks, verification code words, or providing call back verification phone numbers.

Notification/Classification for Dual Unit Emergencies: when the classification involves both units of a dual unit facility (i.e., tornado or earthquake), the classification shall be reported as affecting both units.

In situations when both units of a dual unit facility are affected by emergency events, but the events are not related or the classification for each unit is different, notification will be made for the highest classification. Clarification of the relationship between the classification levels determined for the units should be provided in the periodic state updates and the NRC Event Notification Worksheet.

In situations when one unit is affected by unrelated events, notification will be made for the highest classification via the state/local notification and the second event information provided in the periodic state updates.

Notification for Transportation Accidents: A Transportation Accident is defined in 49 CFR 171.15 and 49 CFR 171.16. If a Transportation Accident involving material in the custody of an Exelon facility occurs, Exelon Nuclear will notify the appropriate internal and offsite agencies in accordance with the Exelon Nuclear Reportability Manual.

### 2. Notification and Mobilization of Emergency Response Personnel

Emergency implementing procedures are established for notification and mobilization of emergency response personnel as follows:

a. Onsite: When an emergency is declared, reclassified, or terminated an announcement is made (over the plant public address system or by other means) that includes the emergency classification declared and response actions to be taken by site personnel.

   At the Unusual Event classification, select ERO augmentation personnel are notified and requested to remain available to respond. At an Alert classification or higher ERO augmentation personnel are notified for activation of the TSC, OSC, EOF, and JIC using the ERO Notification System.

b. Offsite: Notifications are promptly made to offsite emergency response organizations as follows:

1) State/Local Agencies: A notification shall be made within fifteen (15) minutes of:

- The initial emergency classification.
- Classification escalation.
- The issuance of or change to a Protective Action Recommendation (PAR) for the general public.
- Changes in radiological release status, occurring outside of an event classification or PAR notification, based on an agreement with the state(s).

The emergency warning points are simultaneously notified using the Nuclear Accident Reporting System (NARS), or a commercial telephone line as backup.

A notification will also be initiated to cognizant state/local government agencies as soon as possible but within one hour of the termination of an event classification, or entry into Recovery Phase.

2) Nuclear Regulatory Commission (NRC): An event will be reported to the NRC Operations Center immediately after notification of the appropriate state or local agencies but not later than one (1) hour after the time of initial classification, escalation, termination or entry into the Recovery Phase. The NRC is notified by a dedicated telephone system called the Emergency Notification System (ENS). If the ENS is inoperative, the required notification is made via commercial telephone service, other dedicated telephone service, or any other method that shall ensure that a report is made as soon as practical. An NRC Event Notification Worksheet should be utilized to transmit initial information to the NRC. If a continuous communication is requested and established, a log is used in lieu of the ENS Worksheet.

Specific requirements for the notifications to the NRC for classified emergency events are detailed in 10 CFR 50.72 with guidance provided in the Exelon Reportability Manual.

The computerized data link to the NRC, referred to as the Emergency Response Data System (ERDS), continuously supplies specified plant data to the NRC.

Mobilization of federal, state, and county response organizations is performed in accordance with their applicable emergency plan and procedures. At a minimum, mobilization of federal response organizations and activation of state and county EOCs is expected to occur at the declaration of a Site Area Emergency.

The state and county authorities are responsible for the process of notification of the general public.

c. Support Organizations: When an emergency is initially classified, escalated or terminated, notifications are promptly made to the following support organizations:

- Medical, rescue, and fire fighting support services are notified for assistance as the situation dictates.
- The Institute of Nuclear Power Operations (INPO) is notified at an Alert or higher classification with requests for assistance as necessary.
- The American Nuclear Insurers (ANI) are notified at an Alert or higher classification with requests for assistance as necessary.
- Vendor and contractor support services are notified for assistance as the situation dictates.

**3. Initial Notification Messages**

Exelon Nuclear, in conjunction with state and county authorities, has established the contents of the initial notification message form transmitted during a classified emergency. The contents of the form include, as a minimum:

- Designation ("This is a Drill" or "Actual Event").
- Identity of site.
- Event classification.
- EAL number (as agreed upon with state authorities).
- Non-technical event description (as agreed upon with state authorities).
- Date and time of declaration (or entry into Recovery or Termination).
- Whether a release is taking place (Note: "Release" means a radiological release attributable to the emergency event.)
- Wind direction and speed.
- Whether offsite protective measures may be necessary.
- Potentially affected Subareas (or Sectors as applicable) when a General Emergency is declared.

Notification approval, transmittal date and time, and offsite agencies contacted are recorded either on the notification form or in an event logbook.

**4. Follow-up Messages**

For all emergency classifications, update messages to state authorities will be provided at the time of the notification on a prearranged frequency. The facility in Command and Control is responsible for ensuring that the updates are completed. State updates contain the prearranged information plus any additional information requested at the time of the notification.

Follow-up notifications are provided to the NRC Operations Center as soon as possible, but not later than one (l) hour after significant new information is available involving:

a. The results of evaluations or assessments of plant conditions.

b. The effectiveness of response or protective measures taken.

c. Information related to plant behavior that is not understood.

If requested by the NRC, an open, continuous communications channel will be maintained with the NRC Operations Center over the Emergency Notification System (ENS) and/or Health Physics Network (HPN) Circuits.

**5. State and County Information Dissemination**

The state and county emergency response plans describe procedures for state and county officials to make a public notification decision promptly (within about 15 minutes) on being informed by the plant of an emergency. The system for disseminating information to the public includes notification by pre-scripted messages through appropriate broadcast media such as the Emergency Alert System (EAS).

**6. Notification of the Public**

The capability exists for the prompt notification of the general public within the Plume Exposure Pathway Emergency Planning Zones (EPZs) for Exelon Nuclear stations covered under this plan.

This notification capability consists of two principal elements: (1) the Alert and Notification Systems (ANS) and (2) the Emergency Alerting System (EAS) radio stations.

- The Alert and Notification System (ANS) consists of fixed sirens used as a primary means of notification. Activation of the ANS sirens by the civil authorities will alert the public to turn on their radios to a local EAS radio station for detailed information on the emergency situation. A backup means of notification is provided and is described within each of the respective station Annexes.

- The Emergency Alerting System (EAS) is a network of local radio stations prepared to transmit or relay emergency information and instructions from the civil authorities to the general public

The ANS is operated by local governmental agencies and maintained by Exelon Nuclear. To assure the ANS is maintained in an operational readiness posture, the local agencies have agreed to test the system (by sounding the sirens) on a periodic basis that meets or exceeds FEMA guidance and to report inoperable equipment to EP-designated maintenance personnel. The goal of the testing and maintenance program is to identify inoperable equipment in a timely manner and to restore equipment to a functional status commensurate with FEMA operability requirements as referenced in FEMA-REP-10, "Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants" Section E.6.2.1. In addition to this routine test and repair program, preventive maintenance of the ANS will be performed on an annual basis.

A more site-specific description of the various prompt public notification systems is presented in the station specific annexes to the E-Plan. The activation of the ANS sirens, deployment of emergency service vehicles and operation of the Emergency Alerting System is discussed in detail in the state specific response plans.

**7. Messages to the Public**

The respective States have developed EAS messages for the public consistent with the classification scheme. These draft messages are included as part of the States' Emergency Plan and contain instructions with regard to specific protective actions to be taken by occupants and visitors of affected areas. Messages may include instructions such as: take shelter and go indoors, close windows and doors, turn off ventilation systems; directions given for evacuation; directions to stay tuned to specific stations for further information, ad-hoc respiratory protection, (e.g. handkerchief over mouth, etc.). Exelon will provide support for the content of these messages when requested. The States control the distribution of radioprotective drugs to the general public.

## Section F: Emergency Communications

This section describes the provisions utilized for prompt communications among principal emergency response organizations, communications with the ERO and communications with the general public.

### 1. Communications/Notifications

Exelon Nuclear has extensive and reliable communication systems installed at its generating stations and Corporate Headquarters. Examples of the communications network include systems such as normal and dedicated telephone lines on landlines, microwave and fiber-optic voice channels, cell phones, satellite phones, mobile radio units, handi-talkies and computer peripherals. This network provides:

- Voice communication through normal telephone, dedicated line and automatic ring-down between selected facilities, conference call capability, speaker phones, and operator assistance where required.
- Communications between selected Exelon vehicles and appropriate fixed locations, as well as with state mobile units and fixed locations.
- Facsimile, network, and modem transmission.

Figure F-1 depicts the initial notification paths and the organizational titles from the Exelon Nuclear Emergency Response Facilities (ERFs) to federal, state and local emergency response organizations, and industry support agencies. The Exelon primary and alternate methods of communication, and the NRC communications network, are illustrated on Figures F-2 and F-3.

a. Exelon Nuclear maintains the capability to make initial notifications to the designated offsite agencies on a 24-hour per day basis. The offsite notification system, referred to as the Nuclear Accident Reporting System (NARS) provides communications to state and county warning points and Emergency Operations Centers from the CR, TSC, and EOF. Backup methods include facsimile and commercial telephone lines. state and county warning points are continuously staffed.

b-d. Exelon Nuclear has established several dedicated communication systems that ensure reliable and timely exchange of information necessary to provide effective Command and Control over any emergency response; (1) between Exelon and state and local agencies within the EPZs, (2) with federal emergency response organizations, (3) between the plant, the EOF, and the state and county EOCs, and (4) between Emergency Response Facilities and Field Monitoring Teams. A general description of the systems is as follows:

1) Nuclear Accident Reporting System (NARS): The NARS is a dedicated communications system that has been installed for the purpose of notifying state and local authorities of declared nuclear emergencies. This system links together the station Control Rooms, the EOF, TSCs and state and local authorities as appropriate. The specific design, operation, and responsibility for maintenance of the NARS systems vary between Exelon Nuclear regions.

2) Damage Control Line: A dedicated telephone link called the Damage Control Line that enables communication between the Control Room, the TSC and the OSC to coordinate the dispatching of emergency damage control teams from the OSC (see Figure F-2).

3) Operations Status Line: A dedicated telephone link called the Operations Status Line that enables communication between the Control Room, the TSC and the EOF to monitor the activities of the Control Room staff (see Figure F-2).

4) Technical Conference Line: A dedicated telephone line called the Technical Conference Line between the TSC and the EOF to communicate mitigating activities and priorities for the station to the EOF (see Figure F-2).

5) Director's Hotline: A dedicated telephone link called the Director's Hotline that enables direct Emergency Director communication between the Control Room, TSC, and the EOF (see Figure F-2).

6) Private Branch Exchange (PBX) Telephone System: The PBX telephone system provides communication capability between telephones located within the plant. The PBX is used to connect the CR, TSC, EOF, and OSC. The PBX telephone system also provides for outside communications through interconnections with the corporate telephone communications system and commercial telephone lines.

7) Local Commercial Telephone System: This system provides standard commercial telephone service through the public infrastructure, consisting of central offices and the wire line and microwave carrier. The commercial telephone system includes connections to PBX, emergency telephone system, dedicated lines to emergency facilities, and lines to the JICs. The commercial vendor provides primary and secondary power for their lines at their central office.

8) Emergency Response Data System (ERDS): ERDS will continuously supply the NRC with selected plant data points on a near real time basis. The selected data points are transmitted automatically to the NRC at approximately 1-minute intervals.

9) Field Monitoring Team (FMT) Communications: A separate communications system has been installed to allow coordinated environmental monitoring and assessment during an emergency. This system consists of the necessary hardware to allow communication between the Control Room, TSC, EOF, and mobile units in Exelon Nuclear vehicles. Though direct communications between the Control Room and the FMTs is not required per the prescribed methods of FMT coordination, the FMTs can be contacted from equipment in the Control Room if required. Commercial cell phones or other means are available as back up to the primary field team communications system.

In addition, station communication links exist to ensure appropriate information transfer capabilities during an emergency. The station may also utilize its Public Address System, station radios and notification devices to augment its emergency communications.

e. ERO Notification System: Exelon Nuclear utilizes an automated ERO Notification System to rapidly notify members of the ERO. The system consists of a network of physical infrastructure capable of initiating and receiving contact via multiple notification devices. When activated, the system contacts the notification devices (e.g., through commercial and cellular phone, email, text message) belonging to members of the ERO. The System includes redundant activation methods via the internet, call-centers, or direct telephone activation, as well as redundant, geographically separated call centers and data centers, with redundant power sources. Implementing procedures specify the course of action to be taken if the primary ERO Notification System activation path fails to respond. The ERO Notification System provides primary and back-up notification functions. For the Exelon North East sites, the ERO notification system description is contained in the Station Annex and EP implementing procedures.

f. NRC Communications (ENS and HPN)

Communications with the NRC Operations Center will be performed via the NRC ENS and HPN circuits or commercial telephone line. Information is normally communicated from an approved NRC Event Notification Worksheet prior to establishing an open ENS and/or HPN line.

The actual configuration of these systems may vary from station to station. Installation and use of these NRC telephones is under the direction of the NRC (see Figure F-3).

Emergency Notification System (ENS): Dedicated telephone equipment is in place between each nuclear station's Control Room and the NRC, with an extension of that line in the TSC. A separate line is available in the EOF with the capability of being patched with the station through the NRC. This line is used for NRC event notifications and status updates.

Health Physics Network (HPN): There also exists a separate dedicated telephone between the NRC, the TSC, and EOF for conveying health physics information to the NRC as requested or as an open line.

**2. Medical Communications**

Communications are established with the primary and backup medical hospitals and transportation services via commercial telephone that is accessed by station personnel.

**3. Communications Testing**

Communications equipment is checked in accordance with Section H.10. Communications drills between Exelon Nuclear and state and county government facilities are conducted in accordance with Section N.2.a. In addition, minimum siren testing is performed in accordance with the site specific siren Design Report.

**Figure F-1: Exelon Notification Scheme (For Full Augmentation)**

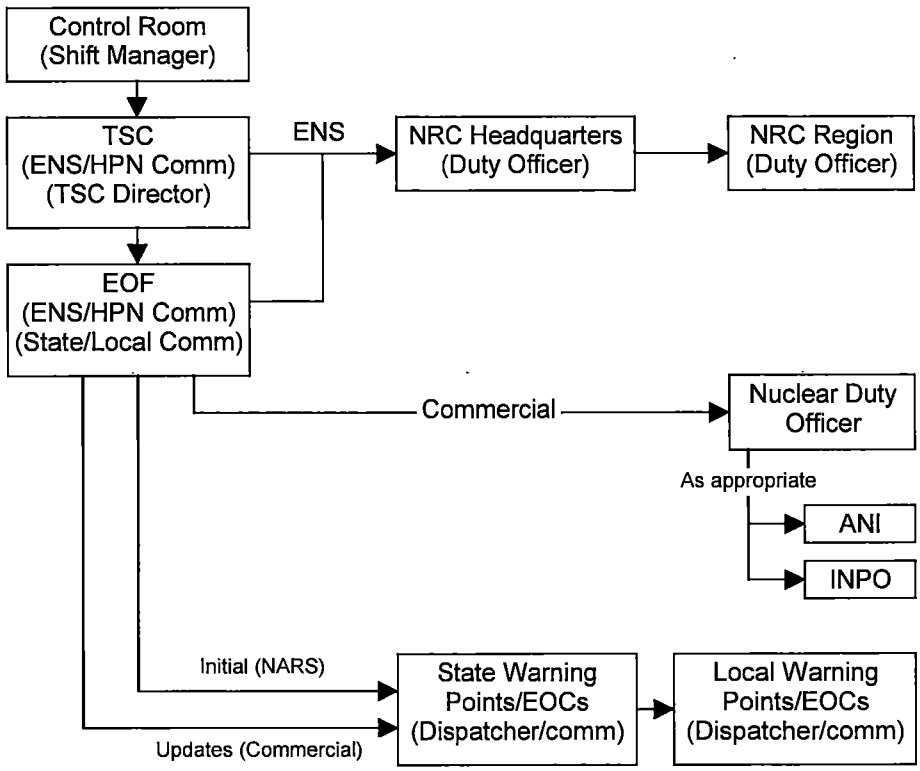
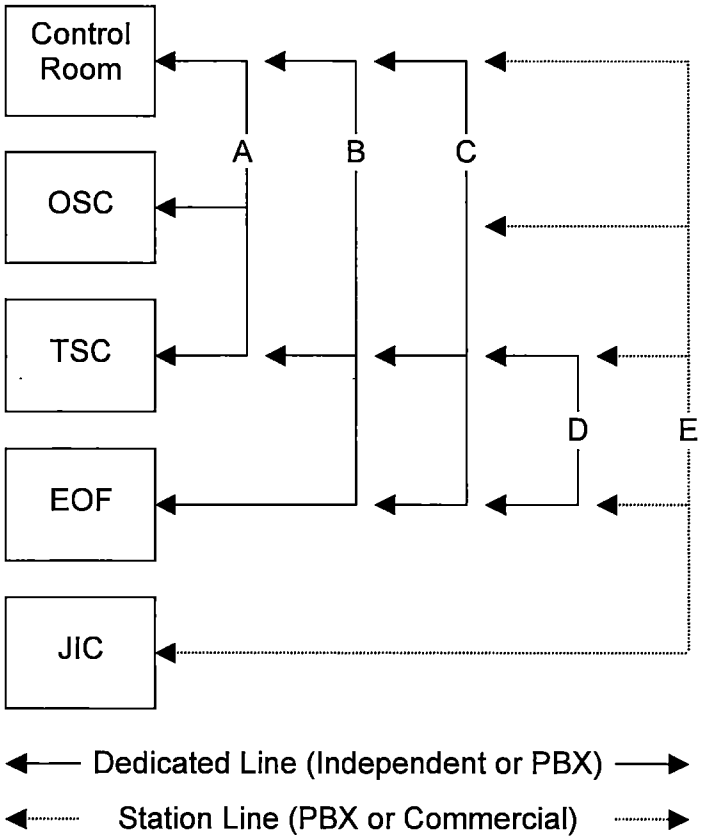


**Figure F-2: ERF Communications Matrix**




A = Damage Control Line between the OSC, TSC, and Control Room.

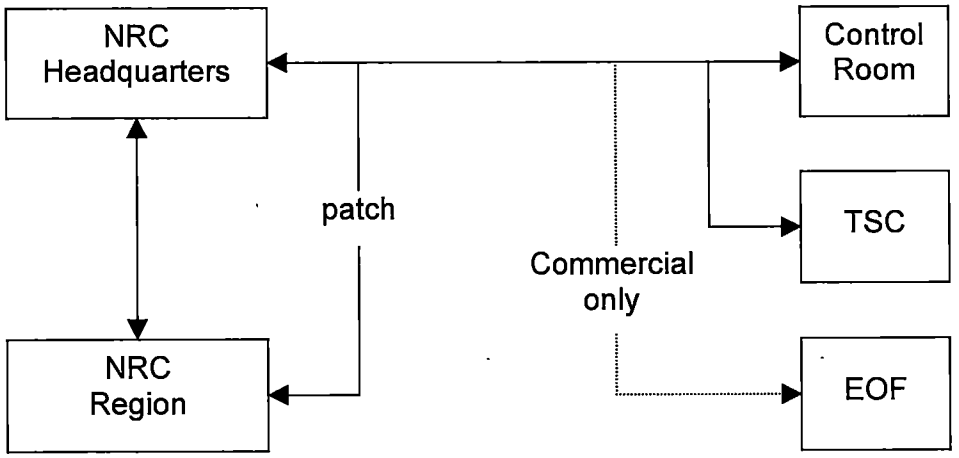
B = Directors Hotline line between the Control Room, TSC and EOF.

C = Operations Line between the TSC, Control Room and EOF.

D = Technical Conference Line between the TSC and EOF.

E = Station telephone line.

**Figure F-3: NRC Communications for Nuclear Response**




**NOTE:** ENS and HPN circuits may use the Federally maintained system, company tie lines or PBX as dedicated primary communications systems and have commercial backups.

## Section G: Public Education and Information

This section describes the Exelon Nuclear public education and information program. It outlines the methods for distributing public information materials on an annual basis and describes how the public is informed in the event of an emergency.

### 1. Public Information Publication

The state has overall responsibility for maintaining a continuing disaster preparedness public education program. The emergency public information publication for the Exelon Nuclear generating stations is updated annually, in coordination with state and county agencies, to address how the general public is notified and what their actions should be in an emergency. Exelon distributes the publication on an annual basis by mail to all residents within the ten-mile plume exposure EPZs and to appropriate locations where a transient population may obtain a copy. The public information publication includes the following information:

a. Educational information on radiation.

b. A description of the times that require public notification (what to do if a take-shelter or evacuate recommendation is given).

c. A map of major evacuation routes.

d. A list of communities likely to serve as host shelter areas and instructions on how to obtain additional information, especially for the disabled or their caretakers and those without transportation.

### 2. Public Education Materials

Public information publications instruct the public to go indoors and turn on their radios when they hear the ANS sirens operating. These publications also identify the local radio stations to which the public should tune in for information related to the emergency.

### 3. Media Accommodations

a. The Exelon Communications and Public Affairs Department is notified when an Unusual Event or higher Emergency condition exists. They will handle public and media inquiries in the early stages of the event (until the JIC is activated) by distributing background information, news releases, and providing information to corporate management.

1) The Emergency Public Information Organization: The Emergency Public Information Organization is part of the Corporate ERO. It may be activated at any time at the discretion of the Nuclear Duty Officer. However, when there is a procedural requirement to activate the EOF, the Emergency Public Information Organization shall also be activated.

The primary purpose of the Emergency Public Information Organization is to disseminate information from Exelon Nuclear's ERO about the emergency events to the public, via the news media. However, the authority for issuance of news releases for the classification of an Unusual Event or prior to ERO activation will always reside with the Exelon Communications and Public Affairs Department. Upon activation, the Emergency Public Information Organization has the responsibility and authority for issuance of news releases to the public.

The Emergency Public Information Organization is comprised of senior managers from Exelon Nuclear who will function as spokespersons, and other Exelon Nuclear individuals including personnel from the Governmental Affairs and Human Relations areas. Exelon Nuclear's spokespersons disseminate information to the news media/public concerning the emergency events out of a Joint Information Center (JIC).

2) The Joint Information Center (JIC): The JIC is the facility in which media personnel gather to receive information related to the emergency event. The JIC is the location where approved news releases will be provided to the media for dissemination to the public. News releases are coordinated between the EOF and JIC personnel and state and/or Federal representatives in the JIC. Exelon public information personnel operate from the EOF and the JIC, which is under the direction of the Corporate Spokesperson and functions as the single point contact to interface with Federal, state, and local authorities who are responsible for disseminating information to the public.

   Each station has a designated JIC. Each JIC is equipped with appropriate seating, lighting and visual aids to allow for public announcements and briefings to be given to the news media. Additionally, JICs are equipped with commercial telephone lines for making outgoing calls. The Emergency Public Information Organization functions from the JIC and EOF in preparing and releasing utility information about the emergency event. The JIC is activated at the declaration of an Alert or higher classification. Functions of the JIC include:

   - Serving as the primary location for accumulating accurate and current information regarding the emergency conditions and writing news releases.
   - Providing work space and phones for public information personnel from the state, counties, NRC, FEMA, and industry-related organizations.
   - Providing telephones for use by the news media personnel.
   - Providing responses to media inquiries through Media Monitoring Staff telephones that the media can call for information about an emergency.

b. The news media is not permitted into the EOF during an emergency.

**4. Coordination of Public Information**

a. The JIC is staffed by Exelon and government public information representatives who will be the source of public information during an emergency at the station. The Corporate Spokesperson is the primary spokesperson for Exelon Nuclear. The Corporate Spokesperson has direct access to all necessary information (see Section B.5).

b. The JIC is staffed by federal, state, county, and utility personnel to assure timely, periodic exchange and coordination of information. Representatives coordinate information prior to conducting news briefings.

c. Rumors or misinformation are identified during an emergency by the media/rumor control monitors. They respond to public and news media calls and monitor media reports.

d. The common MW Region JIC is located west of Chicago, in Warrenville IL, in the Exelon Nuclear Cantera facility. This facility supports the Braidwood, Byron, Clinton, Dresden, LaSalle and Quad Cities stations.

The JIC for the MA Region, Limerick and Peach Bottom Stations, is co-located with the EOF at 175 North Caln Road, Coatesville, Pennsylvania.

The JIC for Calvert Cliffs Station is co-located with the EOF about twelve miles from the site, in Calvert Industrial Park, Skipjack Road at Hallowing Point Road.

The JIC for the Ginna Station is located at 1255 Research Forest, Macedon, NY.

The JIC for the FitzPatrick and Nine Mile Point stations is a shared emergency response facility located near the Oswego County Airport, on County Route 176 in the Town of Volney, New York approximately 12 miles from the sites.

**5. Media Orientation**

Emergency Preparedness, in conjunction with Exelon Communications and Public Affairs Department, offers training (at least annually) to acquaint news media with the E-Plan, information concerning radiation, and points of contact for release of public information in an emergency. Training is provided for those media agencies that accept the training offer.

## Section H: Emergency Facilities and Equipment

Onsite and offsite facilities are available for emergency assessment, communications, first aid and medical care, and damage control. Of particular importance are the Emergency Response Facilities (ERFs); the Control Room (CR), the Technical Support Center (TSC), the Operations Support Center (OSC), the Emergency Operations Facility (EOF), and the Joint Information Center (JIC).

This section describes the emergency facilities and equipment used by the Emergency Response Organization and outlines the requirements which aid in timely and accurate response actions. It also describes the surveillance programs used to monitor and ensure that these facilities and equipment are maintained in a high degree of constant readiness.

### 1. Control Room, Technical Support Center, and Operations Support Center

Exelon Nuclear has established a TSC and an on-site OSC, which are activated upon declaration of an Alert or higher classification. Until they become operational, required functions of these facilities are performed in the Control Room.

Under certain adverse conditions for Security-Based Events, personnel may be assembled in an "ERO Alternative Facility" prior to being dispatched to one of the facility ERFs.

a. Station Control Room: The Control Room is the centralized onsite location from which the Nuclear Station's reactors and major plant systems are operated. The Control Room is equipped with instrumentation to supply detailed information on the reactors and major plant systems. The Control Room is continuously staffed with qualified licensed operators. The Control Room is the first onsite facility to become involved with the response to emergency events. Control Room personnel must evaluate and effect control over the emergency and initiate activities necessary for coping with the emergency until such time that support centers can be activated. These activities shall include:

- Reactor and plant control.
- Initial direction of all plant related operations.
- Accident recognition, classification, mitigation and initial corrective actions.
- Alerting of onsite personnel.
- Notification of appropriate individuals.
- Activation of emergency response facilities and ERO notification.
- Notification of offsite agencies.
- Continuous evaluation of the magnitude and potential consequences of an incident.

- Initial dose projections.
- Recommendations for immediate protective actions for the public.

As other ERFs become activated, they will supply support to the Control Room, although overall Command and Control of the emergency will transfer to the SED (TSC) or the CED (EOF). Throughout all emergencies, the Control Room maintains its emergency activation status until its normal operational status may be resumed.

b. Technical Support Center (TSC): Each nuclear generating station has established a TSC for use during emergency situations by station management, technical, and engineering support personnel. The TSC is activated for all emergencies classified as Alert or higher. Activation for other events is optional. When activated the TSC functions include:

- Support for the Control Room's emergency response efforts.
- Support the SED with assigned Command & Control functions.
- Continued evaluation of event classification.
- Assessment of the plant status and potential offsite impact.
- Coordination of emergency response actions.
- Notification of appropriate corporate and station management.
- Notification and update of the NRC via Emergency Notification System (ENS).

The TSC is the onsite location utilized to support the Control Room for assessment of plant status and potential offsite impact, and for implementation of emergency actions. TSC provides technical data and information to the EOF.

Figure B-1b illustrates the staffing and organization of the TSC.

Each TSC provides reliable voice communications to the Control Room, the OSC, the EOF, the NRC, and state and local Emergency Operations Centers. In addition, they provide facsimile transmissions capability (see Section F.1).

Each TSC is sized to accommodate a minimum of 25 spaces and supporting equipment. This includes provisions for five NRC representatives. Adequate space is also available for the appropriate state representative(s).

Personnel in the TSC shall be protected from radiological hazards, including direct radiation and airborne contaminants under accident conditions with similar radiological habitability as Control Room personnel. To ensure adequate radiological protection, permanent radiation monitoring systems have been installed in the TSC and/or periodic radiation surveys are conducted. These systems indicate radiation dose rates and airborne radioactivity inside the TSC while in use. In addition, protective breathing apparatus (full-face air purifying respirators) and KI are available for use as required.

The TSC has access to a complete set of as-built drawings and other records, including general arrangement diagrams, P&IDs, and the electrical schematics. The TSC has the capability to record and display vital plant data, in real time, to be used by knowledgeable individuals responsible for engineering and management support of reactor operations, and for implementation of emergency procedures.

c. Operations Support Center (OSC): Each nuclear generating station has established an OSC. The OSC is the onsite location to where station support personnel report during an emergency and from which they will be dispatched for assignments or duties in support of emergency operations. The OSC shall be activated whenever the TSC is activated, but need not remain activated at the Alert level if its use is judged unnecessary by the Station Emergency Director. At the Site Area and General Emergency levels, the OSC or an alternate OSC shall be activated at all times. The OSC is not activated for a HOSTILE ACTION when the Alternative Facility is implemented. Activation for other events is optional. Station disciplines reporting to the OSC include, but are not limited to:

- Operating personnel not assigned to the Control Room,
- Radiation Protection Personnel,
- Chemistry Personnel,
- Maintenance Personnel (mechanical, electrical and I&C).

Figure B-1b illustrates the staffing and organization for the OSC.

Each OSC is equipped with communication links to the Control Room, the TSC and the EOF (see Section F). A limited inventory of supplies will be kept for the OSC. This inventory will include respirators, protective clothing, flashlights and portable survey instruments.

**2. Emergency Operations Facility (EOF)**

The EOF is the location where the Corporate Emergency Director will direct a staff in evaluating and coordinating the overall company activities involved with an emergency. Activation of the EOF is mandatory upon declaration of an Alert or higher classification. The EOF provides for:

- Management of overall emergency response.

- Coordination of radiological and environmental assessments.
- Determination of recommended public protective actions.
- Management of recovery operations.
- Coordination of emergency response activities with federal, state, and local agencies.

The common MW Region EOF is located west of Chicago, in Warrenville IL, in the Exelon Nuclear Cantera facility. This facility supports the Braidwood, Byron, Clinton, Dresden, LaSalle and Quad Cities stations.

The common MA Region EOF is located west of Philadelphia, in Coatesville PA. This facility supports Limerick and Peach Bottom stations.

The EOF for Calvert Cliffs Stations is co-located with the JIC about twelve miles from the site, in Calvert Industrial Park, Skipjack Road at Hallowing Point Road.

The EOF for the FitzPatrick and Nine Mile Point stations is a shared emergency response facility located near the Oswego County Airport, on County Route 176 in the Town of Volney, New York approximately 12 miles from the sites.

The EOF for Ginna Station is located at 1255 Research Forest, Macedon, NY.

These facilities are designed with the following considerations:

- The location provides optimum functional and availability characteristics for carrying out overall strategic direction of Exelon Nuclear onsite and support operations, determination of public protective actions to be recommended to offsite officials, and coordination with Federal, state and local organizations.
- It is well engineered for the design life of the plant and is of sufficient size to accommodate about 50 people.
- It is equipped with reliable voice communications capabilities to the TSC, the OSC, the Control Room, NRC, and state and local emergency operations centers. In addition, the EOF has facsimile transmission capability.
- Equipment is provided to gather, store, and display data needed in the EOF to analyze and exchange information on plant conditions with the Station. The EOF technical data system receives, stores, processes, and displays information sufficient to perform assessments of the actual and potential onsite and offsite environmental consequences of an emergency condition.
- The EOF has ready access to plant records, procedures, and emergency plans needed for effective overall management of Exelon Nuclear emergency response resources.

### 3. Emergency Operations Centers

EOCs operated by the state and local communities have been established to perform direction and control of emergency response functions.

The respective state EOCs are capable of continuous (24-hour) operations for a protracted period. These centers contain sufficient communications (radio, telephone and teletype) equipment, maps, emergency plans, and status boards to provide the necessary interfaces with other federal, state, county, and Exelon emergency facilities.

The county EOCs serve as Command and Control headquarters for local emergency response activities as well as a center for the coordination of communications to field units and to the state EOCs. These EOCs have the equipment necessary, (such as facsimile machines, telecommunications equipment, radio gear, photocopiers, wall maps, etc.) to carry out their emergency responsibilities.

### 4. Activation

NOTE: NUREG-0654 Criterion II.B.5 states that the "licensee must be able to augment on-shift capabilities within a short period after declaration of an emergency". It further defines that short period as 30 and 60 minutes. The time frames for rapid augmentation of a nuclear power plant staff in the event of an emergency are not rigid inviolate requirements but rather goals. It is Exelon Nuclear's intent to expend its best efforts to meet the augmentation criteria goals regarding staffing Emergency Response Facilities with sufficiently skilled individuals capable of handling an emergency. Both the NRC and Exelon Nuclear realize that due to diversity of normal residential patterns for the stations' staff, possible adverse weather conditions, road congestion and site access restrictions, these time frames might be exceeded.

Exelon Nuclear has put into place plans and procedures to ensure timely activation of its emergency response facilities. The Shift Manager (as Shift Emergency Director) will initiate a call-out in accordance with the implementing procedures. The ERO augmentation process identifies individuals who are capable of fulfilling the specific response functions that are listed in ERO staffing tables contained within the station specific Annex. This table was developed based on the functions listed in NUREG-0654, Table B-1.

Although the response time will vary due to factors such as weather and traffic conditions, a goal of 60 minutes for minimum staffing, following the declaration of an Alert or higher emergency classification, has been established for the ERO personnel responding to the station emergency facilities and the EOF. Additionally, plans have been developed to ensure timely functional activation and staffing of the JIC when the classification of Alert is declared.

It is the goal of the organization to be capable of activating the applicable Emergency Response Facility upon achieving minimum staffing. The facility can be declared activated when the following conditions are met:

a. Minimum staffing has been achieved.

b. The facility is functional.

Although the minimum staffing criteria applies to the JIC, the activation time is not applicable. Public Information personnel must first coordinate the decision to activate the JIC with the appropriate offsite authorities.

The Director in charge may elect to activate their facility without meeting minimum staffing; if it has been determined that sufficient personnel are available to fully respond to the specific event (this would not constitute a successful minimum staff response).

**5. Monitoring Equipment Onsite**

Each nuclear station is equipped with instrumentation for seismic monitoring, radiation monitoring, fire protection and meteorological monitoring. Instrumentation for the detection or analysis of emergency conditions is maintained in accordance with station Technical Specifications, if applicable, or commitments made to the NRC. The actual instrumentation varies somewhat from site to site and thus will not be described in detail in this plan. Descriptions of the equipment will appear in each Station Annex. This equipment includes but is not limited to the following:

a. Geophysical Monitors

1) Meteorological Instrumentation: A permanent meteorological monitoring station is located near each station for display and recording of wind speed, wind direction, and ambient and differential temperature for use in making offsite dose projections. Meteorological information is presented in the CR, TSC, and EOF by means of the plant computer system. This information is remotely interrogated using a computer or other data access terminal.

With regard to Exelon Nuclear's meteorological monitoring program, there has been a quality assurance program adopted from 10 CFR 50, Appendix B. However, since the meteorological facilities are not composed of structures, systems, and components that prevent or mitigate the consequences of postulated accidents and are not "safety related," not all aspects of 10 CFR 50, Appendix B, apply. Those aspects of quality assurance germane to supplying good meteorological information for a nuclear power station were adopted into the meteorological quality assurance program. The meteorological program is also subject to the requirements of the QATR, Section 19, Augmented Quality.

The National Weather Service (NWS), or regional weather forecast providers, may be contacted during severe weather periods. These providers analyze national and local weather in order to provide localized weather forecasts for the system or for the station area as appropriate.

2) Seismic Monitoring: The seismic monitoring system measures and records the acceleration (earthquake ground motion) of the structure. Earthquakes produce low frequency accelerations which, when detected by the remote sensing devices, are permanently recorded as information which defines the response spectrum. The system remains in a standby condition until an earthquake causes the remote unit(s) to activate the recording circuits and tape transports. It also provides signals for immediate remote indication that specific preset response accelerations have been exceeded.

3) Hydrological Monitors: The design basis flood, probable maximum precipitation, and other improbable, conceivable extremes in hydrologic natural phenomena are well below any design limits for the stations as detailed in the UFSAR.

b. Radiological Monitors and Sampling

1) The Radiation Monitoring System (RMS): In-plant radiological measurements provide information that may help determine the nature, extent and source of emergency conditions. The RMS is available to give early warning of a possible emergency and provides for a continuing evaluation of the situation in the Control Room. Radiation monitoring instruments are located at selected areas within the facility to detect, measure, and record radiation levels. In the event the radiation level should increase above a preset level, an alarm is initiated in the Control Room. Certain radiation monitoring instruments also alarm locally in selected areas of the facility. The RMS is divided into 3 subsystems:

a) Area Radiation Monitors (ARMs) are used for the direct measurement of in-plant exposure rates. The ARM readings allow in-plant exposure rate determinations to be made remotely without requiring local hand-held meter surveys. This information may be used, initially, to aid in the determination of plant area accessibility. In addition to permanent monitors, portable Continuous Air Monitors (CAMs) measure airborne particulate and airborne iodine activities at various locations within the operating areas.

b) Process Radiation Monitors (PRMs) are used for the measurement of radioactive noble gas, iodine, and particulate concentrations in plant effluent and other gaseous and fluid streams.

c) The accident, or high range, radiation monitoring system monitors radiation levels at various locations within the operating area. These are high range instruments used to track radiation levels under accident or post-accident conditions. These instruments include the Containment / Drywell Radiation Monitors.

The RMS provides the necessary activity or radiation levels required for determining source terms in dose projection procedures. Key RMS data is linked to the plant computer, which allows information to be passed to the TSC and EOF. The isotopic mix, including isotopes such as those in Table 3 of NUREG-0654, is based upon a default accident mix. Refer to the station specific UFSAR for further detail on the RMS capabilities and design.

2) Liquid and Gaseous Sampling Systems: The process sampling system consists of the normal sampling system and additional sampling panels located throughout the plant. Sampling systems are installed or can be modified to permit reactor coolant and containment atmosphere sampling even under severe accident conditions.

The sampling systems use a number of manual sampling techniques to enable reactor coolant and containment sampling operations over a wide range of plant conditions. It is capable of providing information relative to post-accident plant conditions to allow operator actions to be taken to mitigate and control the course of an accident. Refer to the specific UFSAR for further detail on sampling capabilities.

3) Portable Radiation Monitoring Equipment: Portable radiation survey instruments are available for a wide variety uses such as area, sample, and personnel surveys and continued accident assessment. Instruments are stored throughout the plant and in the emergency facilities.

c. Process Monitors: The Control Room and applicable redundant backup locations are equipped with extensive plant process monitors for use in both normal and emergency conditions. These indications include but are not limited to reactor coolant system pressure and temperature, containment pressure and temperature, liquid levels, flow rates, status or lineup of equipment components. This instrumentation provides the basis for initiation of corrective actions.

1) Plant Monitoring/Information System: A plant monitoring/information system provides the data acquisition and database capability for performing plant monitoring and functions. The system is designed to scan, convert to engineering units, make reasonability and alarm limit checks, apply required transformations, store for recall and analysis, and display the reading of transformed data from plant instrumentation. The system scans flows, pressures, temperatures, fluid levels, radiation levels, equipment, and valve status at required frequencies. Scanned variables are quality tagged. The system provides for short and mid term storage of data for on-line retrieval and fast recall, and long term storage to appropriate media.

2) Safety Parameter Display (SPDS) & Plant Parameter Display (PPDS) Systems: SPDS and PPDS provide a display of plant parameters from which the safety status of operation may be assessed in the Control Room, TSC and EOF for each nuclear station. The primary function of the SPDS and PPDS is to help operating personnel in the Control Room make quick assessments of plant safety status. SPDS and/or PPDS displays in the TSC and EOF promote the exchange of information between these facilities and the Control Room and assists the emergency organization in the decision making process.

d. Fire Detection System: 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 alarm communication systems and subsystems are located at strategic points throughout the plant to warn personnel of a nuclear incident or other emergency conditions. Existing plant alarm systems are sufficiently audible to alert personnel in the event of a fire or need for assembly. These alarm communication systems consist of warning sirens and lights (in high noise areas) and the PA system. Refer to the respective station UFSAR for further description of the station's fire protection system.

**6. Monitoring Equipment Offsite**

Exelon has made provisions to acquire data from and have access to the following offsite sources of monitoring and analysis equipment:

a. Geophysical Monitors: In the event that the onsite meteorological tower or monitoring instrumentation becomes inoperative and the contracted weather provider cannot be contacted, meteorological data may be obtained directly from the National Weather Service or the internet.

A considerable array of seismometers are located in the region. A central point of contact to obtain information about a seismic event is the National Earthquake Information Service in Golden, Colorado.

Exelon Nuclear Corporate Offices can coordinate hydrology and seismology expertise in the event onsite information becomes unavailable.

b. Radiological Environmental Monitors and Sampling: Exelon Nuclear has contracted with a company to conduct an extensive offsite environmental monitoring program to provide data on measurable levels of radiation and radioactive materials in the environs. The program (described fully in the Offsite Dose Calculation Manual), includes:

- Fixed continuous air samplers.
- Routine sampling of river water; milk and fish.
- A fixed dosimeter monitoring network.

The dosimeter program consists of the following elements at each nuclear station:

- A near-site ring of dosimeters covering the 16 meteorological sectors.
- A 16-sector ring of dosimeters placed in a zone within about 5 miles from the plant.
- Dosimeters placed at each of the normal fixed air sampler locations (typically about 8-15 air samplers per nuclear station).

c. Laboratory Facilities: External facilities for counting and analyzing samples can be provided by the other Exelon Nuclear stations, state, federal or contracted laboratories. These laboratories can act as backup facilities in the event that the affected station's counting room and laboratory become unusable or the offsite radiological monitoring and environmental sampling operation exceeds the capacity or capability of the station laboratory during an emergency. It is estimated that these laboratories will be able to respond within several hours from initial notification.

Outside analytical assistance may be requested from state and federal agencies, or through contracted vendors. The state maintains a mobile radiological laboratory that provides the primary means of analyzing off-site environmental samples. The NRC mobile laboratory may be made available for Site Area and General Emergencies. The DOE, through the Radiological Assistance Program (RAP) has access to any national laboratory with a Bell Lab contract (e.g., Brookhaven, Oak Ridge, Lawrence Livermore, etc.).

A general description of the laboratory capabilities is provided in Section C.3.

**7. Offsite Monitoring Equipment Storage**

Each nuclear station maintains a sufficient supply of emergency equipment (such as portable survey, counting, and air sampling instrumentation and other radiological monitoring equipment and supplies) that may be used for environmental monitoring. These supplies meet the initial requirements of two environmental Field Monitoring Teams. During subsequent phases of an emergency, additional equipment is available from other Exelon Nuclear generating stations, vendors and offsite response organizations.

**8. Meteorological Monitoring**

The station has installed and maintains a meteorological tower equipped with instrumentation for continuous reading of the wind speed, wind direction, air temperature and delta air temperature. Additional capabilities are available to obtain representative current meteorological information from other sources, such as the National Weather Service. A full description of the onsite meteorological capabilities is given in Section H.5.a of this Plan.

**9. OSC Capabilities**

The OSC provides area for coordinating and planning of OSC activities and the staging of personnel. Further space is available in adjacent offices and locker rooms to accommodate additional personnel as may be required. Alternate locations are available. The onsite storeroom of each nuclear station maintains a supply of parts and equipment for normal plant maintenance. These parts, supplies and equipment are available for damage control use as necessary.

Sufficient radiation protection equipment (i.e., protective clothing, respiratory protection gear, KI, and other health physics equipment and supplies) is stored and maintained near the OSC (as well as the other emergency response facilities). Damage Control Team equipment is available near the OSC as well as in the maintenance shops. This equipment includes items such as a camera, portable lighting, and additional portable communications equipment. The OSC is stocked with an assortment of first aid and medical treatment equipment and supplies. The OSC maintains reliable voice communications with the CR, TSC, and EOF. For a complete description of communications equipment, refer to Section F. When an emergency condition exists at one station, additional supplies can be obtained from other unaffected stations and Exelon resources upon request.

**10. Facility and Equipment Readiness**

Emergency facilities and equipment are inspected and inventoried in accordance with emergency preparedness procedures. These procedures provide information on location and availability of emergency equipment and supplies. An inventory of all emergency equipment and supplies is performed on a quarterly basis and after each use in an emergency or drill. During this inventory, radiation monitoring equipment is checked to verify that required calibration period and location are in accordance with the inventory lists. Inspections include an operational check of instruments and equipment. Equipment, supplies, and parts which have a shelf-life are identified, checked, and replaced as necessary. Sufficient reserves of instruments and equipment are maintained to replace those which are removed from emergency kits or lockers for calibration or repair. The stations are responsible for maintaining a supply of KI at their respective site.

**11. General Use Emergency Equipment**

Inventory procedures identify the equipment that makes up kits used in an emergency situation available within each emergency facility.

**12. Collection Point for Field Samples**

The onsite chemistry lab, unless otherwise specified in the respective Station Annex, has been designated as the central point for the receipt of radiological field monitoring samples. Sampling and analysis equipment is available for quantitative activity determination of marine and air samples, and qualitative activity determination of terrestrial samples. Sufficient field monitoring equipment is maintained at the stations for initial sampling. Instrumentation and equipment utilized for sample activity determination are routinely calibrated to ensure timely availability. Additional facilities as described in C.3 and H.6.c are available for sample and analysis of environmental samples.

Refer to Station Annexes for further description of contracted environmental sampling and analysis support for a particular site.

## Section I: Accident Assessment

To effectively coordinate and direct all facets of the response to an emergency situation, diligent accident assessment efforts are required throughout the emergency. All four emergency classifications have similar assessment methods, however, each classification requires a greater magnitude of assessment effort dependent upon the plant symptoms and/or initiating event(s).

### 1. Plant Parameters and Corresponding Emergency Classification

Plant system and effluent parameter values are utilized in the determination of accident severity and subsequent emergency classification. Environmental and meteorological events are also determining factors in emergency classification. An emergency condition can be the result of just one parameter or condition change, or the combination of several. The specific symptoms, parameter values or events for each level of emergency classification are detailed in the emergency implementing procedures. Specific plant system and effluent parameters that characterize a classifiable event (EALs) are presented in Addendum 3 to each Station Annex.

In order to adequately assess the emergency condition, each emergency facility has the necessary equipment and instrumentation installed to make available essential plant information on a continuous basis. Evaluation of plant conditions is accomplished through the monitoring of plant parameters both from indication in the Control Room and within the plant. Some of the more important plant parameters to be monitored in the Control Room are assembled into a single display location, which is entitled the "Safety Parameter Display System" (SPDS). The SPDS monitors such parameters as: reactor coolant system pressure, reactor or pressurizer water level, containment pressure, suppression pool water level and temperature, reactor power, safety system status, containment radiation level and effluent monitor readings. The instrumentation and equipment capabilities available for each emergency facility are described in Section H.

### 2. Onsite Accident Assessment Capabilities

The resources available to provide initial and continuing information for accident assessment throughout the course of an event include plant parameter display systems, liquid and gaseous sampling system, Area and Process Radiation Monitoring Systems, and Accident Radiation Monitoring Systems (which includes the high range containment radiation monitors). Descriptions of these systems are given in Section H.5.b.

### 3. Source Term Determination

Source term (or core damage) estimations serve several roles within the Exelon Emergency Preparedness Program. For planning purposes, core damage considerations are used as the bases for several of the Emergency Action Level (EAL) Initiating Conditions and as the threshold for the declaration of a General Emergency (the definition of a General Emergency specifies conditions which involve 'substantial' core degradation or melting as one of the bases for classification).

From an implementation perspective, core damage estimations provide a means of realistically differentiating between the four core states (no damage, clad failure, and fuel melt, and vessel melt-through) to:

- Evaluate the status of the fuel barriers and how their status relates to the risks and possible consequences of the accident.
- Provide input on core configuration (coolable or uncoolable) for prioritization of mitigating activities.
- Determine the potential quality (type) and/or quantity (%) of source term available for release in support of projected offsite doses and protective action recommendations.
- Provide information that quantifies the severity of an accident in terms that can be readily understood and visualized.
- Support the determination of radiological protective actions that should be considered for long term recovery activities.

The assessment methodologies utilized by Exelon are intended to provide a rapid best estimate of core damage which, when evaluated together, help to develop an overall picture of the extent of core damage. The methods used to estimate the amount or type of core damage occurring under accident conditions includes the following:

- Containment Radiation Monitors: An indirect method used to determine the amount of core damage. Applicable to Loss of Coolant Accident (LOCA) scenarios. Based upon an end-of-life source term and static nuclide ratio assumptions yielding a limited accuracy. Valid any time following an accident.
- Core Temperatures: Methods such as Core Exit Thermocouple (CET), Peak Core Temperatures and Hot Leg Temperatures provide indirect methods used to indicate the type and/or amount of core damage. Applicable for all types of accidents. Valid any time following an accident.
- Core Uncovery: Methods such as Core Uncovery Time, RVLIS Level and Source Range Monitor count rate provide indirect methods used to indicate the type of core damage (clad failure or fuel melt). Applicable for all types of accidents. Provides a relatively accurate estimate of the state of the core early in the event. Valid any time following an accident.
- Containment Hydrogen Concentration: An indirect method used to establish the type of core damage. Applicable to LOCA type accidents where all the hydrogen generated by the metal-water reaction is released into containment. Valid any time following an accident.
- Sample Analysis - Isotopic Ratio Comparison: A direct method used to establish the type of core damage. Compares expected isotopic ratios with a sample to determine a general core state. Applicable under all types of accidents. Valid any time following an accident.

- Sample Analysis - Presence of Abnormal Isotopes: A direct method used to provide a go/no go indication of fuel melt by the presence of unusually high concentrations of the less volatile fission products. Applicable under all types of accidents. Valid any time following an accident.
- Sample Analysis - Concentration Evaluation: A direct method that yields the most accurate numerical estimations of the amount of core damage. Applicable for all types of accidents. Requires the sampled system(s) be in a steady state that usually prevents its use until the plant is in a stable condition.

**4. Effluent Monitor Data and Dose Projection**

Dose assessment or projection represents the calculation of an accumulated dose at some time in the future if current or projected conditions continue. During an accident, the Plant Parameter Display System and personal computers will provide the ERO with the timely information required to make decisions. Radiological and meteorological instrumentation readings are used to project dose rates at predetermined distances from the station, and to determine the integrated dose received. Dose assessment methods used by Exelon personnel to project offsite doses include:

A. Monitored Release Points - This method utilizes the plant's effluent radiation monitors and system flow rates. Effluent release points are used to directly calculate a release rate. The point of the release determines the way the source term is affected and is adjusted by the dose assessment process.

B. Containment Leakage/Failure - This method uses a variety of containment failures or leak rates in conjunction with available source term estimations to develop a release rate to the environment. A direct vent of containment can be modeled as a failure to isolate.

C. Release Point Samples - This method uses a sample at the release point and an estimated flow rate to develop a release rate at the point of release.

D. Field Monitoring Team Data - This method uses a field survey or sample and the atmospheric model to back calculate a release rate and ratio concentrations of radioactive material at various points up and downwind of plume centerline.

The computer applications used to provide dose calculations are evaluated against the EPA-400 plume exposure Protective Action Guides (PAGs) applicable for the early phase of an accident. These evaluations place an emphasis on determining the necessity for offsite protective action recommendations. Dose assessment actions will be performed in the following sequence:

First: Onset of a release to 1 hour post-accident: Shift personnel will rely on a simplified computerized dose model to assist them in developing offsite dose projections using real time data from effluent monitors and site meteorology.

Second: 1 hour post-accident to event termination: Estimates of off-site doses based on more sophisticated techniques are provided. Dedicated ERO personnel will analyze the offsite consequences of a release using more complex computerized dose modeling. These additional methods are able to analyze more offsite conditions than the simplified quick method, as well account for more specific source term considerations.

**5. Meteorological Information**

Local meteorological data is available from an onsite meteorological tower. The data available includes wind speed, wind direction, temperature, and delta temperature. These data are used by the utility, state, and NRC to provide near real-time predictions of the atmospheric effluent transport and diffusion. Meteorological data from the tower is available in the CR, TSC, and EOF. A full description of the onsite meteorological capabilities is given in Section H.5.a.

**6. Unmonitored Release**

Dose projections can be made during a release through use of actual sample data in situations where effluent monitors are either off-scale or inoperative or the release occurs by an unmonitored flow path. In the absence of effluent sample data, a dose projection can be performed simply by specifying the accident category as a default. The selection of a default accident category defines the mix, the total curies, and the release pathway(s). The total number of curies from a default mix for each isotope is used to provide an upper bound for release concentration, and hence, an upper bound for the dose rate and dose to the public.

**7. Field Monitoring**

In addition to the capabilities and resources described in Section H.6.b and H.7, Exelon Nuclear maintains the ability to take offsite air samples and to directly measure gamma dose rates in the event of an airborne or liquid release. The capability to take offsite soil, water, and vegetation samples is also provided by either the Field Teams or a contracted vendor.

The environmental monitoring equipment, as described in Section H, contain portable survey, counting, and air sampling instrumentation and other radiological monitoring equipment and supplies to be used by the Field Monitoring Teams. Samples are taken at predetermined locations as well as those specified both during and after a release. Environmental measurements are used as an aid in the determination and assessment of protective and recovery actions for the general public.

**8. Field Monitoring Teams**

Field Monitoring Teams are dispatched by Exelon Nuclear to perform a variety of functions during conditions that may involve significant releases of radioactive materials from the plant. Radiological survey and sample data is used to define affected area boundaries, verify or modify dose projections and protective action recommendations, and assess the actual magnitude, extent, and significance of a liquid or gaseous release.

In addition to contamination and dose rate measurements, the change out of dosimeters and air sampler cartridges can be performed. Other actions may include soil, water and vegetation sampling.

The initial environmental surveys involve simple-to-perform measurements to quickly confirm or modify the dose projections based on plant parameters. Subsequent environmental monitoring efforts will be aimed at further defining the offsite consequences including instituting an expanded program to enable prompt assessments of any subsequent releases from the plant.

The expertise necessary to conduct limited offsite environmental survey and sampling exists onsite 24 hours a day. A minimum of two offsite Field Monitoring Teams are notified and activated at an Alert or higher classification. Teams are composed of two individuals who are assembled at the station to test and inventory dedicated survey and sampling equipment. Teams are then dispatched in company or personal vehicles into the surrounding area when a release is or is expected to occur. Radiological survey and sample data is transmitted to the emergency facilities. Vendor/contractor support can be used to perform collection, shipment and analysis of environmental sample media as described in Section B.8.c.

**9. Iodine Monitoring**

Field monitoring equipment has the capability to detect and measure airborne radioiodine concentrations as low as $1 \times 10^{-7}$ µCi/cm$^3$ in the presence of noble gases. Interference from the presence of noble gas and background radiation will be minimized by ensuring that monitoring teams move to areas of low background prior to analyzing the sample cartridge. The collected air sample is measured by hand held survey meter as an initial check of the projection derived from plant data to determine if significant quantities of elemental iodine have actually been released (the chemical form that would pose a health hazard).

**10. Dose Estimates**

Specific procedures exist for the correlation of air activity levels to dose rate for key isotopes. Provisions have been established for estimating integrated dose from the projected and actual dose rates and for the comparison of these estimates with the protective action guides.

**11. State Monitoring Capabilities**

The states, except for the State of New York, have the ability to dispatch their own field monitoring teams to track the airborne radioactive plume. The states also have the ability and resources to coordinate with federal and utility monitoring teams to compare sample results.

New York State does not track plumes. Its monitoring capability and responsibility are for ingestion pathways after the plume phase.

## Section J: Protective Response

Protective response consists of emergency actions, taken during or after an emergency situation, which are intended to minimize or eliminate hazards to the health and safety of the public and/or station personnel. A range of protective actions has been developed for emergency workers and the general public in the Plume Exposure Pathway EPZ. Additionally, guidelines have been established to aid in choosing protective actions during an emergency that are consistent with federal guidance. Exelon Nuclear is responsible for onsite actions, while the responsibility for offsite actions rests with the state, county, and other offsite response agencies.

### 1. Notification of Onsite Personnel

For all emergency classifications, all personnel within the Protected Area are notified within 15 minutes of the initial classification or escalation of an emergency by recognizable alarms and/or verbal announcements over the plant Public Address (PA) System. Announcements include the emergency classification and response actions to be taken by personnel onsite (such as ERO, non-ERO, contractor personnel, and visitors). Provisions are made to alert personnel in high noise areas and outbuildings within the Protected Area as applicable.

Each station has identified locations where people might be expected to be present outside the Protected Area but within the Owner Controlled Area. Accountability of persons within the Owner Controlled Area but outside the Protected Area is not required. However, provisions are established for notification of personnel within the Owner Controlled Area any time a Site Evacuation has been initiated, or as otherwise deemed appropriate.

### 2. Evacuation Locations

If a Site Evacuation is required, nonessential personnel are directed to either assemble within designated Assembly Areas or to immediately evacuate the site. Personnel will be directed to either proceed to their homes or to reassemble at designated offsite locations. Visitors to the station will assemble with and follow the instructions of their escorts. Nonessential personnel within the Protected Area will normally exit through the security building. Personal transportation (if available) will normally be used and established evacuation routes will be followed. Personnel without transportation will be identified and provided transportation as necessary.

### 3. Radiological Monitoring of Evacuees

Personnel evacuating the site will be monitored for contamination by the portal monitors as they exit the Protected Area, with portable friskers in Assembly Areas, or sent to offsite monitoring locations on an as needed basis.

**4. Evacuation**

Evacuation is the primary protective action anticipated for onsite personnel not having immediate emergency response assignments. Each nuclear station has identified locations that serve as Assembly Areas and offsite locations for non-essential personnel when they are not instructed to proceed home. The specific locations of these areas are shown in each Station Annex. Implementing procedures describe equipment, supplies and general operation of these facilities. The Station Emergency Director will designate personnel within the Site Boundary as essential or nonessential. Evacuation of non-essential personnel is usually conducted immediately after accountability if a Site Area Emergency or General Emergency has been declared and conditions permit. Evacuation shall commence in accordance with station procedures as directed by the Station Emergency Director or his/her designee, unless one of the following conditions exist:

a. Severe weather conditions threaten safe transport.

b. A significant radiological hazard would be encountered.

c. There is a security threat occurring, which would have an adverse impact on the personnel while leaving the site.

d. A condition similar to the above in magnitude, which in the opinion of the Station Emergency Director would adversely affect the site personnel.

Security forces will be dispatched, when available, to access road(s) to control entry to site facilities. Unauthorized and non-ERO personnel will be denied entry.

The initiation of a site evacuation will be reported to the appropriate state/local agency.

Exelon has established the implementation of alternate onsite protective actions for security-based events that are more appropriate than the actions for radiological emergencies. These alternate protective actions could include taking immediate cover, immediate protected area evacuation, immediate owner controlled area evacuation, and dispatch of the ERO to their alternate reporting center.

**5. Accountability**

The purpose of Accountability is to determine the locations of all personnel inside the Protected Area and to muster emergency personnel at prearranged locations. When Accountability of onsite personnel is determined to be necessary by the Station Emergency Director, all personnel within the protected area shall be accounted for and the names of missing individuals (if any) are determined within thirty (30) minutes of the announcement.

Accountability is usually performed in conjunction with Assembly, and is required to be initiated whenever a Site Area Emergency or higher classification is declared. The movement of personnel for the purposes of Accountability may be delayed if their health and safety could be in jeopardy, such as severe weather or for security concerns.

If it is determined that the prearranged Assembly Area is unfit for personnel, the Station Emergency Director may designate an alternative Assembly Area and direct personnel using appropriate communication systems that are available.

Once established, Accountability within the Protected Area is maintained throughout the course of the event. Should missing personnel be identified, search and rescue operations are initiated.

**6. Provisions for Onsite Personnel**

Exelon maintains an inventory of respiratory protection equipment, anti-contamination clothing, and KI that is made available to emergency workers remaining onsite should conditions warrant. During the course of an emergency, protective actions are considered to minimize radiological exposures or contamination problems associated with all onsite personnel. For those who must work within the restricted area of the affected site, measures that are considered are:

a. Use of Respirators: On-shift and emergency response personnel use respiratory protection in any environment involving exposure to high level gaseous activity or oxygen deficient atmosphere, or where air quality is in doubt. In the presence of airborne particulates, emergency response personnel may be directed by health physics personnel to use full-face filter type respirators. The criteria for issuance of respiratory protection are described in Radiation Protection procedures.

b. Use of Protective Clothing: Anti-contamination clothing, located in the TSC, OSC and station dress out areas is available for use by onsite personnel. The criteria for issuance of protective clothing are described in Radiation Protection procedures.

c. Use of Potassium Iodide (KI): The use of KI may be recommended when a projected dose of 50 Rem Committed Dose Equivalent (CDE) is exceeded for an emergency worker's thyroid. This is the value specified in EPA 400-R-92-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents.". The stations are responsible for maintaining a supply of KI at their respective site. The Station Emergency Director has the responsibility for approval of issuing KI to Exelon Nuclear emergency workers.

**7. Mechanism for Implementing Protective Action Recommendations**

Plant conditions, projected dose and dose rates, and/or field monitoring data are evaluated to develop PARs for the purpose of preventing or minimizing exposure to the general public. PARs are provided to the offsite agencies responsible for implementing protective actions for the general public within the 10-mile EPZ. PARs are approved by the Emergency Director in Command and Control.

In an emergency that requires immediate protective actions be taken prior to activation of the offsite emergency facilities, PARs are provided directly to the state and county 24 hour warning points by the Emergency Director.

**8. Evacuation Time Estimates (ETEs)**

The evacuation time estimates (ETE) were developed in accordance with NUREG/CR-7002, Criteria for Development of Evacuation Time Estimate Studies. Section IV of Appendix E to 10CFR50 requires that an analysis of the time required to evacuate be provided for various sectors and distances within the plume exposure pathway EPZ for transient and permanent residents which includes special facilities schools, nursing homes, hospitals, and recreational areas The evacuation time estimate (ETE) is a calculation of the time to evacuate the plume exposure pathway emergency planning zone (EPZ), which is an area with a radius of about 10 miles around the station.

The ETE study used population data from the 2010 census. The evacuation times are based on a detailed consideration of the EPZ roadway network and population distribution. The ETE Study is contained in an addendum to the station Annex and presents evacuation times for daytime and nighttime scenarios under various weather conditions for the evacuation of various areas around the station.

Within 365 days of the availability of each decennial census data from the U.S. Census Bureau, each station shall develop an ETE analysis using this decennial data and submit it under 10CFR50.4 to the NRC. The ETE analysis shall be submitted to the NRC at least 180 days before using it to form protective action recommendations and providing it to State and local governmental authorities for use in developing offsite protective action strategies.

During the years between decennial censuses, EPZ permanent resident population changes are estimated once a year, but no later than 365 days from the date of the previous estimate, using the most recent U.S. Census Bureau annual resident population estimate and State/local government population data, if available. If at any time during the decennial period, the EPZ permanent resident population increases such that it causes the longest ETE value for the 2-mile zone or 5-mile zone, including all affected Emergency Response Planning Areas, or for the entire 10-mile EPZ to increase by 25 percent or 30 minutes, whichever is less, from the currently NRC approved or updated ETE, the ETE analysis will be updated to reflect the impact of that population increase. These estimates are available for NRC inspection during the period between decennial censuses and will be submitted to the NRC with any updated ETE analysis under 10CFR50.4 no later than 365 days after the determination that the criteria for updating the ETE have been met and at least 180 days before using it to form protective action recommendations and providing it to State and local governmental authorities for use in developing offsite protective action strategies.

**9. Capability of Implementing Protective Action Recommendations**

The responsibility for implementing protective measures based on protective action guides for the offsite population at risk is the responsibility of the state and local governments. Detailed procedures for public protective actions are contained in the state and other local radiological emergency response plans as appropriate.

The state agencies are responsible for evaluation of Exelon Nuclear recommended protective actions and preparing a recommendation to the Governor, or his/her appointed agent. Only when the state acts under the Governor's order does a recommended protective action become a directed protective action.

If the plant conditions are stable and offsite radiological conditions are such that the public health and safety are not endangered, then return to evacuated areas may be discussed with the affected state(s). State authorities are responsible for actually recommending return and transmitting this recommendation.

**10. Implementation of Protective Action Recommendations**

The utility, state, and county emergency plans used to implement the protective measures for the plume exposure pathway take numerous factors into consideration as stated in NUREG-0654 II.J. Among these considerations are:

a. Most of the public evacuees are expected to travel in their own vehicles, leaving the EPZ via designated evacuation routes. Station Annexes show the evacuation routes, EPZ Subareas and pre-selected sampling/monitoring points. The state and county plans contain official maps and information on the locations of off-site centers.

b. The population distribution around the station. Population distribution for the plume exposure EPZ is illustrated in the Station Annexes.

c. As indicated in Section E, offsite agencies are notified in the event the E-Plan is activated. State and county agencies have the capability to notify all members of the transient and resident population within the Plume Exposure Pathway EPZ.

d-l. NUREG-0654 II.J.10.d-l items are addressed separately in state and county emergency plans.

m. At a General Emergency classification, Exelon Nuclear will provide the state with recommendations for protective actions for the public. For incidents involving actual, potential, or imminent releases of radioactive material to the atmosphere, EPA 400-R-92-001, the NRC Response Technical Manual (RTM-96) and NUREG-0654, Supp. 3, Revision 1 are used as the basis for the general public PARs.

1) Plant Based PARs

Station specific PAR Flowcharts have been developed to aid Exelon Nuclear personnel providing PARs based on the above. Station specific PAR Flowcharts with Subarea or Sector tables are documented in the Exelon EP Implementing Procedures, including station-specific requirements regarding PAR determination. These flowcharts and tables provide technically based Protective Action Recommendations based on plant conditions and core damage indicators as applicable to the Exelon site and described within the implementing procedures. Possible plant based PARs issued by Exelon Nuclear, in support of NUREG-0654 Supp. 3, at a General Emergency could include as appropriate for the Station:

- Response to a Rapidly Progressing Severe Accident.
- Utilization of the staged evacuation concept as determined by station ETE's.
- Shelter of the general public in response to but not limited to; a controlled containment vent lasting less than 1 hour in duration less than PAGs, impediments to evacuation, or Hostile Action event.
- Evacuation of the general public.

In addition to the above actions to minimize or prevent potential exposure to radiation, a recommendation of "monitor and prepare" will be issued for the remainder of the EPZ.

2) Dose Based PARs

Evacuation is recommended if projected doses reach the minimum EPA PAGs (≥ 1 Rem EPA TEDE[1] or ≥ 5 Rem CDE Thyroid).

[1] EPA TEDE is defined as the sum of the doses from external exposure and inhalation from the plume, and from 4 days of external exposure to deposited materials.

Many assumptions exist in dose assessment calculations, involving both source term and meteorological factors, which make computer predictions over long distances highly questionable. However, in the event dose assessment results indicate the need to recommend actions beyond the outer EPZ boundaries, which is past 10 miles, Field Monitoring Teams are dispatched to downwind areas to verify the calculated exposure rates prior to issuing PARs outside the EPZ. In the event dose assessment results indicate the need to recommend actions beyond the outer EPZ boundaries (past 10 miles):

- If Field Monitoring Teams have been dispatched from the site, then dose assessment exposure rates will be verified prior to issuing any recommended action.
- If Field Monitoring Teams have not been dispatched from the site, then issuing recommended actions will not be delayed waiting on Field Teams.

Exelon personnel normally do not have the necessary information to determine whether off site conditions would require sheltering instead of evacuation. External factors (such as road conditions, traffic/traffic control, weather, or offsite emergency response capabilities) are determined by the state.

**11. Ingestion Pathway Protective Measures**

The responsibility for specifying protective measures to be used for the ingestion pathway rests with the state. These measures include the methods for protecting the public from consumption of contaminated water and foodstuffs.

**12. Monitoring of Evacuees**

The state and county organizations have the capability to register and monitor evacuees at designated reception centers. This capability includes personnel and equipment capable of monitoring residents and transients evacuating from the plume exposure EPZ and arriving at the reception centers, in accordance with FEMA guidelines.

## Section K: Radiological Exposure Control

This section of the plan describes the means for controlling emergency worker radiological exposures during an emergency, as well as the measures that are used by Exelon to provide necessary assistance to persons injured or exposed to radiation and/or radioactive materials. Exposure guidelines in this section are consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides described in EPA 400-R-92-001.

### 1. Emergency Exposure Guidelines

Being licensed by the NRC, all Exelon Nuclear generating stations maintain personnel exposure control programs in accordance with 10 CFR 20 under normal operating conditions. The Station Emergency Director is assigned the non-delegable responsibility for authorizing personnel exposure levels under emergency conditions per EPA-400. In emergency situations, workers may receive exposure under a variety of circumstances in order to assure safety and protection of others and of valuable property. These exposures will be justified if the maximum risks or costs to others that are avoided by their actions outweigh the risks to which the workers are subjected. The Emergency Worker Dose Limits are as follows:

| Dose Limit (Rem TEDE) | Activity | Condition |
|---|---|---|
| 0-5 | All | Personnel should be kept within normal 10 CFR 20 limits during bona fide emergencies, except as authorized for activities as indicated below. |
| 5-10 | Protecting valuable property | Lower dose not practicable. |
| 10-25 | Lifesaving or protection of large populations | Lower dose not practicable. |
| > 25 | Lifesaving or protection of large populations | Only on a voluntary basis to persons fully aware of the risks involved. |

Limit dose to the lens of the eye to 3 times the above values and doses to any other organ (including skin and body extremities) to 10 times the above values.

Whenever possible, the concurrence of the Station's Radiation Protection (Department) Manager should be secured before exposing individuals to dose equivalents beyond the EPA-400 lower limit.

**2. Emergency Radiation Protection Program**

The TSC Radiation Protection Manager is the individual responsible for the implementation of the radiation protection actions during an emergency. Radiation protection guidelines include the following:

- Volunteers over forty-five years of age are considered first for any emergency response action requiring exposure greater than normal limits. Routine dose limits shall not be extended to emergency dose limits for declared pregnant individuals. As in the case of normal occupational exposure, doses received under emergency conditions should be maintained as low as reasonably achievable.

- Persons undertaking any emergency operation in which the dose will exceed 25 Rem TEDE should do so only on a voluntary basis and with full awareness of the risks involved including the numerical levels of dose at which acute effects of radiation will be incurred and numerical estimates of the risk of delayed effects.

- In the context of the emergency limits, exposure of workers that is incurred for the protection of large populations may be considered justified for situations in which the collective dose avoided by the emergency operation is significantly larger than that incurred by the workers involved.

- Exposure accountability is maintained and proper personnel radiological monitoring equipment is provided for all personnel during emergency conditions.

- Access to high radiation areas is only permitted with prior approval of the applicable Radiation Protection Manager. Personnel are not allowed to enter known or potential high radiation areas unless their exposure has been properly evaluated.

- Periodic habitability surveys of emergency facilities are performed during an emergency. If the facility is determined to be uninhabitable, the facility is evacuated in order to prevent or minimize exposure to radiation and radioactive materials. Alternate assembly areas are established, as necessary, to relocate and monitor evacuated personnel.

**3. Personnel Monitoring**

a. Emergency workers will receive DLR badges and personal self-reading dosimeters capable of measuring expected exposures on a real time basis. The capability exists for the emergency processing of DLRs on a 24-hour per day basis, if necessary.

b. Emergency worker dose records are maintained by the Radiation Protection Managers (as appropriate) in accordance with the emergency and radiological protection procedures. Emergency workers are instructed to read their dosimeters frequently. DLRs may be processed with increased periodicity.

**4. Non-Exelon Personnel Exposure Authorization**

The responsibility for authorizing non-Exelon emergency workers (i.e. state and local agency emergency workers) to receive exposures in excess of the EPA General Public Protective Action Guides rests with the state and county organizations, except when such emergency workers are onsite. Authorization of exposures in excess of EPA General Public Protective Action Guides, in this latter instance, rests with the Station Emergency Director.

**5. Contamination and Decontamination**

During an emergency, the Station Emergency Director is responsible for preventing or minimizing personnel exposure to radioactive materials deposited on the ground or other surfaces. Special consideration should be given to setting up contamination control arrangements for personnel entering the OSC after completion of assigned activities.

a. During emergency conditions, normal plant contamination control criteria will be adhered to as much as possible. However, these limits may be modified by the applicable Radiation Protection Manager per existing Radiation Protection procedures, should conditions warrant.

b. Contamination Control Means: Personnel found to be contaminated will normally be attended to at decontamination areas located onsite. Temporary decontamination areas can also be set up inside at various locations. Decontamination showers and supplies are provided onsite with additional personnel decontamination equipment and capabilities. 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. Potentially contaminated emergency vehicles will be surveyed before they are allowed to leave the plant or offsite assembly area. If the survey area is not suitable for monitoring and decontamination due to radiological or other concerns, vehicles will be surveyed at an alternate location.

**6. Contamination Control Measures**

Controls are established 24 hours per day to contain the spread of loose surface radioactive contamination.

a. Contaminated areas are isolated as restricted areas with appropriate radiological protection and access control. Personnel leaving contaminated areas are monitored to ensure they and their clothing are not contaminated. If contamination above acceptable levels is found, they will be decontaminated in accordance with plant procedures. If normal decontamination procedures do not reduce personnel contamination to acceptable levels, the case will be referred to a competent medical authority. Supplies, instruments, and equipment that are in contaminated areas or have been brought into contaminated areas will be monitored prior to removal. If found to be contaminated, they will be decontaminated using normal plant decontamination techniques and facilities or may be disposed of as radwaste. Contaminated vehicles will be decontaminated before being released.

b. Measures will be taken to control onsite access to potentially contaminated potable water and food supplies. Under emergency conditions when uncontrolled releases of activity have occurred, eating, drinking, smoking, and chewing are prohibited in all station emergency response facilities until such time as habitability surveys indicate that such activities are permissible.

c. Restricted areas and contaminated items will be returned to normal use when contamination levels have been returned to acceptable levels. Contamination control criteria for returning areas and items to normal use are contained in the plant procedures.

**7. Decontamination of Relocated Personnel**

Nonessential onsite personnel may be evacuated to an offsite relocation center or assembly area, as discussed in Section J. Radiological controls personnel at that location monitor evacuees and determine the need for decontamination. Existing and temporary facilities to limit contamination and exposure will be utilized and established at the site as necessary during an emergency situation. In the event that decontamination of evacuees locally is not possible, personnel will be sent to designated locations for monitoring and decontamination. Provisions for extra clothing are made and suitable decontaminates are available for the expected type of contaminations, particularly with regards to skin contaminations.

## Section L: Medical and Public Health Support

This section describes the arrangements for medical services for contaminated injured individuals sent from the station.

### 1. Offsite Hospital and Medical Services

Hospital personnel have been trained and hospitals are equipped to handle contaminated or radiation injured individuals. Specifically, training of medical support personnel at the agreement hospitals will include basic training on the nature of radiological emergencies, diagnosis and treatment, and follow-up medical care. Station personnel are available to assist medical personnel with decontamination radiation exposure and contamination control. Arrangements, by letter of agreement or contract, are maintained by Exelon Nuclear with a qualified hospital located in the vicinity of each nuclear generating station for receiving and treating contaminated or exposed persons with injuries requiring immediate hospital care. Exelon Nuclear shall provide medical consultants to aid in any special care necessary at these facilities.

Arrangements are also maintained by the corporate office with a qualified medical facility well equipped and staffed for dealing with persons having radiation injuries and whenever necessary, such persons will be transferred to this hospital facility for extended specialized treatment. Exelon Nuclear will have available to the staff of this hospital, medical consultants who will provide the direction of the special care necessary for the treatment of persons having radiation injuries.

These agreements are verified annually. Refer to section II.P.4 for details.

### 2. Onsite First Aid Capability

Each nuclear station maintains onsite first aid supplies and equipment necessary for the treatment of contaminated or injured persons. In general, physicians or nurses are not staffed at Exelon Nuclear's generating stations, and as such, medical treatment given to injured persons is of a "first aid" nature. Each station does have an industrial hygiene advisor. Additionally, the Radiation Protection Technicians at each nuclear station are experienced in control of radioactive contamination and decontamination work. Station personnel are also trained and qualified to administer first aid. At least two of these individuals are available on shift at all times. The functions of station personnel in handling onsite injured people are:

1) Afford rescue;

2) Administer first aid including such resuscitative measures as are deemed necessary;

3) Begin decontamination procedures; and

4) Arrange for suitable transportation to a hospital when required.

Primary attention shall be directed to the actual factors involved in the treatment of casualties, such as: control of bleeding, resuscitation including heart and lung, control of bleeding after resuscitation, protection of wounds from bacterial or radioactive contamination and the immobilization of fractures.

Station personnel provide an initial estimate of the magnitude of surface contamination of the injured and preliminary estimates of total body dose to the injured. Primary rapid and simple decontamination of the surface of the body (when possible and advisable) before transportation to a designated hospital may be carry out as directed or performed by Radiation Protection personnel. When more professional care is needed, injured persons are transported to a local clinic or hospital. Contaminated and injured persons are transported to a dedicated facility specified for each Nuclear Station.

**3. Medical Service Facilities**

Because of the specialized nature of the diagnosis and treatment of radiation injuries, Corporate Emergency Preparedness maintains an agreement with REAC/TS. REAC/TS is a radiological emergency response team of physicians, nurses, health physicists and necessary support personnel on 24-hour call to provide consultative or direct medical or radiological assistance at the REAC/TS facility or at the accident site. Specifically, the team has expertise in and is equipped to conduct: medical and radiological triage; decontamination procedures and therapies for external contamination and internally deposited radionuclides, including chelation therapy; diagnostic and prognostic assessments or radiation-induced injuries; and radiation dose estimates by methods that include cytogenetic analysis, bioassay, and in vivo counting.

In addition to REAC/TS, respective Station Annexes may identify additional medical consultants, based on agreements with local hospitals, to support personnel training and medical response.

**4. Medical Transportation**

Arrangements are made by each nuclear generating station for prompt ambulance transport of persons with injuries involving radioactivity to designated hospitals. Such service is available on a 24-hour per day basis and is confirmed by letter of agreement. Radiation monitoring services shall be provided by Exelon Nuclear whenever it becomes necessary to use the ambulance service for the transportation of contaminated persons.

A qualified Radiation Protection person shall accompany the ambulance to the hospital. Additional Radiation Protection personnel may be contacted and dispatched to local hospitals to assist in the monitoring and decontamination of the injured victim and hospital and ambulance facilities and personnel.

## Section M: Reentry and Recovery Planning

This section describes the measures to be taken for reentry into the areas of the nuclear power station which have been evacuated as a result of an accident. It also outlines the Exelon Nuclear Recovery Organization and its concepts of operation.

### 1. Reentry and Recovery

a. Evaluating Reentry Conditions

During an emergency, immediate actions are directed toward limiting the consequences of the accident to afford maximum protection to station personnel and the general public. Once corrective measures have been taken and effective control of the plant has been re-established, a more methodical approach to reentry is taken. This E-Plan divides reentry into two separate categories:

- Reentry *during the emergency phase of an accident* is performed to save a life, control a release of radioactive material, prevent further damage to plant equipment or restore plant equipment. If necessary, this category of reentry may be performed using emergency exposure limits. Briefings, rather than written radiation protection procedures, may be used when making these entries.

  All reentry activities conducted during the emergency are authorized by the Station Emergency Director and coordinated by the OSC Director and the Radiation Protection Manager.

- Reentry *during the recovery phase of an accident* is performed using normal exposure limits. Either normal procedures or procedures that consider existing as well as potential conditions inside affected areas are developed specifically for each reentry.

  Reentry activities during the recovery phase are authorized by the Recovery Director and coordinated by the recovery organization managers in charge of personnel making the reentry.

The following items are considered when planning for any reentry:

- Review of available radiation surveillance data to determine plant areas potentially affected by radiation and/or contamination.

- Review of radiation exposure history of personnel required to participate in the accident mitigation or recovery operations.

- Determination of the need for additional personnel and the sources of these additional personnel.

- Review of adequacy of radiation survey instrumentation and equipment (types, ranges number, calibration, etc.).

- Review of non-radiological hazards and required protective measures (e.g., fire, electrical, Hazmat).
- Pre-planning of activities and briefings for the reentry team that include the following:
  - Personnel knowledge requirements.
  - Methods and procedures that will be employed during the entry.
  - Specific tasks to be performed.
  - Anticipated radiation and contamination levels.
  - Radiation survey equipment and types and ranges of dosimetry required.
  - Shielding requirements and availability.
  - Appropriate communications.
  - Protective clothing and equipment requirements.
  - Access control procedures.
  - Decontamination requirements.
  - De-briefing requirements.
  - Respiratory protection.
- A review of security controls to prevent unauthorized or unintentional entry into hazardous areas.

b. Evaluating Entry into Recovery

The Recovery Phase is that period when major repairs are being performed to return the plant to an acceptable condition and the possibility of the emergency condition degrading no longer exists. Once the plant has been stabilized, contained and controlled, the Recovery Phase may be entered. It is the responsibility of the Station Emergency Director to classify Recovery after obtaining authorization from the Corporate Emergency Director.

Establishment of Recovery can be conducted from any emergency classification level. However, it is possible that the lower classifications of Unusual Event and Alert will conclude with the event being terminated. There may be cases where certain EAL initiating conditions remain exceeded, but the station is under control and no further danger of degradation exists. In such a case, it may be appropriate to enter Recovery. Site Area and General Emergencies will require a Recovery Phase to be established prior to event termination. Exelon Nuclear may consult with/notify cognizant governmental agencies prior to declaring Recovery or event termination.

Termination/Recovery considerations are contained in the implementing procedures to provide guidance for evaluating the risk of entering Recovery without alleviating the intent of the Initiating Condition. The purpose of Recovery is to provide the necessary personnel to handle the long-term activities and to return the plant to an acceptable condition.

The following conditions are guidelines for the determination of establishing Recovery (this is not intended to be a complete list and additional criteria may apply, depending on the specifics of the event):

- The risk to the health and safety of the public has been mitigated.
- Plant parameters and equipment status have been established and controlled.
- In-plant radiation levels are stable or decreasing, and acceptable, given the plant conditions.
- The potential for uncontrolled releases of radioactive material to the environment has been eliminated.
- Environmental monitoring has been established.
- The radioactive plume has dissipated and plume tracking is no longer required (the only environmental assessment activities in progress are those necessary to assess the extent of deposition resulting from passage of the plume).
- Exelon Nuclear workers have been protected.
- Any security threat has been neutralized, and/or plant security is under the direction of Exelon Nuclear personnel.
- Adequate plant safety systems are operable.
- The reactor is in a stable shutdown condition and long-term core cooling is available

- The fuel pool damage has been mitigated, or spent fuel damage has been contained and controlled.
- Primary and/or secondary containment integrity has been established.
- Plant systems and equipment are restored and/or replaced such that plant conditions are stable highly unlikely to degrade further.
- Conditions that initiated the emergency have been contained, controlled, eliminated or stabilized such that the classification is no longer applicable.
- The operability and integrity of radioactive waste systems, decontamination facilities, power supplies, electrical equipment and of plant instrumentation including radiation monitoring equipment.
- Any fire, flood, earthquake or similar emergency condition or threat to security no longer exists.
- All required notifications have been made.
- Discussions have been held with federal, state and county agencies and agreement has been reached to terminate the emergency.
- At an Alert or higher classification, the ERO is in place and emergency facilities are activated.
- Any contaminated injured person has been treated and/or transported to a medical care facility.
- Offsite conditions do not unreasonably limit access of outside support to the station and qualified personnel and support services are available.

It is not necessary that all conditions listed above be met; however, all items must be considered prior to entering the recovery phase. For example, it is possible after a severe accident that some conditions remain that exceed an Emergency Action Level, but entry into the Recovery Phase is appropriate.

**2. Recovery Organization**

Once plant conditions have been stabilized and the Recovery Phase has been initiated, the Emergency Director may form a Recovery Organization for long-term operations. These types of alterations will be discussed with the NRC prior to implementation.

- For events of a minor nature, (i.e. for Unusual Event classifications) the normal on shift organization is normally adequate to perform necessary recovery actions.

- For events where damage to the plant has been significant, but no offsite releases have occurred and/or protective actions were not performed, (i.e. for Alert classifications) the station Emergency Response Organization, or portions thereof, should be adequate to perform the recovery tasks prior to returning to the normal station organization.

- For events involving major damage to systems required to maintain safe shutdown of the plant and offsite radioactive releases have occurred, (i.e. for Site Area Emergency or General Emergency classifications) the station recovery organization is put in place.

The specific members of the station recovery organization are selected based on the sequence of events that preceded the recovery activities as well as the requirements of the recovery phase. The basic framework of the station recovery organization is as follows:

a. The Recovery Director: The Corporate Emergency Director is initially designated as the Recovery Director. The Recovery Director is charged with the responsibility for directing the activities of the station recovery organization. These responsibilities include:

   - Ensuring that sufficient personnel, equipment, or other resources from Exelon and other organizations are available to support recovery.

   - Directing the development of a recovery plan and procedures.

   - Deactivating any of the plant Emergency Response Organization which was retained to aid in recovery, in the appropriate manner. Depending upon the type of accident and the onsite and offsite affects of the accident, portions of the ERO may remain in place after initiation of the recovery phase.

   - Coordinating the integration of available federal and state assistance into onsite recovery activities.

   - Coordinating the integration of Exelon support with federal, state and county authorities into required offsite recovery activities.

   - Approving information released by the public information organization which pertains to the emergency or the recovery phase of the accident.

   - Determining when the recovery phase is terminated.

b. The Recovery Plant Manager: The Station Manager or a designated alternate will become the Recovery Plant Manager. The Recovery Plant Manager reports to the Recovery Director and is responsible for:

   - Coordinating the development and implementation of the recovery plan and procedures.

- Ensuring that adequate engineering activities to restore the plant, are properly reviewed and approved.
- Directing all onsite activities in support of the station recovery effort.
- Designating other Exelon recovery positions required in support of onsite recovery activities.

c. The Recovery Offsite Manager: A senior Corporate Emergency Preparedness or Regulatory Affairs individual, or a designated alternate, is the Recovery Offsite Manager. The Recovery Offsite Manager reports to the Recovery Director and is responsible for:

- Providing liaison with offsite agencies and coordinating Exelon assistance for offsite recovery activities.
- Coordinating Exelon ingestion exposure pathway EPZ sampling activities and the development of an offsite accident analysis report.
- Developing a radiological release report.
- Designating other Exelon recovery positions required in support of offsite recovery activities.

d. The Company Spokesperson: A senior Exelon management individual is designated as the Company Spokesperson. The Company Spokesperson reports to the Recovery Director and is responsible for:

- Functioning as the official spokesperson to the press for Exelon on all matters relating to the accident or recovery.
- Coordinating non-Exelon public information groups (federal, state, county, etc.).
- Coordinating media monitoring and rumor control.
- Determining what public information portions of the ERO will remain activated.

The remainder of the recovery organization is established and an initial recovery plan developed at the end of the emergency phase or just after entry into the recovery phase. Consideration is given to recovery activity needs and use of the normal station organizations. Individual recovery supervisors may be designated in any or all of the following areas:

- Training
- Radiation Protection
- Chemistry

- Technical/Engineering Support
- Nuclear Oversight
- Operations
- Security
- Maintenance
- Special Offsite Areas (Community Representatives, Environmental Samples, Investigations, etc.)

**3. Recovery Phase Notifications**

When the decision is made to enter the recovery phase, all members of the Exelon ERO are informed of the change. All Exelon personnel are instructed of the Recovery Organization and their responsibilities to the recovery effort.

**4. Total Population Exposure**

Total population exposure calculations are performed and periodically updated during the recovery phase of an accident. A method has been developed for estimating the total population exposure resulting from the accident from data collected in cooperation with the state and other federal agencies. Total population exposure is determined through a variety of procedures including:

- Examination of pre-positioned dosimeters.
- Bioassay.
- Estimates based on release rates and meteorology.
- Estimates based on environmental monitoring of food, water, and ambient dose rates.

The state will be the lead agency in the collection and analysis of environmental air, soil, foliage, food, and water samples and for the generation of radiation monitoring reports. Exelon Nuclear environmental sampling activities will be coordinated with state efforts, as requested, and results shared with cognizant agencies.

## Section N: Drill and Exercise Program

This section describes the Drill and Exercise Program that Exelon Nuclear has implemented to:

- Verify the adequacy of the Emergency Preparedness Program.
- Develop, maintain, and evaluate the capabilities of the ERO to respond to emergency conditions and safeguard the health and safety of station personnel and the general public.
- Identify deficiencies in the E-Plan and the associated procedures, or in the training of response personnel, and ensure that they are promptly corrected.
- Ensure the continued adequacy of emergency facilities, supplies and equipment, including communications networks.

The Exercise Cycle is defined as an eight-year period of time. At each station, the eight-year cycle began in the same year that the first Hostile Action based exercise was performed. During each eight-calendar year exercise cycle, sites shall vary the content of scenarios during exercises to provide the opportunity for the ERO to demonstrate proficiency in the key skills to respond to the following scenario elements:

- hostile action directed at the plant site,
- no radiological release or an unplanned minimal radiological release that does not require public protective actions,
- an initial classification of or rapid escalation to a Site Area Emergency or General Emergency,
- implementation of strategies, procedures, and guidance developed under § 50.54(hh)(2), and integration of offsite resources with onsite response.

Exelon uses drill and exercise scenarios that provide reasonable assurance that anticipatory responses do not result from preconditioning of participants. Such scenarios include a wide spectrum of radiological releases and events, including hostile action

## 1. Exercises

a. Biennial Exercises

Federally prescribed exercises are conducted at each nuclear station in order to test the adequacy of timing and content of implementing procedures and methods; to test emergency equipment and communication networks; and to ensure that emergency personnel are familiar with their duties. Exercises involving offsite agency participation, required under Section F.2.c & d to 10 CFR 50 Appendix E, are conducted at each nuclear station based on FEMA-REP-14 guidance and the respective state and local emergency response plans.

Partial participation means appropriate offsite authorities shall actively take part in the exercise sufficient to test direction and control functions to include protective action decision making related to Emergency Action Levels and communication capabilities among affected state and local authorities and Exelon Nuclear.

Full participation exercises will include appropriate offsite local and state authorities and Exelon personnel physically and actively taking part in testing the integrated capability to adequately assess and respond to an accident at the plant. Additionally, full participation exercises will includes testing the major observable portions of the onsite and offsite emergency plans and mobilization of state, local, and Exelon personnel and other resources in sufficient numbers to verify the capability to respond to the accident scenario.

Where partial or full participation by offsite agencies occurs, the sequence of events simulates an emergency that results in the release of radioactivity to the offsite environs, sufficient in magnitude to warrant a response by offsite authorities.

b. Off-Year Exercises

An Off-Year Exercise is conducted at each station during the calendar year when an NRC Evaluated Exercise is not scheduled. An Off-Year Exercise shall involve a combination of at least two facilities in order to demonstrate at least two of the functions of management and coordination of emergency response, accident assessment, protective action decision-making, or plant system repair and corrective actions. For Off-Year Exercises involving no or limited participation by offsite agencies, emphasis is placed on development and conduct of an exercise that is more mechanistically and operationally realistic. Players will be able, by implementing appropriate procedures and corrective actions, to determine the outcome of the scenario to a greater extent than when core damage and the release of radioactivity are prerequisites for demonstration of all objectives.

c. Pre-Exercises

Pre-Exercise Drills should be conducted prior to a Biennial Exercise where Federal Emergency Management Agency (FEMA) evaluation of state and local performance is expected. Pre-Exercise Drills may be conducted prior to Off-Year Exercises that only involve the utility. The Pre-Exercise is a training and experience tool for the participants to sharpen awareness and practice skills necessary to accomplish specific E-Plan duties and responsibilities.

Exercises provide an opportunity to evaluate the ability of participating organizations to implement a coordinated response to postulated emergency conditions. Exercises are conducted to ensure that all major elements of the E-Plan and preparedness program are demonstrated at least once in each exercise cycle. Each station shall conduct at least one off-hours exercise between 6:00 p.m. and 4:00 a.m. every exercise cycle. Weekends and holidays are also considered off-hours periods. Provisions will be made for qualified personnel from Exelon, federal, state, or local governments to observe and critique each exercise as appropriate.

**2. Drills**

In addition to the exercises described above, Exelon conducts drills for the purpose of testing, developing, and maintaining the proficiency of emergency responders. Drills are scheduled on the Emergency Preparedness annual events plan, which contains provisions for the following drills:

a. Communication Drills

- Monthly - The capability of the Nuclear Accident Reporting System (NARS) to notify the state and local government warning points and EOCs within the plume exposure pathway EPZ are demonstrated. Also, the capability to notify the NRC is demonstrated using the Emergency Notification System (ENS) and the Health Physics Network (HPN) where available.

- Quarterly - The capability to notify the NRC Region, FEMA Region, American Nuclear Insurers (ANI) and federal emergency response organizations as listed in the Emergency Response Facilities (ERF) Telephone Directory are demonstrated from the EOF. Also, computer and critical communications equipment shall be functionally tested.

  Communications between states outside the 10 mile EPZ but within the 50-mile EPZ are tested by the host state.

- Annually - The emergency communications systems outlined in Section F are fully tested. This includes (1) communications between the plant and the state and local EOCs and Field Monitoring Teams, and (2) communications between the CR, the TSC, and the EOF.

Each of these drills includes provisions to ensure that all participants in the test are able to understand the content of the messages.

b. Fire Drills: Fire drills shall be conducted at each nuclear station in accordance with Station Technical Specifications and/or Station procedures.

c. Medical Emergency Drills: A medical emergency drill, involving a simulated contaminated individual, and containing provisions for participation by local support services organizations (i.e., ambulance and support hospital) are conducted annually at each nuclear station. local support service organizations, which support more than one station, shall only be required to participate once each calendar year. The offsite portions of the medical drill may be performed as part of the required biennial exercise.

d. Radiological Monitoring Drills: Plant environs and radiological monitoring drills (onsite and offsite) are conducted annually. These drills include collection and analysis of all sample media (such as, water, vegetation, soil, and air), and provisions for communications and record keeping.

e. Health Physics Drills: Health Physics Drills involving a response to, and analysis of, simulated airborne and liquid samples and direct radiation measurements within the plant are conducted semi-annually. At least annually, these drills shall include a demonstration of the sampling system capabilities, or the Core Damage Assessment Methodology (CDAM) objectives as applicable.

f. Augmentation Drills: Augmentation drills serve to demonstrate the capability of the process to augment the on-shift staff with a TSC, OSC and EOF in a short period after declaration of an emergency. These drills are conducted using the following methods:

- Quarterly, each station will initiate an unannounced off-hours ERO augmentation drill where no actual travel is required. Each region's Corporate ERO shall also perform an unannounced off-hours ERO augmentation drill that may be conducted independent of, or in conjunction with, a station drill.

- At least once per exercise cycle, an off-hours unannounced activation of the ERO Notification System with actual response to the emergency facilities is conducted by each station. Each region's Corporate ERO need only participate once per cycle.

g. Accountability Drills: Accountability drills are conducted annually. The drill includes identifying the locations of all individuals within the protected area.

**3. Conduct of Drills and Exercises**

Advance knowledge of the scenario will be kept to a minimum to allow "free-play" decision making and to ensure a realistic participation by those involved. Prior to the drill or exercise, a package will be distributed to the controllers and evaluators that will include the scenario, a list of performance objectives, and a description of the expected responses.

For each emergency preparedness exercise or drill conducted, a scenario package is developed that includes at least the following:

a. The basic objective(s) of the drill or exercise and the appropriate evaluation criteria.

b. The date(s), time period, place(s), and participating organizations.

c. The simulated events.

d. A time schedule of real and simulated initiating events.

e. A narrative summary describing the conduct of the scenario to include such things as simulated casualties, offsite fire department assistance, rescue of personnel, use of protective clothing, deployment of radiological monitoring teams, and public information activities.

f. A description of the arrangements for and advance materials to be provided to official observers.

Prior approval by the appropriate station management is obtained for all drills and exercises conducted in support of the Emergency Preparedness Program.

**4. Critique and Evaluation**

Drill and exercise performance objectives are evaluated against measurable demonstration criteria. As soon as possible following the conclusion of each drill or exercise, a critique is conducted to evaluate the ability of the ERO to implement the E-Plan and procedures.

A formal written critique report is prepared by Emergency Preparedness following a drill or exercise involving the evaluation of designated objectives or following the final simulator set with ERO participation. The report will evaluate the ability of the ERO to respond to a simulated emergency situation. The report will also contain corrective actions and recommendations.

Biennially, representatives from the NRC observe and evaluate the licensee's ability to conduct an adequate self-critical critique. For partial and full offsite participation exercises both the NRC and FEMA will observe, evaluate, and critique.

Critique comments identified by participants during a training drill where objectives are not formally being evaluated will be reviewed and dispositioned by Emergency Preparedness, but do not require a formal report.

**5. Resolution of Drill and Exercise Findings**

The critique and evaluation process is used to identify areas of the Emergency Preparedness Program that require improvement. The Emergency Preparedness Manager is responsible for evaluation of recommendations and comments to determine which items will be incorporated into the program or require corrective actions, and for the scheduling, tracking, and evaluation of the resolution to the items.

Whenever exercises and/or drills indicate deficiencies in the E-Plan or corresponding implementing procedures, such documents will be revised as necessary.

Remedial exercises will be required if the emergency plan is not satisfactorily tested during the Biennial Exercise, such that NRC, in consultations with FEMA, cannot find reasonable assurance that adequate protective measures can be taken in the event of a radiological emergency. The extent of State and local participation in remedial exercises must be sufficient to show that appropriate corrective measures have been taken regarding the elements of the plan not properly tested in the previous exercises.

## Section O: Emergency Response Training

This section describes the emergency response training that is provided to those who may be called upon in an emergency. It outlines the training provided by Exelon Nuclear to both its employees and offsite support personnel requiring site access.

### 1. Assurance of Training

The E-Plan Training Program assures the training, qualification, and requalification of individuals who may be called on for assistance during an emergency. Specific emergency response task training, prepared for each E-Plan position, is described in lesson plans and study guides. The lesson plans, study guides, and written tests are contained in the ERO Training Program. Responsibilities for implementing the training program are contained in plant procedures. Exelon personnel who are assigned an E-Plan position will receive retraining at a frequency of once per calendar year not to exceed 18 months between training sessions.

Offsite training is provided to support organizations that may be called upon to provide assistance in the event of an emergency. The following outlines the training received by these organizations:

a. Emergency Preparedness shall annually train, or document an annual written offer to train, those non-Exelon Nuclear organizations referenced in the Station Annexes that may provide specialized services during a nuclear plant emergency (e.g., local law enforcement, fire-fighting, medical services, transport of injured, etc.). The training made available is designed to acquaint the participants with the special problems potentially encountered during a nuclear plant emergency, notification procedures and their expected roles. Those organizations that must enter the site shall also receive site-specific emergency response training and be instructed as to the identity (by position and title) of those persons in the onsite organization who will control their support activities.

b. Training of offsite emergency response organizations is described in their respective radiological emergency plans, with support provided by Exelon Nuclear as requested.

### 2. Functional Training of the ERO

In addition to general and specialized classroom training, members of the Exelon Nuclear ERO receive periodic performance based emergency response training. Performance based training is provided using one or more of the following methods:

- Familiarization Sessions: A familiarization session is an informal, organized tabletop discussion of predetermined objectives.

- Walk Throughs: Consists of a facility walk through to familiarize plant ERO personnel with procedures, communications equipment, and facility layout. Walk throughs also provide the opportunity to discuss facility activities, responsibilities and procedures with an instructor.

- Drills: A drill is a supervised instruction period aimed at testing, developing and maintaining skills in a particular operation. Drills described in Section N of this plan are a part of training. These drills allow each individual the opportunity to demonstrate the ability to perform their assigned emergency functions. During drills, on-the-spot correction of erroneous performance may be made and a demonstration of the proper performance offered by the Controller.

**3. First Aid Response**

Selected station personnel are trained in accordance with the Exelon Nuclear approved First Aid Program. First-Aid Teams will likely be augmented with additional personnel such as Fire Brigade Members and other personnel qualified to assist in the rescue.

**4. Emergency Response Organization Training Program**

Exelon Nuclear ERO personnel who are responsible for implementing this plan receive specialized training. The training program for emergency response personnel is developed based on the requirements of 10 CFR 50, Appendix E and position specific responsibilities as defined in this document.

On-Shift emergency response personnel perform emergency response activities as an extension of their normal duties and are trained annually as part of their duty specific training. Additional Emergency Preparedness information is provided as part of the Station Nuclear General Employee Training.

New ERO personnel receive an initial overview course that familiarizes them with the E-Plan by providing basic information in the following areas as well as specific information as delineated in the sections below:

- Planning Basis
- Emergency Classifications
- Emergency Response Organization and Responsibilities
- Call-out of Emergency Organization
- Emergency Response Facilities
- Communications Protocol/Emergency Public Information
- Offsite Organizations

Emergency response personnel in the following categories receive knowledge and/or performance based training initially and retraining thereafter once per calendar year not to exceed 18 months between training sessions.

a. Directors, Managers and Coordinators within the station and corporate ERO: Personnel identified by the Emergency Response Organization Telephone Directory as Directors, Managers and Coordinators for the station and corporate EROs receive training appropriate to their position in accordance with the approved ERO Training Program. These personnel receive specialized training in the areas of:

- Notifications
- Emergency Classifications
- Protective Action Recommendations
- Emergency Action Levels
- Emergency Exposure Control

Selected Directors, Managers, Coordinators and Shift Emergency Directors receive training in accordance with the approved ERO Training Program. Training in accident assessment sufficient to classify an event and to mitigate the consequences of an event are also covered.

b. Personnel Responsible for Accident Assessment:

The skills and knowledge required to perform plant stabilization and mitigation are a normal function of operations specific positions, as identified in Section B of this plan. Power changes and planned and unplanned reactor shutdowns are handled on a normal operation basis. Subsequent plant stabilization and restoration is pursued utilizing normal operating procedures. Licensed Operators receive routine classroom and simulator training to ensure proficiency in this area.

1) Active Senior Licensed Control Room Personnel shall have training conducted in accordance with the approved ERO Training Program such that proficiency is maintained on the topics listed below. These subjects shall be covered as a minimum on an annual basis.

- Event Classification.
- Protective Action Recommendations.
- Radioactive Release Rate Determination.
- Notification form completion and use of the Nuclear Accident Reporting System (NARS).
- Federal, state and local notification procedures as appropriate.

- Site specific procedures for activating the onsite and offsite ERO.

To remove peripheral duties from the Operations shift, the following group of positions responsible for accident assessment, corrective actions, protective actions, and related activities receive the training listed below:

2) Core Damage Assessment Personnel: During an emergency when core/cladding damage is suspected, a specialized group of trained individuals perform core damage assessment. At a minimum, personnel responsible for core damage assessment receive classroom and hands-on training in the following areas:

   - Available Instrumentation and Equipment
   - Isotopic Assessment and Interpretation
   - Computerized Core Damage Assessment Methodology (CDAM) and/or proceduralized assessment methods.

c. Radiological Monitoring Teams and Radiological Analysis Personnel

1) Offsite Radiological Monitoring: Offsite radiological monitoring is performed by trained individuals who provide samples and direct readings for dose assessment calculations and dose projection comparisons.

   Personnel identified as members of Field Monitoring Teams receive training in accordance with the approved training program. Field Monitoring Team members receive classroom and hands-on training in the following areas:

   - Equipment and Equipment Checks
   - Communications
   - Plume Tracking Techniques

2) Personnel Monitoring: Personnel monitoring is performed by trained individuals who monitor station personnel and their vehicles for contamination during an emergency. Personnel Monitoring Team members receive classroom and hands-on training in the following areas:

   - Personnel Monitoring Equipment and Techniques
   - Decontamination Techniques for Personnel
   - Decontamination Techniques for Vehicles

3) Dose Assessment: Dose Assessment training includes the skills and knowledge necessary for calculation and interpretation of an offsite release and its impact on the environment under varying meteorological conditions. Individuals responsible for performing dose assessment are trained in the following areas:

- Computerized Dose Assessment
- Protective Action Recommendations
- Field Monitoring Team Interface
- Protective Action Guidelines associated with offsite plume exposure doses
- Basic Meteorology

d. Police, Security, and Fire Fighting Personnel

1) Local Police and Fire Fighting Personnel: The local Police and Fire Departments are invited to receive training as outlined in Part 1.a of this section.

2) Security Personnel: Station security personnel are trained in accordance with training defined by the Nuclear General Employee Training (NGET) and Exelon Nuclear Security Program.

3) Fire Control Teams (fire brigades): Station fire brigades are trained in accordance with training defined by the Exelon Nuclear Fire Protection Program. Fire Brigade personnel are considered the primary members of rescue teams and will receive the appropriate EP training as part of their training program. Training also includes rescue of personnel from hazardous environments.

e. Repair and Damage Control Teams: Operations, Maintenance and Radiation Protection personnel are trained as part of their normal job specific duties to respond to both normal and abnormal plant operations.

Operations personnel are trained to: (1) recognize and to mitigate degrading conditions in the plant, (2) mechanically and electrically isolate damaged or malfunctioning equipment, (3) isolate fluid leaks, and (4) minimize transients.

Maintenance personnel are trained to troubleshoot and repair damaged or malfunctioning electrical, mechanical, or instrumentation systems as appropriate to their job classification.

Radiation Protection personnel are trained to assess the radiological hazards associated with equipment repair and instruct personnel as to the appropriate protective clothing requirements, respiratory protection requirements, stay times, and other protective actions specific to the conditions present.

At least 50% of personnel from those departments, who are potential responders to the OSC as Damage Control Team members, are required to be qualified in the use of respiratory protection equipment. This includes in-plant supervision and craft/technicians for the following departments:

- Operations
- Radiation Protection
- Chemistry
- Maintenance (mechanical, electrical and I&C)

f. First Aid and Rescue Personnel: First aid and rescue team members receive training as outlined in Part 3 of this section.

g. Local Support Service Personnel: Local support service personnel providing assistance during an emergency are invited to receive training as outline in Parts 1.a and 1.b of this section.

h. Medical Support Personnel: Onsite medical personnel receive specialized training in the handling of contaminated victims and hospital interface. Offsite ambulance and hospital personnel are offered annual training in accordance with a program provided by Emergency Preparedness.

i. Public Information Personnel: Corporate and station personnel responsible for disseminating emergency public information and responding to media and public information requests receive specialized public information training.

j. Communications Personnel: ERO personnel receive training on communications protocol as a part of the initial Emergency Response Overview Course. Personnel using specialized communications equipment that is not part of their normal daily function receive initial and requalification training on the equipment. Personnel involved in notifications to offsite agencies receive specialized training in the notification process.

**5. General, Initial, and Requalification Training Program Maintenance**

a. Station Departments and Emergency Preparedness share the responsibility for ensuring that the ERO receives all necessary training and retraining. In order to carry this out, responsibilities are assigned as follows:

Corporate Responsibilities for Corporate ERO Personnel

- Scheduling and conducting initial, retraining, and make-up classes.

- Acting as the sole contact point for ensuring attendance.
- Record keeping for the training courses, including dates of scheduled classes and non-attendance information.
- Verifying that all emergency response personnel training records are current.
- Ensure instructional materials are prepared and reviewed every two years.

Station Responsibilities for Station ERO Personnel

- Station management shall ensure the attendance of onsite personnel for training, including required E-Plan courses.
- Each Station shall conduct onsite emergency personnel initial and retraining for station Emergency Response Personnel using approved lesson plans.
- The Station Training Department shall provide those shift personnel included in a continuing training program an annual review of the following items as a minimum:
  - Assembly Areas
  - Emergency Response Facility assignment
  - Potential Hazards (radiological and non-radiological)
  - Anticipated actions including assembly requirements, protective equipment requirements (clothing, masks, SCBA, etc.), the use of KI, emergency exposure limits and accountability requirements.

b. Initial and Requalification ERO Training: The proficiency of emergency response personnel (as defined in 10 CFR 50 Appendix E) is ensured by the following means:

- Assigning persons to emergency duties that are similar to those performed as a part of their regular work assignment or experience.
- Initial training and annual retraining on applicable generic and site-specific portions of the E-Plan and the corresponding implementing procedures. Individuals not demonstrating the required level of knowledge in initial or retraining classes receive additional training on the areas requiring improvement. Annual retraining is conducted **once** per calendar year not to exceed 18 months between training sessions.

- Training is required for changes to the Emergency Plan and Station Annexes that are not editorial or minor in nature including changes that impact the resources, capabilities, or methods associated with Planning Standards, Program Elements, or 10CFR50 Appendix E, and modify program requirements or commitments. Training on E-Plan changes shall be completed within one hundred twenty (120) days of implementation of the change.

- Participation in exercises and/or drills as developed or authorized by the Emergency Preparedness Department and designed to sharpen those skills that they are expected to use in the event of a nuclear emergency.

All personnel assigned position specific responsibilities in the ERO are documented by inclusion in the Emergency Response Organization Telephone directory listing of positions and personnel.

c. Nuclear General Employee Training (NGET): All personnel with unescorted station access are provided with initial orientation training on the notification and instruction methods used in the event of an emergency. Additionally, all badged individuals also receive initial orientation on the basic principles of radiological safety including the effects of radiation and the theory and use of radiation detection devices. Appropriate actions for escorted individuals shall be the responsibility of the escort. NGET provides initial and annual requalification training on the basic elements of the E-Plan for all personnel working at the plant. Specifically, these elements include:

- Station emergency alarms and their meaning

- Assembly areas

- Site and Exclusion Area Evacuation procedures

- Special precautions and limitations during an emergency

- Purpose of the E-Plan

## Section P: Responsibility for the Maintenance of the Planning Effort

This section describes the responsibilities for development, review and distribution of the E-Plan and actions that must be performed to maintain the emergency preparedness program. It also outlines the criteria for insuring that personnel who perform the planning are properly trained.

### 1. Emergency Preparedness Staff Training

The Emergency Preparedness staff is involved in maintaining an adequate knowledge of state of the art planning techniques and the latest applications of emergency equipment and supplies. At least once each calendar year each member of the Emergency Preparedness staff is involved in one of the following activities:

- Training courses specific or related to emergency preparedness.
- Observation of or participation in drills and/or exercises at other stations.
- Participation in industry review and evaluation programs.
- Participation in regional or national emergency preparedness seminars, committees, workshops or forums.
- Specific training courses in related areas, such as systems, equipment, operations, radiological protection, or Problem Identification & Resolution (PI&R).

### 2. Authority for the Emergency Preparedness Effort

The Site Vice Presidents are responsible for the safe and reliable operation of the generating stations within Exelon Nuclear. The issuance and control of this plan and the activities associated with emergency preparedness at Exelon Nuclear shall be the overall responsibility of the Vice President, Fleet Support. This individual is assigned the responsibility for overall implementation of the E-Plan and station Annexes.

### 3. Responsibility for Development and Maintenance of the Plan

Each regional Emergency Preparedness Manager is responsible for the overall radiological emergency preparedness program associated with the operation of the nuclear power stations within their respective region and to administer the program to ensure availability of resources in the event of an emergency. The regional Emergency Preparedness Managers report to an EP Director who in turn reports to the Vice President, Fleet Support.

The Emergency Preparedness Managers are assisted by regional corporate and Station Emergency Preparedness staff. Specific responsibilities include the following:

Program Administration

- Develop and maintain the E-Plan, Station Annexes, implementing procedures and administrative documents.
- Develop and maintain 50.54(q) evaluations for changes to EP documents.
- Coordinate and maintain the EP Activities Schedule.
- Develop and maintain working relationships and coordinate meetings with Federal, state and local agencies.
- Ensure integration of plans between Exelon and offsite agencies.
- Provide an opportunity to discuss Emergency Action Levels and the availability of Nuclear Oversight audit results relating to interface with governmental agencies.
- Coordinate, negotiate and maintain agreements and contracts with offsite agencies and support organizations.
- Obtain Letters of Agreement with medical facilities, and medical consultants specifically skilled in the medical aspects of radiation accidents and other medical consultants as might be necessary for the case of a person involved in a radiation incident.
- Coordinate the development and annual distribution of the station's public information publication.
- Coordinate and administer the Self Evaluation Program to monitor and evaluate the adequacy of the Emergency Preparedness Program.
- Coordinate and support EP Self-Assessments, Audits and Inspections.
- Ensure the documentation and resolution of adverse conditions in the emergency preparedness program discovered through drills, audits, etc. in accordance with the Exelon Nuclear Corrective Action Program.
- Coordinate and develop Operational Experience responses.
- Coordinate, document and review Performance Indicator data and reports.
- Provide oversight of Drill and Exercise Performance (DEP) evaluations during License Operator Requalification (LOR) Training.
- Coordinate and conduct EP Event reviews and reports.

- Maintain adequate documentation/files to support EP activities.
- Develop and manage the EP budget.
- Maintain the Emergency Response Facilities (ERF) Telephone Directory.

Drills and Exercises

- Coordinate and maintain the EP Drill and Exercise Schedule.
- Coordinate and conduct exercises and drills.
- Coordinate NRC, FEMA, state, and local exercise scheduling and development activities.
- Coordinate drill and exercise scenario development activities.
- Develop and publish drill and exercise scenario manuals.
- Coordinate and perform controller and evaluator functions for drills and exercises.
- Coordinate response cells for drills and exercises.
- Develop and issue drill and exercise reports.

Facilities and Equipment

- Provide maintenance and administration of the Alert and Notification System (ANS).
- Provide maintenance of the ERO call-out system.
- Ensure the Emergency Response Facilities are maintained in a constant state of readiness.
- Coordinate and review the EP equipment inventories.
- Coordinate and conduct maintenance and testing of the communications systems.
- Maintain the EP computer applications.

ERO Qualification and Administration

- Develop and maintain ERO Lesson Plans, Examinations, and Qualification Cards.
- Maintain EP NGET training content.

- Coordinate, schedule and conduct ERO qualification and requalification training.
- Oversee the maintenance of ERO training records.
- Maintain and coordinate publishing of the ERO Duty Rosters.
- Provide adequate oversight and support for the training of offsite response personnel.
- Coordinate conduct of Emergency Medical Assistance Program training.
- Coordinate annual training for the media.

Each Plant Manager is responsible for implementation of the E-Plan at their respective Stations. The Plant Manager has the following responsibilities for maintenance of the Emergency Preparedness Program:

- Ensure the adequate staffing and training of station ERO members.
- Schedule and conduct drills and exercises to maintain the state of readiness of the Emergency Preparedness Program.
- Ensure the operational readiness of station facilities and communication systems for use during an emergency.
- Ensure the operational readiness of station emergency equipment and supplies is maintained.
- Ensure the emergency response procedures and the training and retraining of Station Emergency Response personnel are maintained.

**4. E-Plan and Agreement Revisions**

The E-Plan, its Annexes, and supporting Agreements are reviewed on an annual basis. This review may also include applicable state and local emergency response agencies based on established agreements.

The annual E-Plan review/update includes required changes identified during audits, assessments, training, drills, and exercises. The Emergency Preparedness Director is responsible for determining which recommended changes are incorporated into a plan or emergency procedure revision. In those years when the review does not warrant a revision, a letter to that affect will be issued.

The E-Plan and its Annexes shall be revised as needed and the most current approved revisions shall remain in effect so long as they are certified as current. Revisions to the E-Plan are reviewed by the Stations' Plant Operational Review Committee (PORC) prior to approval. Changes to the plan are made without NRC approval only if such changes do not result in a reduction in effectiveness of the plan per 10 CFR 50.54(q), and the plan as changed continues to meet the standards of 10 CFR 50.47(b) and the requirements of 10 CFR 50, Appendix E. Proposed changes that reduce or have a potential to reduce the effectiveness of the approved plan are not implemented without prior approval by the NRC.

- Proposed revisions to the E-Plan and Station Annexes shall be completed in accordance with the Exelon Nuclear review and approval processes.

- The E-Plan and Station Annexes shall normally be implemented simultaneously to be consistent at all sites. Regional issues may result in slight delayed implementation within one region; however, the changes are implemented simultaneously at each station and corporate response facility within the associated region.

- E-Plan and Station Annex changes shall be categorized as (1) minor/ administrative or (2) significant programmatic changes. Minor/administrative changes shall be implemented within 30 days of approval. Significant programmatic changes shall be implemented as soon as practical and within 60 days of final approval simultaneously at all sites.

- After review and approval, the E-Plan and Station Annexes shall be:

  a) Reviewed by the applicable Emergency Preparedness Manager(s) and EP Director, or designee(s), and

  b) Approved for use by the Vice President, Fleet Support or designee.

- The Implementing Procedures shall be developed and revised concurrent with the E-Plan and Annexes, and reviewed every two years.

Annually, each Letter of Agreement is reviewed and certified current in order to assure the availability of assistance from each supporting organization not already a party to the individual State Plan for Radiological Accidents.

**5. E-Plan Distribution**

E-Plan manuals, Station Annexes and implementing procedures are distributed on a controlled basis to the Emergency Response Facilities. All controlled documents holders are issued revision changes upon approval. Selected Federal, state, and local agencies, and other appropriate locations requiring them are also issued copies. Procedures are in place that control the revision of the E-Plan and require the use of revision bars and individual page identifications (i.e. section of plan, revision number, etc.).

**6. Supporting Emergency Response Plans**

Other plans that support this E-Plan are:

- NUREG-1471, US Nuclear Regulatory Commission, "Concept of Operations: NRC Incident Response"
- National Response Framework (NRF), Nuclear/Radiological Incident Annex.
- Illinois Plan for Radiological Accidents (IPRA).
- The Iowa Emergency Plan.
- State of Wisconsin Peacetime Radiological Emergency Response Plan.
- Commonwealth of Pennsylvania Radiological Emergency Response Plan.
- State of Maryland Radiological Emergency Response Plan.
- State of New York Emergency Response Plan.
- Department of Energy, Region 5, "Radiological Assistance Plan"
- INPO Emergency Resources Manual.
- Nuclear Station Security Plans - Note: The Station Security Plan contains industrial security information that must be withheld from public disclosure under provisions of 10 CFR 2.790(d).

**7. Implementing and Supporting Procedures**

Appendix 2 of this plan contains a listing, by number and title, of those procedures that implement this plan during an emergency. Additionally, administrative procedures that outline the steps taken to maintain the Exelon Emergency Preparedness Program have been developed and are listed in Appendix 2.

**8. Cross Reference to Planning Criteria**

The Plan is formatted in the same manner as NUREG-0654, FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in support of Nuclear Power Plants." The use of this format lends itself to uncomplicated comparison of the criteria set forth in NUREG-0654, FEMA-REP-1.

**9. Audit/Assessment of the Emergency Preparedness Program**

To meet the requirements of 10 CFR 50.54(t), Exelon Nuclear Oversight shall coordinate an independent review the Emergency Preparedness Program to examine conformance with 10 CFR 50.47, 10 CFR 50.54, and 10 CFR 50 Appendix E. Included in the audit/assessment are the following:

- The E-Plan and associated implementing procedures.

- The Emergency Preparedness Training Program including drills and exercises.
- The readiness of the station Emergency Response Organization to perform its function.
- The readiness of facilities and equipment to perform as outlined in the plan and procedures.
- The interfaces between Exelon, the state, and county governmental agencies pertaining to the overall Emergency Preparedness Program.

Results of this audit are submitted for review to Corporate Management and the Station Vice President. The Emergency Preparedness Manager ensures that any findings that deal with offsite interfaces are reviewed with the appropriate agencies. Written notification will be provided to the state and counties of the performance of the audit and the availability of the audit records for review at Exelon facilities. Records of the audit are maintained for at least five years.

**10. Maintenance of Emergency Organization Telephone Directory**

Names and phone numbers of the Emergency Response Organization and support personnel shall be reviewed and updated at least quarterly.

## Appendix 1: References

References consulted in the writing of this E-Plan are listed in this section. With exception of regulatory requirements, inclusion of material on this list does not imply adherence to all criteria or guidance stated in each individual reference.

1. 10 CFR 50.47, Emergency Plans

2. 10 CFR 50.72, Immediate Notification Requirements for Operating Nuclear Power Reactors

3. 10 CFR 50 Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants

4. 10 CFR 50 Appendix E, Emergency Planning and Preparedness for Production and Utilization Facilities

5. 10 CFR 20, Standards for Protection Against Radiation

6. 10 CFR 70, 73, and 100.

7. 33 CFR 153.

8. 40 CFR 110, 112, 116, 118, 302 and 355.

9. 44 CFR 350.

10. 44 CFR 401.

11. 49 CFR 171 and 172.

12. NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, November 1980.

13. NUREG-0654, Supplement 1, "Criteria for Utility Offsite Planning and Preparedness."

14. NUREG-0654, Supplement 3, "Criteria for Protective Action Recommendations for Severe Accidents."

15. NUREG-0396, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants," Dec. 1978.

16. NUREG-0578, "TMI-2 Lessons Learned Task Force Status Report and Short-Term Recommendations."

17. NUREG-0696, Revision 1, Functional Criteria for Emergency Response Facilities

18. NUREG-0737, Clarification of TMI Action Plan Requirements, dated October 1980.

19. NUREG-0737, Supplement 1, Requirements for Emergency Response Capability, December 1982.

20. NUREG 0728 - "Report to Congress: NRC Incident Response Plan."

21. US NRC Regulatory Guide 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors," revision 4, July 2003.

22. U.S. NRC Response Technical Manual (RTM-96)

23. NEI 99-01, Methodology for Development of Emergency Action Levels.

24. EPA 400-R-92-001, October 1991, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents."

25. FEMA-REP-10, Guide for Evaluation of Alert and Notification Systems for Nuclear Power Plants

26. FEMA-REP-14, Exercise Evaluation Methodology

27. FEMA-Guidance Memorandum, MS-1 "Medical Services"

28. Exelon Nuclear Quality Assurance Topical Report (QATR), NO-AA-10

29. INPO Emergency Resources Manual

30. "Maintaining Emergency Preparedness Manual," dated December 1996 INPO 96-009.

31. "Federal Bureau of Investigation and Nuclear Regulatory Commission Memorandum of Understanding for Cooperation Regarding Threat, Theft, or Sabotage in U.S. Nuclear Industry," Federal Register, Vol. 44, p. 75535, December 20, 1979.

32. Illinois Department of Nuclear Safety, Title 32, Chapter II, Subchapter b, Part 340, "Standards for Protection Against Radiation."

33. ComEd April l983 response to NUREG 0737 Supplement #1 or latest submitted schedule of planned operational dates.

34. "Voluntary Assistance Agreement by and Among Electric Utilities involved in Transportation of Nuclear Materials," dated November 1, 1980.

35. Comprehensive Environmental Response, Compensation and Liability Act of 1980.

36. Accidental Radioactive Contamination of Human Food and Animal Feeds; Recommendation for State and Local Agencies, Volume 47, No. 205, October 22, 1982.

37. American Nuclear Insurers Bulletin #5B (1981), "Accident Notification Procedures for Liability Insureds".

38. "Potassium Iodide as a Thyroid Blocking Agent in a Radiation Emergency: Final Recommendations on Use," Federal Register Vol. 47, No. 125, June 29, 1982.

39. Letter from William J. Dircks, Executive Director for Operations, NRC, to Dr. Donald F. Knuth, President KMC, Inc. dated October 26, 1981.

40. INPO Coordination agreement on emergency information among USCEA, EPRI, INPO, NUMARC and their member utilities, dated April (1988).

41. Babcock and Wilcox Company, Post Accident Sample Offsite Analysis Program (1982).

42. ANI/MAELU Engineering Inspection Criteria For Nuclear Liability Insurance, Section 6.0, Rev. 1, "Emergency Planning."

43. NRC RIS 2006-12, Endorsement of Nuclear Energy Institute Guidance "Enhancement to Emergency Preparedness Programs for Hostile Action."

44. NRC Bulletin 2005-02, "Emergency Preparedness and Response Actions for Security-Based Events."

45. NRC Information Notice 2009-01, National Response Framework

## Appendix 2: Procedure Cross-Reference to NUREG-0654

| Criteria | Planning Standard | Procedure/Document |
|---|---|---|
| NUREG-0654.II.A | Assignment of Responsibility (Organization Control) | EP-AA-120, Emergency Plan Administration |
| | | Letters of Agreement |
| NUREG-0654.II.B | Onsite Emergency Organization | EP-AA-112, Emergency Response Organization (ERO) / Emergency Response Facility (ERF) Activation and Operation |
| NUREG-0654.II.C | Emergency Response Support and Resources | EP-AA-112-400, Emergency Operations Facility Activation and Operations |
| NUREG-0654.II.D | Emergency Classification System | EP-AA-111, Emergency Classification and Protective Action Recommendations |
| | | EP-CE-111, Emergency Classification and Protective Action Recommendations |
| NUREG-0654.II.E | Notification Methods and Procedures | EP-AA-114, Notifications |
| NUREG-0654.II.F | Emergency Communications | EP-AA-114, Notifications |
| | | EP-AA-124, Inventories and Surveillances |
| NUREG-0654.II.G | Public Education and Information | EP-AA-120, Emergency Plan Administration |
| NUREG-0654.II.H | Emergency Facilities and Equipment | EP-AA-112, Emergency Response Organization (ERO) / Emergency Response Facility (ERF) Activation and Operation |
| | | EP-AA-121, Emergency Response Facilities and Equipment Readiness |
| | | EP-AA-120-1006, EP Reportability – Loss of Emergency Preparedness Capabilities |
| | | EP-MW-121-1006, Contracted Siren Maintenance Oversight |
| | | EP-AA-123, Computer Programs |
| | | EP-AA-124, Inventories and Surveillances |
| | | EP-AA-125-1004, Emergency Response Facilities & Equipment Performance Indicators Guidance |
| NUREG-0654.II.I | Accident Assessment | EP-AA-110, Assessment of Emergencies |
| | | EP-AA-123, Computer Programs |
| NUREG-0654.II.J | Protective Response | EP-AA-113, Personnel Protective Actions |
| | | EP-AA-123, Computer Programs |
| NUREG-0654.II.K | Radiological Exposure Control | EP-AA-110, Assessment of Emergencies |
| | | EP-AA-113, Personnel Protective Actions |
| NUREG-0654.II.L | Medical and Public Health Support | EP-AA-120, Emergency Plan Administration |
| UREG-0654.II.M | Recovery and Reentry Planning and Post-Accident Operations | EP-AA-115, Termination and Recovery |
| | | EP-AA-120-1002, Offsite Readiness Evaluation |

| Criteria | Planning Standard | Procedure/Document |
|---|---|---|
| NUREG-0654.II.N | Exercises and Drills | EP-AA-122, Drills & Exercises Program |
| | | EP-AA-125-1001, EP Performance Indicator Guidance |
| | | EP-AA-125-1002, ERO Performance – Performance Indicators Guidance |
| | | EP-AA-125-1003, ERO Readiness - Performance Indicators Guidance |
| NUREG-0654.II.O | Radiological Emergency Response Training | TQ-AA-113, ERO Training And Qualification |
| NUREG-0654.II.P | Responsibility for the Planning Effort: Development, Periodic Review and Distribution of Emergency Plans | EP-AA-1, Emergency Preparedness |
| | | EP-AA-10, Emergency Preparedness Program Description |
| | | EP-AA-11, Operating Stations Emergency Preparedness Process Description |
| | | EP-AA-1101, EP Fundamentals |
| | | EP-AA-1102, ERO Fundamentals |
| | | EP-AA-120, Emergency Plan Administration |
| | | EP-AA-125, Emergency Preparedness Self Evaluation Process |
| | | Emergency Response Facilities Telephone Directory |

## Appendix 3: List of Corporate Letters of Agreements

| Organization/Agreement Type | Applicable To |
|---|---|
| Department Of Energy (DOE) Radiation Emergency Assistance Center/Training Site, REAC/TS (Letter on File)<br>Medical Consultant | MW / MA / NE Sites |
| Environmental, Inc. (P.O.)<br>Radiological Environmental Monitoring | MW / MA Sites |
| GE Hitachi Nuclear Energy, BWRs (Letter on File)<br>BWR Emergency Support | MW / MA / NE Sites |
| Landauer, Inc. (P.O.)<br>Emergency Dosimetry | MW / MA / NE Sites |
| INPO (Letter on File)<br>Emergency Event Support | MW / MA / NE Sites |
| Murray & Trettel, Inc. (P.O.)<br>Meteorological Support | MW / MA / NE Sites |
| Presence St. Joseph Medical Center (Letter on File)<br>Back-up Emergency Medical Facility | MW Region |
| Teledyne Brown Engineering (P.O.)<br>Bioassay Analysis/Radiochemical Analysis | MW / MA / NE Sites |
| Westinghouse Electric Company, PWRs (Letter on File)<br>PWR Emergency Support | MW Region |
| National Foam, Inc.<br>Fire Foam Supply | MW / MA Sites |
| Pennsylvania DEP / BRP | Pennsylvania Sites |

## Appendix 4: Glossary of Terms and Acronyms

| | |
|---|---|
| Accident Assessment | Accident assessment consists of a variety of actions taken to determine the nature, effects and severity of an accident and includes evaluation of reactor operator status reports, damage assessment reports, meteorological observations, seismic observations, fire reports, radiological dose projections, in plant radiological monitoring, and environmental monitoring. |
| Activation | (1) "ERO Activation" is the process of initiating actions to notify and mobilize Emergency Response Organization (ERO) personnel following an event classification under the emergency plan.<br><br>(2) "Facility Activation" refers to the decision to consider a facility fully operational based on the minimum staffing required in ERO staffing tables contained within the station specific Annex and the ability of facility staffing and equipment to perform its designed function(s). |
| Annual | Frequency of occurrence equal to once per calendar year, January 1 to December 31. |
| Assembly/Accountability | A procedural or discretionary protective action taken for all persons within the security "Protected Area", which involves the gathering of personnel into pre-designated areas, and the subsequent verification that the location of these personnel is known. |
| Assessment Actions | Those actions taken during or after an emergency to obtain and process information that is necessary to make decisions to implement specific emergency measures. |
| Biennial | Frequency of occurrence equal to once per two calendar year periods. |
| Biennial Exercise | An event that tests the integrated capability and a major portion of the basic elements existing within an emergency plan. An exercise usually involves participation of personnel from state and local governments, utility personnel, and may involve participation of Federal government personnel. |

| | |
|---|---|
| Classification | The classification of emergencies is divided into FIVE (5) categories or conditions, covering the postulated spectrum of emergency situations. The first four (4) emergency classifications are characterized by Emergency Action Levels (EALs) or event initiating conditions and address emergencies of increasing severity. The fifth, the Recovery classification, is unique in that it may be viewed as a phase of the emergency, requiring specific criteria to be met and/or considered prior to its declaration. |
| Command and Control | When in Command and Control, the designated Emergency Director (Shift, Station or Corporate) has overall responsibility for Exelon Nuclear's emergency response efforts, including the nondelegable responsibilities of Command and Control. |
| Committed Dose Equivalent (CDE) | The Dose Equivalent to organs or tissues of reference that will be received from an intake of radioactive material by an individual during the 50-year period following the intake. |
| Corrective Action | Those emergency measures taken to lessen or terminate an emergency situation at or near the source of the problem, to prevent an uncontrolled release of radioactive material, or to reduce the magnitude of a release. Corrective actions include, equipment repair or shutdown, installation of emergency structures, fire fighting, repair, and damage control. |
| Damage Assessment | Estimates and descriptions of the nature and extent of damages resulting from an emergency or disaster; of actions that can be taken to prevent or mitigate further damage; and of assistance required in response and recovery efforts based on actual observations by qualified engineers and inspectors. |
| Damage Control | The process of preventing further damage from occurring and preventing the increase in severity of the accident. |
| Decontamination | The reduction or removal of contaminated radioactive material from a structure, area, material, object, or person. Decontamination may be accomplished by (1) treating the surface so as to remove or decrease the contamination; (2) letting the material stand so that the radioactivity is decreased as a result of natural decay; and (3) covering the contamination. |

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| Dedicated Communications | A communications link between two or more locations, access to which is limited to designated locations, and used only for the purpose intended. The communications link may be either telephone or radio. |
| Deep Dose Equivalent (DDE) | The dose equivalent at a tissue depth of 1 cm (1000 $mg/cm^2$); applies to external whole body exposure. |
| Dose | A generic term that means absorbed dose, dose equivalent, effective dose equivalent, deep dose equivalent, committed dose equivalent, committed effective dose equivalent, or total effective dose equivalent. |
| Dose Equivalent (DE) | The product of the absorbed dose in tissue, quality factor, and all other necessary modifying factors at the location of interest. The unit of dose equivalent is the Rem. |
| Dose Projection | The calculated estimate of a radiation dose to individuals at a given location (normally off-site), determined from the source term/quantity of radioactive material (Q) released, and the appropriate meteorological dispersion parameters (X/Q). |
| Dose Rate | The amount of ionizing (or nuclear) radiation to which an individual would be exposed per unit of time. As it would apply to dose rate to a person, it is usually expressed as rems per hour or in submultiples of this unit, such as millirems per hour. The dose rate is commonly used to indicate the level of radioactivity in a contaminated area. |
| Dosimeter | An instrument such as a Dosimeter of Legal Record (DLR), self-reading pocket dosimeter (SRPD), or electronic dosimeter (ED) for measuring, registering, or evaluating total accumulated dose or exposure to ionizing radiation. |
| Dosimeter of Legal Record (DLR) | Specific station type dosimeters used for monitoring personnel and the environment. |
| Drill | A supervised instruction period aimed at testing, developing and maintaining skills in a particular operation. |
| Early Phase | The period at the beginning of a nuclear incident when immediate decisions for effective use of protective actions are required and must be based primarily on predictions of radiological conditions in the environment. This phase may last from hours to days. For the purposes of dose projections, it is assumed to last four days. |

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| Emergency Action Levels (EALs) | A pre-determined, site-specific, observable threshold for a plant Initiating Condition that places the plant in a given emergency class. An EAL can be an instrument reading; an equipment status indicator; a measurable parameter (onsite or offsite); a discrete, observable event; or another phenomenon which, if it occurs, indicates entry into a particular emergency class. |
| Emergency Alert System (EAS) | A network of broadcast stations and interconnecting facilities which have been authorized by the Federal Communications Commission to operate in a controlled manner during a war, state of public peril or disaster, or other national or local emergency. In the event of a nuclear reactor accident, instructions/notifications to the public on conditions or protective actions would be broadcast by state or local government authorities on the EAS. |
| Emergency Director | Individual in Command and Control. One of the following: the Shift Emergency Director (Control Room), Station Emergency Director (TSC) or the Corporate Emergency Director (EOF). |
| Emergency Notification System (ENS) | The NRC Emergency Notification System hot line is a dedicated telephone system that connects the plant with NRC headquarters in White Flint, Maryland. It is directly used for reporting emergency conditions to NRC personnel. |
| Emergency Operations Facility (EOF) | Designated location from which the Licensee Emergency Response Organization conducts the company's overall emergency response in coordination with Federal, State and designated emergency response organizations. |
| Emergency Operating Procedures (EOPs) | EOPs are step-by-step procedures for direct actions taken by licensed reactor operators to mitigate and/or correct an off normal plant condition through the control of plant systems. |
| Emergency Operations Center (EOC) | A facility designed and equipped for effective coordination and control of emergency operations carried out within an organization's jurisdiction. The site from which civil government officials (municipal, county, state, and Federal) exercise direction and control in a civil defense emergency. |
| Emergency Personnel | Those organizational groups that perform a functional role during an emergency condition. Within Exelon Nuclear, emergency personnel include the Managers and Directors of the Emergency Response Organization, accident assessment personnel, radiological monitoring teams, fire brigades, first aid teams and security personnel. |

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| Emergency Planning Zones (EPZ) | That area surrounding a nuclear station in which emergency planning is conducted for the protection of the public. With respect to protecting the public from the plume exposure resulting from an incident, the EPZ is usually an area with a radius of about 10 miles surrounding the facility. With respect to the ingestion exposure pathway, the EPZ is usually an area with a radius of about 50 miles. |
| Emergency Preparedness | A state of readiness that provides reasonable assurance that adequate protective measures can and will be taken upon implementation of the E-Plan in the event of a radiological emergency. |
| Emergency Response Data System (ERDS) | ERDS is a continuous direct near real-time electronic data link between the licensee's onsite computer system and the NRC Operations Center that provides for the automated transmission of a limited data set of selected parameters. |
| Environmental Monitoring | The use of radiological instruments or sample collecting devices to measure and assess background radiation levels and/or the extent and magnitude of radiological contamination in the environment around the plant. This may be done in various stages such as pre-operational, operational, emergency, and post operational. |
| Essential Personnel | Essential personnel are those needed to achieve the goals and tasks as deemed necessary by the Station Emergency Director. |
| Evacuation | The urgent removal of people from an area to avoid or reduce high level, short-term exposure usually from the plume or from deposited activity. |
| Exclusion Area | An Exclusion Area is an area specified for the purpose of reactor site evaluation in accordance with 10 CFR 100. It is an area of such size that an individual located at any point on its boundary for two hours immediately following onset of the postulated release would not receive a total radiation dose to the whole body in excess of 25 rem or a total radiation dose of 300 rem to the thyroid from iodine exposure. |
| Exercise | An event that tests the integrated capability of a major portion of the basic elements existing within emergency preparedness plans and organizations. |
| Exercise Cycle | An eight-year period. |

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| Fission Product Barrier | The fuel cladding, reactor coolant system boundary, or the containment boundary. |
| Hazardous Material | A substance or material which has been determined by the United States Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and which has been so designated in 49 CFR 172. |
| Health Physics Network (HPN) Line | In the event of a Site Area Emergency, the NRC HPN line will be activated by the NRC Operations center in White Flint, Maryland. This phone is part of a network that includes the NRC Regional Office and the NRC Operations Headquarters in White Flint, Maryland. This system is dedicated to the transmittal of radiological information by plant personnel to NRC Operations Center and the Regional office. HPN phones are located in the TSC and EOF. |
| High Radiation Sampling System | Post-accident sampling capability to obtain and perform radioisotopic and chemical analyses of reactor coolant and containment atmosphere samples. |
| Imminent | Mitigation actions have been ineffective and trended information indicates that the event or condition will occur within 2 hours. |
| Ingestion Exposure Pathway | The potential pathway of radioactive materials to the public through consumption of radiologically contaminated water and foods such as milk or fresh vegetables. Around a nuclear power plant this is usually described in connection with the 50-mile radius Emergency Planning Zone (50 mile EPZ). |
| Initiating Condition | A predetermined UNIT condition where either the potential exists for a radiological emergency or such an emergency has occurred. |
| Integrated Drill | A drill conducted in the year that a Biennial Exercise is not scheduled including at least two Emergency Response Facilities in order to demonstrate at least two of the functions of management and control of emergency response, accident assessment, protective action decision-making, or plant system repair and corrective action. |
| Intermediate Phase | The period beginning after the source and releases have been brought under control and reliable environmental measurements are available for use as a basis for decisions on additional protective actions. |

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| Joint Information Center | A Corporate Emergency Facility activated by Exelon and staffed by Exelon, state, and Federal Public Information personnel. This facility serves as the single point of contact for the media and public to obtain information about an emergency. |
| Late Phase | The period beginning when recovery action designed to reduce radiation levels in the environment to acceptable levels for unrestricted use are commenced and ending when all recovery actions have been completed. This period may extend from months to years (also referred to as the recovery phase). |
| Local Evacuation | The evacuation of personnel from a particular area, such as a room or building. |
| Low Population Zone (LPZ) | As defined in 10 CFR 100.3, the area immediately surrounding the exclusion area which contains residents, the total number and density of which are such that there is a reasonable probability that appropriate protective measures could be taken in their behalf in the event of a serious accident. |
| Main Control Room | The operations center of a nuclear power plant from which the plant can be monitored and controlled. |
| Monthly | Frequency of occurrence equal to once per calendar month. |
| Non-Essential Site Personnel | Those personnel not needed for the continuing existence or functioning of the ERO. They are personnel not required to fill certain positions in the ERO. Identification of non-essential personnel is circumstance-oriented as determined by the Station Emergency Director. |
| Notification, Public | Public notification means to communicate instructions on the nature of an incident that prompted the public alerting/warning and on protective or precautionary actions that should be taken by the recipients of the alert. A state and local government process for providing information promptly to the public over radio and TV at the time of activating the alerting (warning) signal (sirens). Initial notifications of the public might include instructions to stay inside, close windows, and doors, and listen to radio and TV for further instructions. Commercial broadcast messages are the primary means for advising the general public of the conditions of any nuclear accident. (See Emergency Alert System.) |

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| Off-Site | The area around a nuclear generating station that lies outside the station's "site boundary". |
| Offsite Dose Calculation Manual (ODCM) | The ODCM presents a discussion of the following:<br>1. The ways in which nuclear power stations can affect their environment radiologically<br>2. The regulations which limit radiological effluents from the nuclear power stations; and<br>3. The methodology used by the nuclear power stations to assess radiological impact on the environment and compliance with regulations. |
| On-Site | The area around a nuclear generating station that lies within the station's "site boundary". |
| Owner Controlled Area | Company owned property on which a Nuclear Station is located and may include Exelon Nuclear leased lands adjacent to that Nuclear Station. |
| Operations Support Center (OSC) | An emergency response facility at the Plant to which support personnel report and stand by for deployment in an emergency situation. |
| Personnel Monitoring | The determination of the degree of radioactive contamination on individuals, using standard survey meters, and/or the determination of dosage received by means of dosimetry devices. |
| Plume Exposure Pathway | The potential pathway of radioactive materials to the public through: (a) whole body external exposure from the plume and from deposited materials, and (b) inhalation of radioactive materials. |
| Population-at-Risk | Those persons for whom protective actions are being or would be taken. In the 10-mile EPZ the population-at-risk consists of resident population, transient population, special facility population, and industrial population. |
| Potassium Iodide | (Symbol KI) A chemical compound that readily enters the thyroid gland when ingested. If taken in a sufficient quantity prior to exposure to radioactive iodine, it can prevent the thyroid from absorbing any of the potentially harmful radioactive iodine-131. |

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| Potential | Mitigation actions are not effective and trended information indicates that the parameters are outside desirable bands and not stable or improving. |
| Projected Dose | That calculated dose that some individuals in the population group may receive if no protective actions are implemented. Projected doses are calculated to establish an upper limit boundary. |
| Protected Area | That onsite area within the security boundary as defined in each station's Security Plan. |
| Protection Factor (PF) | The relation between the amount of radiation that would be received by a completely unprotected person compared to the amount that would be received by a protected person such as a person in a shielded area. PF = Shielded dose rate / Unshielded dose rate. |
| Protective Action | Those emergency measures taken for the purpose of preventing or minimizing radiological exposures to affected population groups. |
| Protective Action Guide (PAG) | Projected radiological dose values to individuals in the general population that warrant protective action. Protective Action Guides are criteria used to determine if the general population needs protective action regarding projected radiological doses, or from actual committed (measured) dose values. |
| Protective Action Recommendations (PARs) | Recommended actions to the States for the protection of the offsite public from whole body external gamma radiation, and inhalation and ingestion of radioactive materials. Access control and other recommendations concerning the safeguards of affected food chain processes may be issued by the States as PARs. |
| Public Alerting/Warning | The process of signaling the public, as with sirens, to turn on their TV's or radios and listen for information or instructions broadcast by state or local government authorities on the Emergency Alert System (EAS). |
| Puff Release | A controlled containment vent that will be terminated prior to exceeding 60 minutes in duration and is less than the limit as defined in the Station Annexes. |

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| Quarterly | Frequency of occurrence equal to once in each of the following four periods: January 1 through March 31; April 1 through June 30; July 1 through September 30; October 1 through December 31. |
| Recovery | The process of reducing radiation exposure rates and concentrations of radioactive material in the environment to levels acceptable for unconditional occupancy or use. |
| Release | A '*Release in Progress*' is defined as ANY radioactive release that is a result of, or caused by, the emergency event. |
| Restricted Area | Any area, access to which is controlled by Exelon for purposes of protection of individuals from exposure to radiation and radioactive materials. |
| Restricted Area Boundary | For classification and dose projection purposes, the boundary is a 400-meter (1/4-mile) radius around the plant. The actual boundary is specified in the ODCM. |
| Safety Analysis Report, Updated Final (UFSAR) | The UFSAR is a comprehensive report that a utility is required to submit to the NRC as a prerequisite and as part of the application for an operating license for a nuclear power plant. The multi-volume report contains detailed information on the plant's design and operation, with emphasis on safety-related matters. |
| Semi-Annual | Frequency of occurrence equal to once in each of the following periods: January 1 through June 30; July 1 through December 31. |
| Shall, Should, and May | The word "shall" is used to denote a requirement, the word "should" to denote a recommendation and the word "may" to denote permission, neither a requirement nor a recommendation. |
| Shielding | Any material or barrier that attenuates (stops or reduces the intensity of) radiation. |
| Site Boundary | Each Nuclear Station's Site Boundary is described in detail in the ODCM. |
| Site Evacuation | The evacuation of non-essential personnel from the plant site. |
| Source Term | Radioisotope inventory of the reactor core, or amount of radioisotope released to the environment, often as a function of time. |

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| Technical Support Center (TSC) | A center outside of the Control Room in which information is supplied on the status of the plant to those individuals who are knowledgeable or responsible for engineering and management support of reactor operations in the event of an emergency, and to those persons who are responsible for management of the on-site emergency response. |
| Threshold Value | Measurable, observable detailed conditions which must be satisfied to determine an EAL applicability. |
| Thyroid Blocking Agent | An agent which when properly administered to an individual will result in sufficient accumulation of stable iodine in the thyroid to prevent significant uptake of radioiodine. Potassium Iodide is such an agent. |
| Total Effective Dose Equivalent (TEDE) | The sum of the deep dose equivalent (for external exposure) and the committed effective dose equivalent (for internal exposure) and 4 days of deposition exposure. |
| Unrestricted Area | Any area to which access is not controlled by the licensee for protecting individuals from exposure to radiation and radioactive materials, and any area used for residential quarters. |
| Vital Areas | Areas within the station security fence which contain vital equipment. Examples include Control Rooms, Containment/Reactor Buildings, Turbine Buildings and Electrical Equipment Rooms. |
| Vital Equipment | Any equipment, system, device or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation. Equipment or systems which would be required to function to protect public health and safety following such failure, destruction, or release are also considered to be vital. |
| Weekly | Frequency occurrence equal to once per calendar week: Monday through Sunday. |

Any abbreviation followed by a lower case 's' denotes the plural form of the term.

ACRONYMS

ac ..... alternating current

ALARA ..... as low as reasonably achievable

ANI ..... American Nuclear Insurers

ANS ..... Alert and Notification System

ANSI ..... American National Standards Institute

ARM ..... Area Radiation Monitor

ASLB ..... Atomic Safety Licensing Board

BNE ..... Bureau of Nuclear Engineering (New Jersey)

BWR ..... boiling water reactor

CB ..... citizen band

cc ..... cubic centimeter

CDE ..... Committed Dose Equivalent

CEOC ..... County Emergency Operation Center

CFR ..... Code of Federal Regulations

CHRMS ..... Containment High Range Monitoring System

CHRRMS ..... Containment High Range Radiation Monitoring System

cm2 ..... square centimeter

CNO ..... Chief Nuclear Officer

cpm ..... count per minute

CR ..... Control Room

CRO ..... Control Room Operator

CRT ..... Cathode Ray Tube

Cs ..... Cesium

dc ..... direct current

DEP ..... Department of Environmental Protection (New Jersey)

DEP ..... Drill and Exercise Performance

DEQ ..... Department of Environmental Quality

DEP/BRP .....Dept of Environmental Protection, Bureau of Radiation Protection (PA)

DFO..... Disaster Field Office

DGI..... Digital Graphics Incorporated

DHFS ..... Department of Health and Family Services

DLR .....Dosimeter of Legal Record

DOE ..... U. S. Department of Energy

DOT..... U. S. Department of Transportation

DPH..... Department of Public Health

dpm ..... disintegration per minute

EAL .....Emergency Action Level

EAS..... Emergency Alerting System

EMA ..... Emergency Management Agency

ENC.....Emergency News Center

ENS..... Emergency Notification System (NRC)

EOC .....Emergency Operations (or Operating) Center

EOF.....Emergency Operations Facility

EOP..... Emergency Operating Procedure

EPA..... U. S. Environmental Protection Agency

EPDS ..... Emergency Preparedness Data System

EPZ..... Emergency Planning Zone

ERF ..... Emergency Response Facility

ESF ..... Engineered Safety Feature

FEMA ..... Federal Emergency Management Agency

FRMAC .....Federal Radiological Monitoring and Assessment Center

FRMAP ..... Federal Radiological Monitoring and Assessment Plan

FRPCC ..... Federal Radiological Preparedness Coordinating Committee

FSAR ..... Final Safety Analysis Report

Ge ..... Germanium

GET ..... General Employee Training

GM ..... Geiger Mueller (radiation detection tube)

HEPA ..... high efficiency particulate air

HPN ..... Health Physics Network (NRC)

hr ..... hour

I ..... Iodine

IDPH ..... Iowa Department of Public Health

IEMA ..... Illinois Emergency Management Agency

IEMD ..... Iowa Emergency Management Division

IRAP ..... Interagency Radiological Assistance Plan

INPO ..... Institute of Nuclear Power Operations

JIC ..... Joint Information Center

LGEOC ..... Local Government Emergency Operations Center

Li ..... Lithium

LOCA ..... Loss of Coolant Accident

LPZ ..... Low Population Zone

MAELU ..... Mutual Atomic Energy Liability Underwriters

MEMA ..... Maryland Emergency Management Agency

MCP ..... Municipal Command Post

mR ..... milliroentgen

NARS ..... Nuclear Accident Reporting System

NCRP ..... National Council on Radiation Protection

NJ-OEM ..... New Jersey-Office of Emergency Management

NOP ..... Nuclear Organization Procedure

NRC ..... U. S. Nuclear Regulatory Commission

NRF ..... National Response Framework

NRR ..... Nuclear Reactor Regulation (NRC)

NWS ..... National Weather Service

NSRAC ..... Nuclear Safety Review and Audit Committee

OEM ..... Office of Emergency Management (NJ State Police)

OSC ..... Operations Support Center

PAG ..... Protective Action Guide

PANS ..... Prompt Alert and Notification System

PAR ..... Protective Action Recommendation

PASS ..... Post Accident Sampling System

PEMA ..... Pennsylvania Emergency Management Agency

PWR ..... pressurized water reactor

QATR ..... Quality Assurance Topical Report

R ..... roentgen

RAA ..... Remote Assembly Area (off-site)

RAC ..... Regional Advisory Committee (FEMA)

RAFT ..... Radiological Assistance Field Team (ILLINOIS)

RAP ..... Radiological Assistance Plan (ILLINOIS)

REAC ..... Radiological Emergency Assessment Center (ILLINOIS)

REP ..... Radiological Emergency Preparedness

RERP ..... Radiological Emergency Response Plan

RMS ..... Radiation Monitoring System

SCBA ..... Self Contained Breathing Apparatus

SEOC ..... State Emergency Operations Center

SFCP ..... State Forward Command Post

SGTS ..... Standby Gas Treatment System

SHL ..... State Hygienic Laboratory (IOWA)

SPCC ..... Spill Prevention Control and Countermeasure

SPDS ..... Safety Parameter Display System

Sr ..... Strontium

SRC ..... State Radiological Coordinator

SSC ..... State Staging Center

STA ..... Shift Technical Advisor

TDD ..... Telecommunications Device for the Deaf

TEDE ..... Total Effective Dose Equivalent

TSC ..... Technical Support Center

µCi ..... microcurie

UFSAR ..... Updated Final Safety Analysis Report

WEM ..... Wisconsin Emergency Management

| Cover Page | |
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Notes 1:

Notes 2:

Instructions:

**Attachment 3**

**EP-AA-1007, Revision 34, *"Exelon Nuclear Radiological Emergency Plan Annex for Peach Bottom Atomic Power Station"***

**Emergency Plan Annex Revision**

Exelon Generation®

EP-AA-1007
Revision 34

# EXELON NUCLEAR

# RADIOLOGICAL EMERGENCY PLAN ANNEX

# FOR

# PEACH BOTTOM ATOMIC POWER STATION

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## Section 5: Emergency Facilities and Equipment



## APPENDICES



## ADDENDUMS

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## REVISION HISTORY

| REVISION | REVISION DATE |
|---|---|
| 0 | August 2002 |
| 1 | September 2002 |
| 2 | November 2002 |
| 3 | January 2003 |
| 4 | February 2003 |
| 5 | February 2003 |
| 6 | April 2003 |
| 7 | May 2003 |
| 8 | September 2003 |
| 9 | October 2003 |
| 10 | December 2004 |
| 11 | May 2005 |
| 12 | September 2005 |
| 13 | January 2006 |
| 14 | May 2007 |
| 15 | September 2007 |
| 16 | November 2007 |
| 17 | September 2008 |
| 18 | May 2009 |
| 19 | March 2010 |
| 20 | December 2010 |
| 21 | March 2011 |
| 22 | September 2011 |
| 23 | February 2012 |
| 24 | November 2012 |
| 25 | November 2012 |
| 26 | December 2012 |
| 27 | June 2013 |
| 28 | September 2013 |
| 29 | June 2014 |
| 30 | December 2014 |
| 31 | March 2015 |
| 32 | January 2017 |
| 33 | December 2017 |
| 34 | May 2019 |

# Section 1: Introduction

As required in the conditions set forth by the Nuclear Regulatory Commission (NRC) for the operating licenses for the Exelon Nuclear Stations, the management of Exelon recognizes its responsibility and authority to operate and maintain the nuclear power stations in such a manner as to provide for the safety of the general public.

The Exelon Emergency Preparedness Program consists of the Exelon Nuclear Standardized Radiological Emergency Plan, Station Annexes, emergency plan implementing procedures, and associated program administrative documents. The Exelon Nuclear Standardized Radiological Emergency Plan outlines the basis for response actions that would be implemented in an emergency. Planning efforts common to all Exelon Nuclear stations are encompassed within the Emergency Plan.

This document serves as the Peach Bottom Atomic Power Station Annex and contains information and guidance that is unique to the station. This includes facility geography and location for a full understanding and representation of the station's emergency response capabilities. The Station Annex is subject to the same review and audit requirements as the Exelon Nuclear Standardized Radiological Emergency Plan per EP-AA-120, "Emergency Plan Administration".

## 1.1 Facility Description

The Peach Bottom Atomic Power Station (PBAPS) is a fixed nuclear facility operated by Exelon Nuclear. The station consists of one High Temperature Gas Cooled Reactor designated as Unit 1, which is in the SAFSTOR status of decommissioning, two operating Boiling Water Reactors designated as Units 2 and 3, and an Independent Spent Fuel Storage Installation (ISFSI).

The PBAPS station is located partly in York County and partly in Lancaster County in southeastern Pennsylvania, on the west shore of Conowingo Pond, near the mouth of Rock Run Creek. The plant is about 38 miles NNE of Baltimore, MD; 65 miles WSW of Philadelphia, PA; 45 miles SE of Harrisburg, PA; and 20 miles SSE of Lancaster, PA. Conowingo Pond is a reservoir formed by the backwater of Conowingo Dam on the Susquehanna River; the dam is located about 9 miles downstream from PBAPS. The nearest communities are Delta, PA, and Cardiff, MD, located approximately 4 and 6 miles WSW of the site, respectively.

For more specific site location information, refer to the Updated Final Safety Analysis Report (UFSAR) for Peach Bottom Atomic Power Station.

## 1.2 Emergency Planning Zones

The Plume Exposure Emergency Planning Zone (EPZ) for Peach Bottom Atomic Power Station shall be an area surrounding the Station with a radius of about ten miles. The exact physical boundaries are determined by the Commonwealth of Pennsylvania, State of Maryland, and affected Counties). Refer to Figure PBAPS 1-1.

The Ingestion Pathway Emergency Planning Zone (EPZ) for Peach Bottom Atomic Power Station shall be an area surrounding the Station with a radius of about 50 miles. Refer to Figure PBAPS 1-2.

## 1.3 Participating Governmental Agencies

The overall responsibility for the management of the effects of accidental off-site releases of radioactivity resulting from either a nuclear power plant or a transportation accident rests with state and local governments.

The Commonwealth of Pennsylvania organizations having prime responsibility in matters of radiation hazards are the Pennsylvania Emergency Management Agency (PEMA) and the Bureau of Radiation Protection (BRP) of the Pennsylvania Department of Environmental Protection. State of Maryland organizations having primary responsibility in matters of radiation hazards are the Maryland Emergency Management Agency (MEMA) and the Technical Support Program of the Maryland Department of the Environment (MDE).

County and local governments are responsible for the protection of public health and safety within their jurisdiction. Similarly, organizations in the Commonwealth of Pennsylvania and States of Maryland, Delaware, and New Jersey are responsible for the protection of the public in their states. Cooperation with the States of Delaware and New Jersey is necessary because these states are within the Ingestion Pathway EPZ.

These civil agencies will respond to provide support in the event of an emergency in the areas indicated below.

### 1.3.1 Pennsylvania Emergency Management Agency (PEMA)

Responsibilities of PEMA are outlined in Annex E, "Radiological Emergency Response to Nuclear Power Plant Incidents" of the Commonwealth of Pennsylvania Emergency Operations Plan.

### 1.3.2 Department of Environmental Protection, Bureau of Radiation Protection (DEP/BRP)

Responsibilities of DEP/BRP are outlined in Annex E of the Commonwealth of Pennsylvania Emergency Operations Plan.

### 1.3.3 Pennsylvania State Police

Responsibilities of the State Police are set forth in Annex E of the Commonwealth of Pennsylvania Emergency Operations Plan.

### 1.3.4 Maryland Emergency Management Agency (MEMA)

MEMA responsibilities are outlined in Annex Q, "Fixed Nuclear Facility Radiological Emergency Plan".

1.3.5 Maryland Department of the Environment, Emergency Operations and Technical Support Program

Responsibilities of MDE Emergency Operations and Technical Support Program are outlined in Annex Q, "Fixed Nuclear Facility Radiological Emergency Plan".

1.3.6 Maryland State Police

Responsibilities of the State Police are set forth in Annex Q, "Fixed Nuclear Facility Radiological Emergency Plan".

1.3.7 State Of Delaware

The State of Delaware's border is located within the 50-mile Ingestion Pathway for PBAPS. The State would be notified if protective actions are required within that area. No direct support is provided to PBAPS.

1.3.8 State Of New Jersey

The State of New Jersey's border is located within the 50-mile Ingestion Pathway for PBAPS. The State would be notified if protective actions are required within that area. No direct support is provided to PBAPS.

1.3.9 County Governments

County government agencies have agreements regarding responsibilities for coping with emergencies. These agencies include three counties in Pennsylvania, York, Lancaster, and Chester; and two counties in Maryland, Cecil and Harford.

a. Pennsylvania Counties

Annex E of the Commonwealth of Pennsylvania Emergency Operations Plan defines "risk counties" as those within a 10-mile radius of a fixed nuclear facility. For Peach Bottom, the risk counties are:

- York County
- Lancaster County
- Chester County

The responsibilities assigned to these counties are in Annex E of the Commonwealth of Pennsylvania Emergency Operations Plan.

b. Maryland Counties

Harford and Cecil Counties in Maryland may potentially be affected by an incident at the Peach Bottom Atomic Power Station. Responsibilities assigned to these counties are outlined in Annex Q, "Fixed Nuclear Facility Radiological Emergency Plan".

Refer to Table PBAPS 1-1 for a list of offsite radiological emergency response organizations and response plans in support of the Peach Bottom Atomic Power Station's Emergency Preparedness Program.

## Table PBAPS 1-1: Offsite Radiological Emergency Response Organizations and Response Plans

The following state, local and emergency plans are available and filed under separate cover.

- Annex E - "Radiological Emergency Response to Nuclear Power Plant Incidents" - to Commonwealth of Pennsylvania Emergency Operations Plan.

- Chester County Radiological Emergency Response Plan for Incidents at Peach Bottom Atomic Power Station:

Municipality

West Nottingham Township

School District

Oxford

- State of Maryland Disaster Assistance Plan, Annex Q, Radiological Emergency Plan.

- Lancaster County Emergency Operations Plan, Annex E, Part 2 - PBAPS

Municipalities

| | |
|---|---|
| Fulton Township | Drumore Township |
| Martic Township | Quarryville Borough |
| Little Britain Township | Providence Township |
| East Drumore Township | |

School District

| | |
|---|---|
| Solanco | Penn Manor |

**Table PBAPS 1-1: Offsite Radiological Emergency Response Organizations and Response Plans (Cont'd)**

- York County Emergency Operations Plan, Annex E, Part 2 - PBAPS

Municipalities

| | |
|---|---|
| Lower Chanceford Township | Fawn Township |
| Fawn Grove Borough | Delta Borough |
| Peach Bottom Township | |

School Districts

Red Lion

South Eastern

- Harford County Emergency Operations Plan - PBAPS

School District

Harford County

- Cecil County Emergency Operations Plan - PBAPS

School

Conowingo Elementary

- State of Delaware Emergency Plan

- State of New Jersey Emergency Plan

**Figure PBAPS 1-1: 10-Mile Plume Exposure Pathway EPZ**

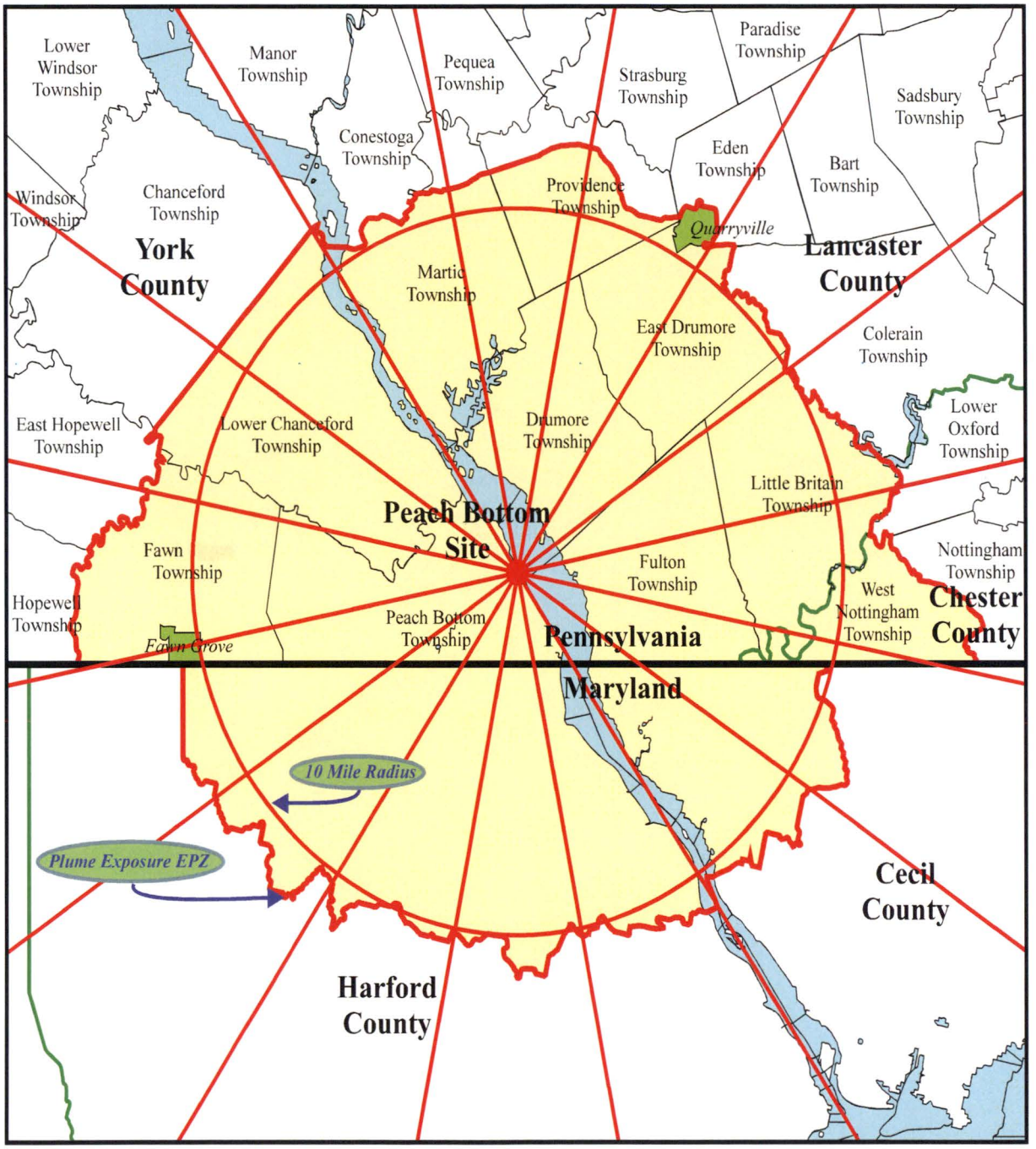
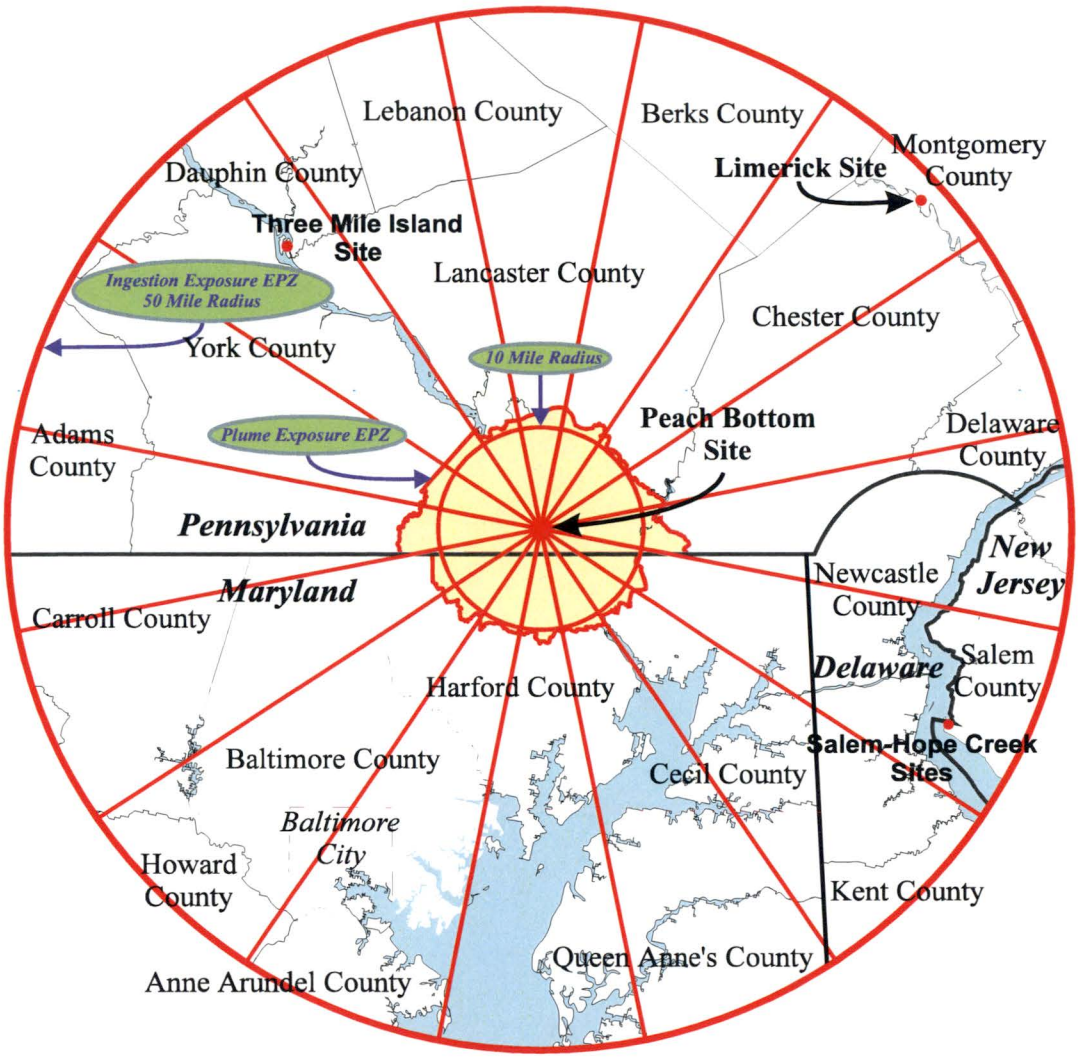


**Figure PBAPS 1-2: 50-Mile Ingestion Pathway EPZ**



# Section 2: Organizational Control of Emergencies

This section describes the Emergency Response Organization (ERO) and its key positions. It outlines the staffing requirements which provide initial emergency response actions and provisions for timely augmentation of on-shift personnel when required. It also describes interfaces among Exelon Nuclear emergency response personnel and specifies the offsite support available to respond to the nuclear generating stations.

## 2.1 Shift Organization Staffing

Initial response to any emergency is by the normal plant organization present at the site. This organization includes positions that are onsite 24 hours per day and is described in Section B.1 of the Exelon Nuclear Standardized Radiological Emergency Plan. ERO activation is described in Section H.4 of the Exelon Nuclear Standardized Radiological Emergency Plan.

Table PBAPS 2-1 outlines ERO positions required to meet minimum staffing and full augmentation of the on-shift complement at an Alert or higher classification, and the major tasks assigned to each position. Responsibilities for each position are described in Section B.5 of the Exelon Nuclear Standardized Radiological Emergency Plan.

### 2.1.1 Shift Dose Assessment

The on-shift dose assessment function will be performed by a shift Radiation Protection Technician (RPT) at Limerick Generating Station. However, Peach Bottom Atomic Power Station will maintain the capability to perform a shift dose assessment, if necessary.

### 2.1.2 Shift Emergency Communicators

The Shift Communicator performs notifications to the State and County organizations until relieved by the TSC, and assists in the initiation of the ERO Callout System as directed. The Communicator position is staffed by a designated on-shift individual capable of responding to the Control Room immediately in support of the initiation of offsite notifications within 15 minutes of event classification.

A 2$^{nd}$ on-shift individual will be designated to support communications with the NRC over the Emergency Notification System (ENS) until relieved by the TSC.

2.1.3 Shift Technical Advisor (STA) / Incident Assessor

Section B.1 of the Exelon Nuclear Standardized Radiological Emergency Plan outlines the On-Shift Emergency Response Organization Assignment of the STA. Peach Bottom Atomic Power Station has deemed the following as an acceptable method of implementing Section B.1 in reference to the STA.

The responsibilities of the STA are delineated on OP-AA-101-111, "Roles and Responsibilities of On-Shift Personnel." If the STA is the Shift Manager or Unit Supervisor, then another Senior Reactor Operator (SRO) shall assist as Incident Assessor during unexpected conditions and transients. Per Table PBAP-1, the on-shift STA or Incident Assessor shall also provide core/thermal hydraulics support to Control Room staff.

## 2.2 Emergency Response Organization (ERO) Staffing

Refer to Table PBAPS 2-1 of the PBAPS Annex, "Minimum Staffing Requirements", for a comparison against the Exelon Nuclear Standardized Radiological Emergency Plan of 60-minute and full augmentation commitments.

2.2.1 Emergency Onsite Organization (Figure PBAPS 2-2)

No changes in augmentation positions or staffing levels for the Technical Support Center (TSC), Operations Support Center (OSC) and Control Room from that specified in the Exelon Nuclear Standardized Radiological Emergency Plan.

2.2.2 Emergency Offsite Organization (Figure PBAPS 2-3)

Based on existing interface and staffing agreements, representatives from the Commonwealth of Pennsylvania and State of Maryland will respond to the Emergency Operations Facility (EOF), allowing direct face-to-face communications. As such, the State Environs Communicator position, listed under the Exelon Nuclear Standardized Radiological Emergency Plan, is not staffed at the Coatesville EOF. Rather the EOF Environmental Coordinator will interface directly with State representatives present in the EOF.

2.2.3 Emergency Public Information Organization (Figure PBAPS 2-4)

No changes in augmentation positions or staffing levels for the Joint Information Center (JIC)) and Emergency News Center (ENC) from that specified in the Exelon Nuclear Standardized Radiological Emergency Plan.

## 2.3 Emergency Response Organization (ERO) Training

Training is conducted in accordance with Section O.5 of the Exelon Nuclear Standardized Radiological Emergency Plan per TQ-AA-113, "ERO Training and Qualification." Retraining is performed on an annual basis, which is defined as once per calendar year not to exceed 18 months between training sessions.

## 2.4 Non-Exelon Nuclear Support Groups

Agreements exist on file with or are verified current annually by the MA Region Corporate Emergency Preparedness Group for the following support agencies listed in Appendix 2 of the Exelon Nuclear Radiological Emergency Plan Annex for PBAPS.

Additionally, Exelon Nuclear has contractual agreements common within Exelon Nuclear with several companies whose services would be available in the event of a radiological emergency. These agencies are listed in Appendix 3 of the Exelon Nuclear Standardized Radiological Emergency Plan. Emergency response coordination with governmental agencies and other support organizations is discussed in Section A of the Standard Plan.

## 2.5 Nuclear Steam Systems Supplier (NSSS)

General Electric Company maintains an Emergency Response Organization, which can provide technical assistance from their home office or at the site.

## 2.6 Architect/Engineer

Bechtel or other contractors may be involved in the technical analysis or construction activities associated with the emergency response or recovery operation. Each such organization will designate a lead representative who will have the same responsibilities, within their scope of work, as described for the NSSS Contractor.

## Table PBAPS 2-1: Minimum Staffing Requirements

| Functional Area | Major Tasks | Emergency Positions | Minimum Shift Size | [a]60 Minute Augmentation | Full Augmentation |
|---|---|---|---|---|---|
| 1. Plant Operations/Safe Shutdown and Assessment of Operational Aspects | Control Room Staff | Shift Manager | 1 | | |
| | | Control Room Supervisor | 1 | | |
| | | Reactor Operator | 3 | | |
| | | Equipment Operator | 3 | | |
| 2. Emergency Direction and Control | Command and Control / Emergency Operations | Shift Emergency Director (CR) | 1[d] | | |
| | | Station Emergency Director (TSC) | | 1 | |
| | | Corporate Emergency Director (EOF) | | 1 | |
| 3. Notification & Communication | Emergency Communications | Shift Personnel[b] | 2 | | |
| | | TSC Director (TSC) | | 1 | |
| | | EOF Director (EOF) | | 1 | |
| | | State/Local Communicator | | 1 (EOF) | 1 (TSC) |
| | | ENS Communicator | | 1 (TSC) | 1 (EOF) |
| | | HPN Communicator | | 1 (EOF) | 1 (TSC) |
| | Plant Status | Operations Communicator (CR/TSC) | | | 2 |
| | In-Plant Team Control | Damage Control Comm. (CR/TSC/OSC) | | | 3 |
| | Technical Activities | Technical Communicator (TSC) | | | 1 |
| | Governmental | EOC Communicator (EOF) | | | 1 |
| | | State EOC Liaison[f] (PEMA/MEMA) | | | 2 |
| | | Regulatory Liaison (EOF) | | | 1 |
| 4. Radiological Accident Assessment and Support of Operational Accident Assessment | Offsite Dose Assessment | Radiation Protection Personnel[c] | 1 | | |
| | | Dose Assessment Coordinator (EOF) | | 1 | |
| | | Dose Assessor (EOF) | | | 1 |
| | | Radiation Controls Coordinator (TSC) | | | 1 |
| | Offsite Surveys | Environmental Coordinator (EOF) | | 1 | |
| | | Field Team Communicator (EOF) | | | 1 |
| | | Off-Site Field Team Personnel [j] | 2 | 2 | (e) |
| | Onsite Surveys | RP Personnel | | 2 | (e) |
| | In-plant Surveys | RP Technicians | 1 | 2 | (e) |
| | Chemistry | Chemistry Personnel | 1 | 1 | (e) |
| | RP Supervisory | Radiation Protection Manager(TSC/EOF) | | 2 | |

## Table PBAPS 2-1: Minimum Staffing Requirements (Cont'd)

| Functional Area | Major Tasks | Emergency Positions | Minimum Shift Size | [a]60 Minute Augmentation | Full Augmentation |
|---|---|---|---|---|---|
| 5. Plant System Engineering, Repair and Corrective Actions | Technical Support | STA / Incident Assessor[k] (CR) | 1 | | |
| | | Technical Manager (TSC) | | 1 | |
| | | Core/Thermal Hydraulics Engineer (TSC) | | 1 | |
| | | Mechanical Engineer (TSC) | | 1 | |
| | | Electrical Engineer (TSC) | | 1 | |
| | | SAMG Decision Maker (TSC) | | 1[d] | |
| | | SAMG Evaluator (TSC) | | 2[d] | |
| | | Operations Manager (TSC) | | 1 | |
| | | Radiation Controls Engineer (TSC) | | | 1 |
| | Repair and Corrective Actions | Mechanical Maintenance (OSC) | 1[d] | 2 | (e) |
| | | Rad Waste Operator | 1 | | (e) |
| | | Electrical Maintenance (OSC) | 1[d] | 2 | (e) |
| | | Instrument & Control (I&C) (OSC) | 1 | | |
| | | Maintenance Manager (TSC) | | 1 | |
| | | OSC Director (OSC) | | 1 | |
| | | Assistant OSC Director (OSC) | | | 1 |
| | | OPs Lead & Support Personnel (OSC) | | | (e) |
| | Accident Analysis | Technical Support Manager (EOF) | | | 1 |
| | | Operations Advisor (EOF) | | | 1 |
| | | Technical Advisor (EOF) | | | 1 |
| 6. In-Plant Protective Actions | Radiation Protection | RP Personnel[c] | 2[d] | 4 | (e) |
| 7. Fire Fighting | -- | Fire Brigade[g] | 5 | | |
| 8. First Aid and Rescue Operations | -- | Plant Personnel | 2[d] | | (e) |
| 9. Site Access Control and Personnel Accountability | Security & Accountability EOF Security | Security Team Personnel | (h) | (h) | |
| | | Security Coordinator[l] (TSC/ EOF) | | | 2 |
| 10. Resource Allocation and Administration | Logistics / Administration | Logistics Manager (EOF) | | 1 | |
| | | Logistics Coordinator (TSC) | | | 1 |
| | | Administrative Coordinator (EOF) | | | 1 |
| | | Clerical Staff (TSC/OSC/EOF) | | | (e) |
| | | Events Recorder (EOF) | | | 1 |
| | | Computer Specialist (EOF) | | | 1 |
| | | **SUB-TOTAL:** | **23** | **34** | **27+** |

## Table PBAPS 2-1: Minimum Staffing Requirements (Cont'd)

| Functional Area | Major Tasks | Emergency Positions | | Minimum Shift Size | [a]60 Minute Augmentation | Full Augmentation |
|---|---|---|---|---|---|---|
| 11. Public Information | Media Interface | Corporate Spokesperson | (JIC) | | 1 | |
| | | Rad Protection Spokesperson | (JIC) | | | 1 |
| | | Technical Spokesperson | (JIC) | | | 1 |
| | Information Development | Public Information Director | (JIC) | | 1 | |
| | | News Writer | (JIC) | | | 1 |
| | Media Monitoring and Rumor Control | Communications Department | (JIC) | | | (e) |
| | Facility Operation and Control | JIC Director | (JIC) | | 1 | |
| | | JIC Coordinator | (JIC) | | | 1 |
| | | Administrative Coordinator | (JIC) | | | 1 |
| | | Events Recorder | (EOF) | | | 1 |
| | | Clerical Staff | (JIC) | | | (e) |
| | | Access Controls | (JIC) | | | 1 |
| | | **SUB-TOTAL:** | | **0** | **3[i]** | **7+** |

| | Minimum Shift Size | Total Minimum Staff | Total Full Augmentation |
|---|---|---|---|
| **TOTAL:** | **23** | **37** | **34+** |

[a] Response time is based on optimum travel conditions.
[b] Refer to Section 2.1.2 for a description of shift emergency communication staffing.
[c] Refer to Section 2.1.1 for description of on-shift dose assessment staffing.
[d] May be provided by personnel assigned other functions. Personnel can fulfill multiple functions.
[e] Personnel numbers depend on the type and extent of the emergency.
[f] Staffing of the County EOC Liaison position is not required based on agreements with offsite agencies; however, every effort will be made to dispatch an Exelon Nuclear representative upon request from County EOC Director.
[g] Fire Brigade per UFSAR / TRM, as applicable.
[h] Function performed by on-shift security personnel.
[i] The following Emergency Public Information Organization personnel will be designated "minimum staffing" (on-call) positions but are not subject to the 60-minute response time requirement: Corporate Spokesperson, Public Information Director and JIC Director.
[j] One member of each Field Survey Team is a Driver.
[k] Refer to Section 2.1.3 for description of on-shift STA/Incident Assessor staffing requirements.
[l] TSC Security Coordinator position will be staffed by PBAPS Security personnel. The EOF Security Coordinator position will be staffed by Corporate personnel.

Figure PBAPS 2-1: Exelon Overall ERO Command Structure

**Bolded Boxes** indicate minimum staffing positions.

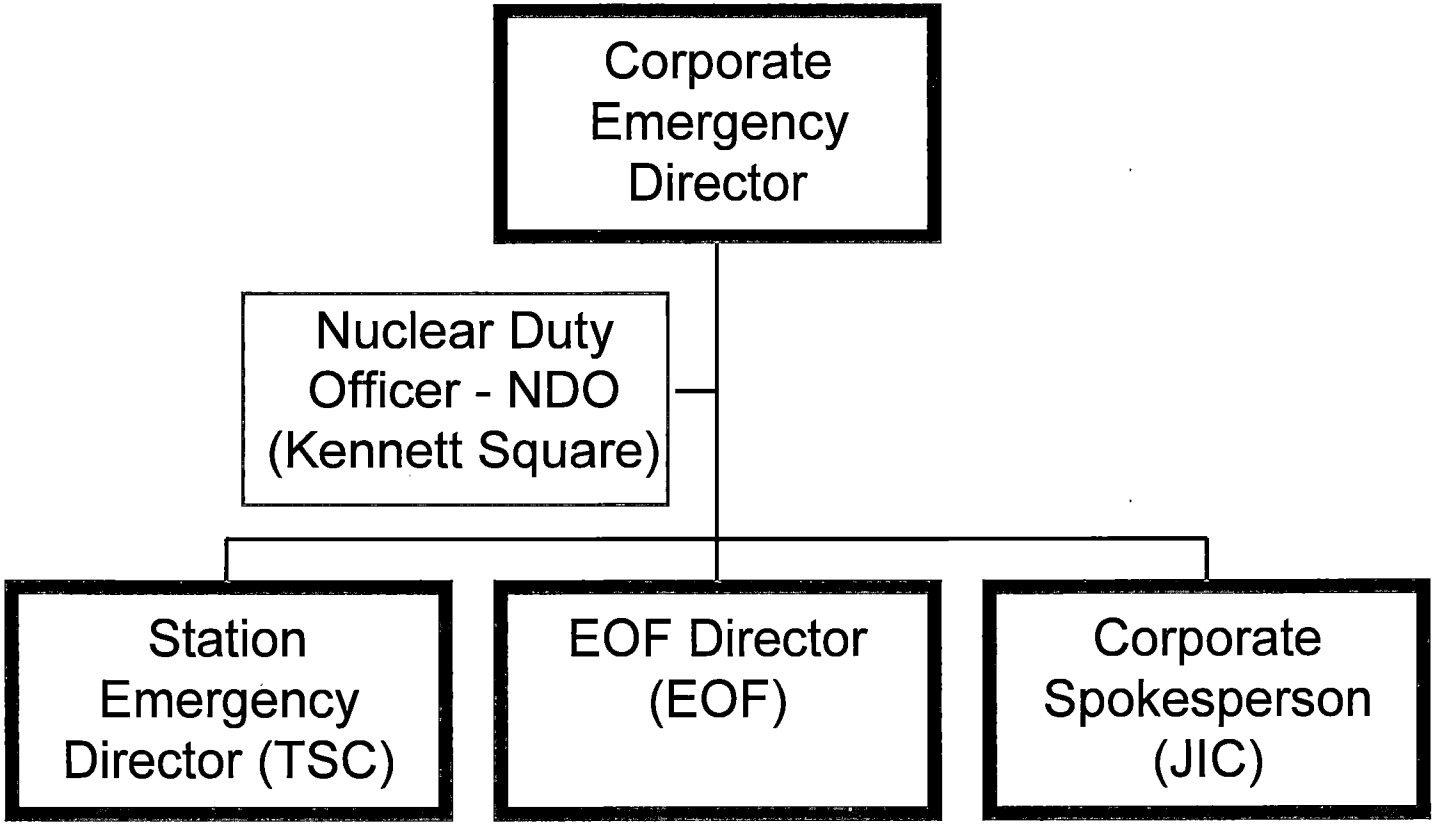
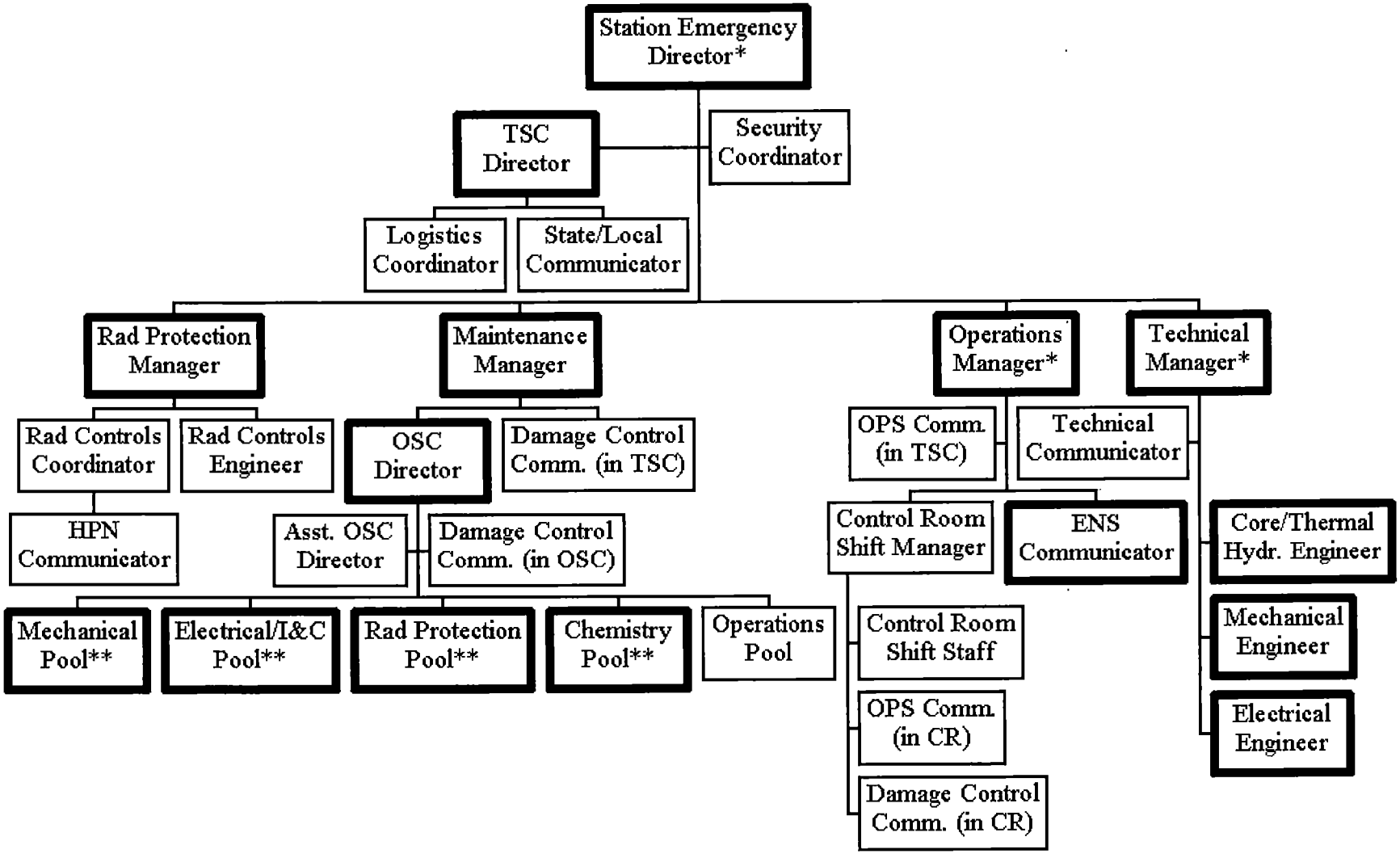


Figure PBAPS 2-2: Emergency Onsite Organization

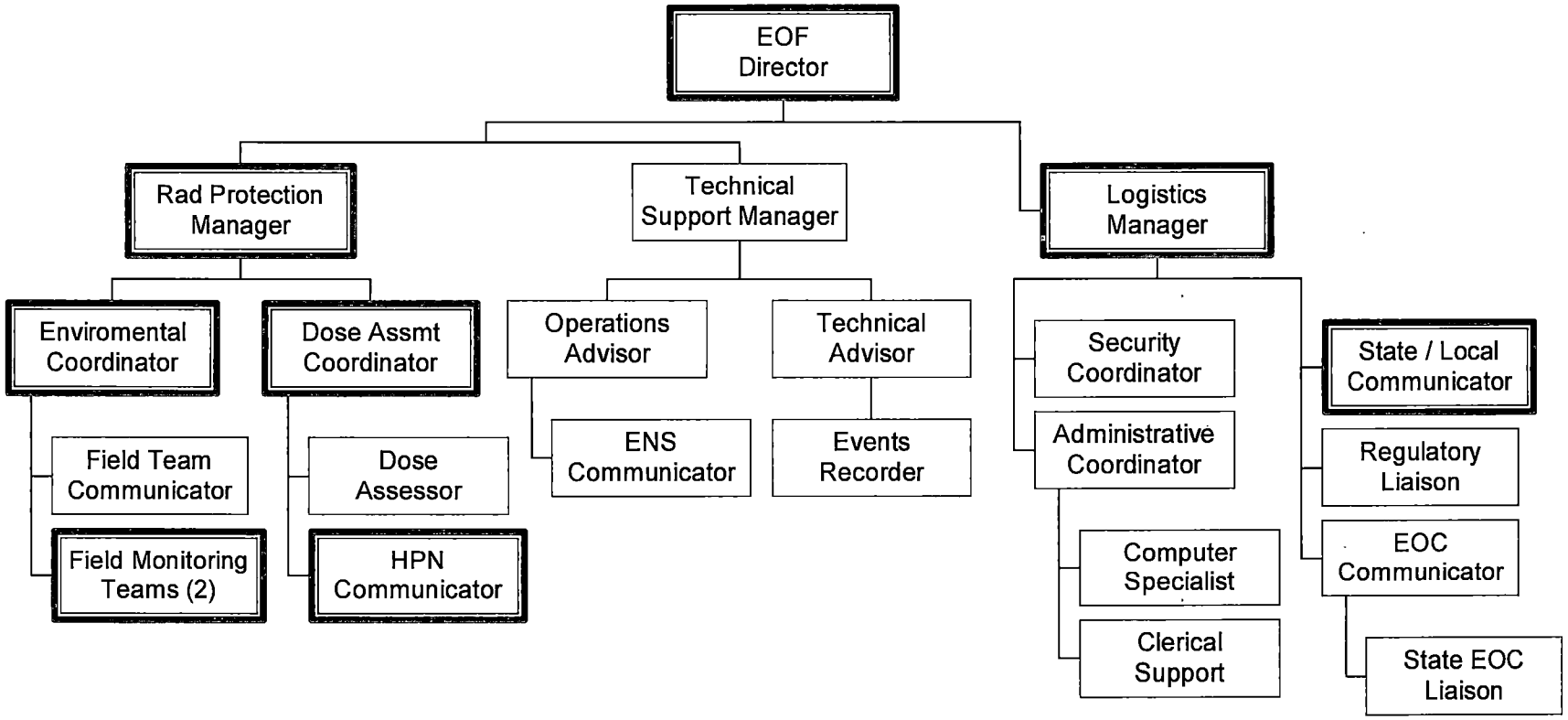



**Bolded Boxes** indicate minimum staffing positions.

* SAMG functions may be assigned to other qualified personnel. Minimum staffing requires 1 Decision Maker and 2 Evaluators.

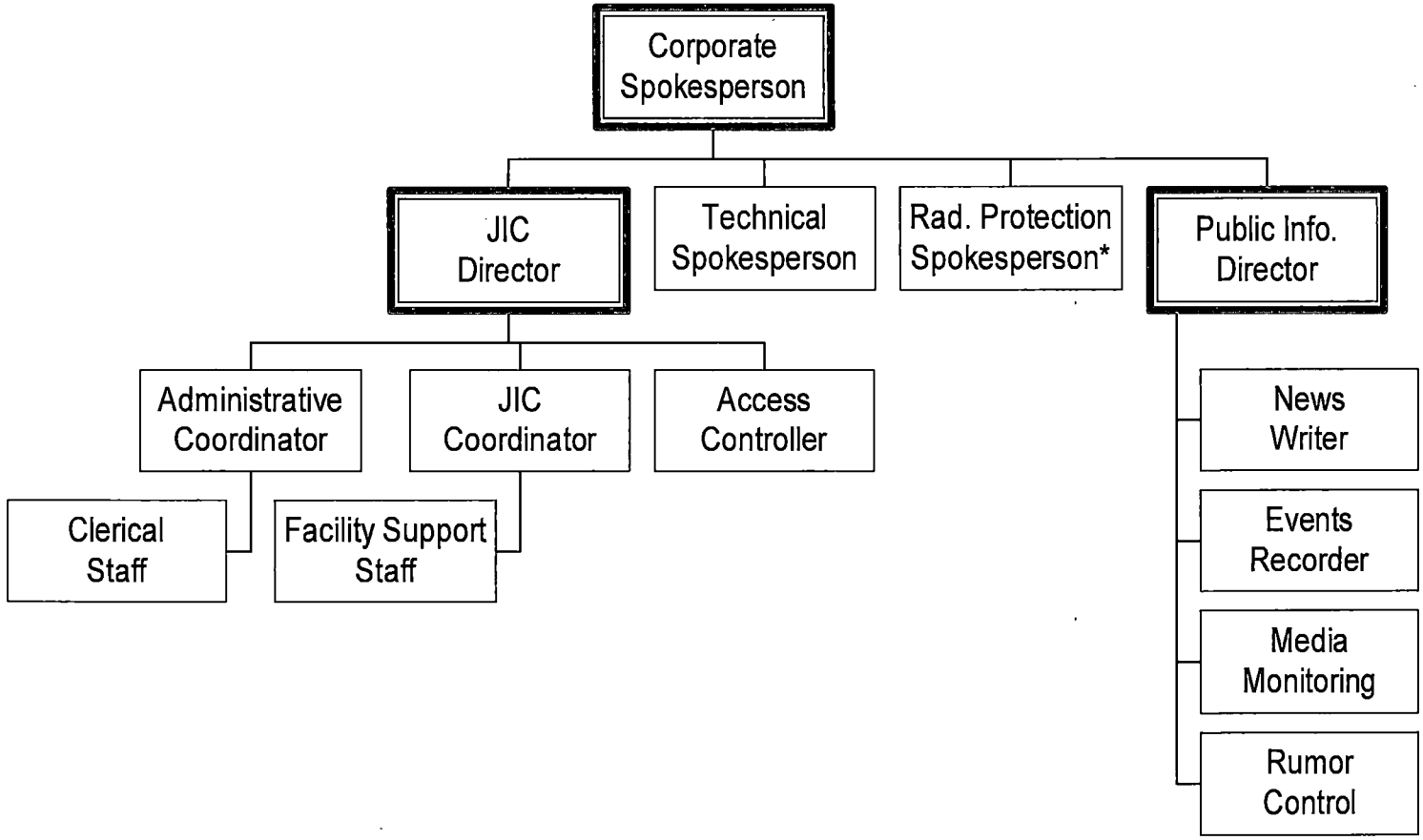
** Refer to Table PBAPS 2-1 for required staffing levels

Figure PBAPS 2-3: Emergency Offsite Organization




**Bolded Boxes** indicate minimum staffing positions.

Figure PBAPS 2-4: Emergency Public Information Organization




**Bolded Boxes** indicate minimum staffing positions.

* Radiation Protection Spokesperson may be staffed by a qualified consultant.

## Section 3: Classification of Emergencies

**The PBAPS Emergency Action Levels and supporting information are re-located to EP-AA-1007, Addendum 3**

# Section 4: Emergency Measures

## 4.1 Notification of the Emergency Organization

Notifications for the Peach Bottom Atomic Power Station are made to the following additional State and local agencies in accordance with Section E.3 of the Exelon Nuclear Standardized Radiological Emergency Plan:

- Maryland Emergency Management Agency (MEMA)
- Pennsylvania Emergency Management Agency (PEMA)
- Cecil County Department of Emergency Services
- Chester County Department of Emergency Services
- Harford County Department of Emergency Services
- Lancaster County Emergency Management Agency
- York County Emergency Services

Notification of PEMA and the risk counties will be directed by the Emergency Director within 15 minutes of initial event classification, reclassification, or a change in a protective action recommendation (PAR) due to plant conditions or meteorological changes per Section E.3 of the Exelon Nuclear Standardized Radiological Emergency Plan. In addition, once the EOF is activated, the Corporate Emergency Director will contact the Senior Pennsylvania State Official as designated by PEMA following the decision to recommend a protective action for the general public.

Upon notification of an emergency at Peach Bottom Atomic Power Station, the Pennsylvania Bureau of Radiation Protection (BRP) and Maryland Department of the Environment (MDE) will contact the appropriate station to verify that an emergency exists and to obtain technical information, and then makes recommendations to PEMA and MEMA respectively, regarding protective actions for the public. The BRP/ MDE Support Plan For Fixed Nuclear Facility Incidents utilizes the Protective Action Guidelines in the U.S. Environmental Protection Agency (EPA) 400-R-92-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents".

Exelon Nuclear will provide follow-up information to the BRP/MDE or other off-site authorities. The follow-up information will keep these authorities apprised of existing or potential radiological releases, meteorological conditions, projected doses and contamination levels, licensee actions, recommend protective actions and other information pertinent to the authorities responsibilities. The information may be provided over open communication paths or in person to BRP/MDE personnel.

## 4.2 Assessment Actions

The effluent radiation monitoring system provides indications of gross releases of gaseous and liquid radioactivity. By applying calibration factors, meteorological data, or river flow, the gross indications are used to calculate approximate release rates in μCi/sec and dose rates at specific distances along the release pathways. Particulate and iodine analysis depends on collecting installed filter papers and charcoal cartridges for analysis in the counting room. Similar calculation procedures are applied to approximate release rates and dose rates due to iodine.

Detectors are strategically located throughout the plant. These detectors indicate and alarm locally and in the Control Room. They serve the purpose of indicating current dose rates in those areas and are used for local evacuation action levels and re-entry operations.

Certain plant operating systems contain radiation monitors. These systems are described in the PBAPS UFSAR.

Portable monitoring instruments and sampling equipment consist of such items that are utilized and maintained on-site by the Chemistry and Health Physics sections for normal day-to-day plant operations and are thus available for emergency operations.

### 4.2.1 Core Damage Assessment Methodology

Core damage information is used to refine dose assessments and confirm or extend initial protective action recommendations. Peach Bottom Atomic Power Station utilizes NEDC-33045P-A, "Methods of Estimating Core Damage in BWRs" (Revision 0, July 2001), as the basis for the methodology for post-accident core damage assessment. This methodology utilizes real-time plant indications. In addition, PBAPS may use samples of plant fluids and atmospheres as inputs to the CDAM (Core Damage Assessment Methodology) program for core damage estimation.

## 4.3 Protective Actions for the Offsite Public

For incidents at PBAPS, PEMA coordinates with MEMA and contacts York, Lancaster and Chester County Emergency Management Agencies to assure that local plans have been implemented. MEMA likewise contacts Cecil and Harford Counties in the event of emergency at PBAPS to assure that all plans have been implemented. County and local governments have primary responsibilities for implementing protective measures for the public following a nuclear incident.

The BRP and MDE serve as lead State agency, in Pennsylvania and Maryland respectively, for technical assistance to other state agencies, county, and local governments regarding radiological health and accident assessment. In the absence of communications with the state, recommendations for protective actions shall be made directly to county emergency operations centers from the station.

4.3.1 Alert and Notification System (ANS) Sirens

Annex E of the Commonwealth of Pennsylvania Emergency Operations Plan and Annex Q of the Maryland Radiological Emergency Plan address notification to the general public and others regarding protective actions. An Alert Notification System, which is intended for use by the counties, in conjunction with the Emergency Alert System (EAS) to provide notification to the general public, has been installed.

Alerting of the EPZ population is provided by a siren system that was installed and is maintained by Exelon Nuclear. The system consists of high-powered rotating electro-mechanical sirens mounted on Class 1 utility poles throughout the Plume Exposure Pathway (10-Mile EPZ). Personnel at the risk county communication centers operate the sirens. The Pennsylvania Emergency Management Agency (PEMA), in conjunction with Maryland and the risk counties, coordinates the activation of the siren system for Peach Bottom Atomic Power Station.

The siren system meets or exceeds the acoustic coverage requirements outlined in NUREG-0654/FEMA-REP-1 and FEMA-REP-10. The location of each siren site was determined by a computer-based sound propagation model.

The sirens are controlled by digitally encoded radio signals transmitted by a transceiver at the station. Each risk county has control of the sirens that are physically located in that county. The sirens can be activated on an individual, municipal, county, or EPZ-wide basis. A controller located at the station serves as a backup to the county controllers. After the system is activated, each siren reports the result of its activation back to the respective county controller and the controller at the station. The siren system is tested regularly to ensure its operability.

Annex E (to the PA Emergency Operations Plan) and Annex Q (to the Maryland REP) delineate risk counties as responsible to:

- Develop a system for rapid notification (in priority order) of county and local government heads, key staff, emergency forces, volunteer organizations, schools, hospitals, nursing homes, business, and industry;
- Ensure that the alert and notification system is operable on an around-the-clock basis;
- Prepare and disseminate public information material on protective actions to provide clear instructions to the population at risk;
- Prepare and maintain material current for dissemination through the EAS; and
- Include provisions in the alert plan for notification of transients.

PEMA/MEMA will notify other states within the Ingestion Pathway EPZ should such action be necessary.

Annex E (to the PA Emergency Operations Plan) and Annex Q (to the Maryland REP) also call for each risk county to promptly activate their alert notification system, when appropriate. EAS radio stations will be activated and instructed as to which prepared message to use. Detailed messages with specific instructions to the public will be provided to the EAS stations by state and county public information officers on a timely basis. Various state agencies will assist the counties in assuring notifications of transients.

Backup means of notification is achieved through Route Alerting, which is contained within the State and respective counties' Radiological Emergency Response Plans and procedures. The means consists of utilizing vehicles with public address (PA) systems in the event the primary method of alerting and notification is unavailable. The backup method has the capability to alert and notify the public within the plume exposure pathway EPZ within a reasonable time, but does not need to meet the 15-minute design objective for the primary prompt public alert and notification system.

4.3.2 Evacuation Time Estimates

The ETE study used population data from the 2010 census which includes parts of three counties in Pennsylvania (Chester, Lancaster and York) and two counties in Maryland (Harford and Cecil). The evacuation times are based on a detailed consideration of the EPZ roadway network and population distribution. The ETE Study, contained in EP-AA-1007 Addendum 2, Evacuation Time Estimates for the Peach Bottom Station Plume Exposure Pathway Emergency Planning Zone, presents evacuation times for daytime and nighttime scenarios under various weather conditions for the evacuation of various areas around the Peach Bottom Atomic Power Station, once a decision has been made to evacuate.

4.3.3 Potassium Iodide (KI)

The Department of Health, Commonwealth of Pennsylvania, is responsible for providing advice to PEMA on the planning for the use, stockpiling and distribution of Potassium Iodide (KI) or other thyroid blocking agents and such other radiological health materials as may be required for the protection of the general public. Their decision shall also be based on U.S. FDA guidance.

The use of KI in the State of Maryland will be in accordance with state health laws and under the direction of State and County Medical Officials.

Based on agreement with the Commonwealth of Pennsylvania and State of Maryland, PBAPS will recommend to government officials that the general public be notified to take KI at a General Emergency classification in those sectors were an evacuation or shelter has been recommended. This notification will be approved by the Emergency Director in Command and Control of PAR decision-making and off-site notifications, and performed as part of the State / local notifications described under Sections II.B.4 and II.E.3 of the Exelon Nuclear Standardized Radiological Emergency Plan.

4.3.4 Public Information

a. Publications

Public information on protective actions is prepared and disseminated annually to provide clear instructions to the population-at-risk. Exelon Nuclear assists PEMA/MEMA and risk counties in the preparation and distribution of their respective public information..

Pamphlets outlining public education response actions are readily available for transients in the 10-Mile EPZ. In addition, emergency information is provided to the operators of other recreational areas in the 10-Mile EPZ, as defined by the Commonwealth of Pennsylvania, State of Maryland and risk counties.

These public information publications (including telephone book emergency information, etc.) instruct the public to go indoors and turn on their radios when they hear the ANS sirens operating. These publications identify the local radio stations to which the public should tune in for information related to the emergency. Additional materials (e.g., such as rumor control numbers, evacuation routes, information on inadvertent siren soundings, etc.) may also be included in these publications based on agreements with responsible State and risk county agencies.

b. News Media Education

Information kits are available to news media personnel. These kits include information on a variety of nuclear power plant related subjects.

4.3.5 Protective Action Recommendations (PARs) for the General Public

To aid the Emergency Response Organization during a developing emergency situation, EP-AA-111, "Emergency Classification and Protective Action Recommendations" has been developed based on Section J.10.m of the Emergency Plan.

## 4.4 Protective Actions for Onsite Personnel

### 4.4.1 Plant Evacuation

Exelon Nuclear personnel and contractors filling emergency response organization positions are considered essential personnel. As such, they will report to their emergency response locations. They will not evacuate unless specifically directed by the Emergency Director. All other personnel are considered non-essential.

In-plant evacuation is initiated primarily by area radiation monitor alarms and continuous air monitor alarms, but is also applicable for fire alarms, explosions, toxic material conditions, as well as radiation, contamination, and airborne radioactivity surveys which indicate conditions above applicable limits. Notification for personnel to proceed with in-plant evacuation will be via a local alarm or an announcement on the plant PA system. The affected area and evacuation assembly areas (if appropriate) will be announced. The immediate response by individuals in the vicinity of such an alarm or announcement is evacuation to an unaffected area or designed assembly area. In the absence of readily available radiological survey information or other logical assessment of conditions, evacuation will be, at least, to a point where other area radiation monitors, continuous air monitors, or observation of local conditions show that the area is not affected.

Assigned plant personnel report to the scene to evaluate conditions, to provide information to the Control Room, and to perform other emergency functions such as personnel accountability, decontamination, medical assistance, and control of the hazard.

Notification of a Site Evacuation is accomplished by activating the Evacuation Alarm System followed by an announcement over the plant PA system. The evacuation assembly area(s) are announced. Evacuation assembly areas are illustrated in Figure PBAPS 4-1. Non-essential personnel will exit via the security exit points and will proceed to the parking lot for transportation. Evacuees are expected to use their personal vehicles in evacuating to the designated evacuation assembly area(s). Designated evacuation assembly areas are located out side the protected area. Plant access roads are maintained clear during the winter months, travel on these roads is expected to be possible at all times.

Plant visitors who have not completed the required training program are escorted at all times. This ensures proper response under emergency conditions. Visitors at the station shall follow the lead of their escorts to the assembly areas.

4.4.2 Personnel Accountability

The Security personnel shall follow security procedures for personnel accountability. For evacuations, information from evacuees is an important means of accounting for plant personnel. For Site Evacuations, non-essential personnel and those ERO members whose facility is located outside the Protected Area are accounted for at the security exit point. Emergency response personnel responding to the OSC within the Protected Area are accounted for by badging into designated card readers.

4.4.3 Monitoring of Evacuees

Evacuees from the Peach Bottom Site are checked for contamination. Necessary personnel and vehicle decontamination efforts are initiated at the evacuation assembly area using in-plant equipment or emergency kit supplies. Priority for decontamination shall be given to personnel found to have the highest levels of contamination. Any personnel suspected, or known, to have ingested or inhaled radioactive material shall be given a whole body count, as soon as conditions permit, to assess their internal exposure.

The registering and monitoring of the general public evacuating from the Plume Exposure Pathway EPZ, as described in Section II.J.12 of the Exelon Nuclear Standardized Radiological Emergency Plan, will occur at designated facilities per the respective State and County Radiological Emergency Response Plans.

## 4.5 Severe Accident Management

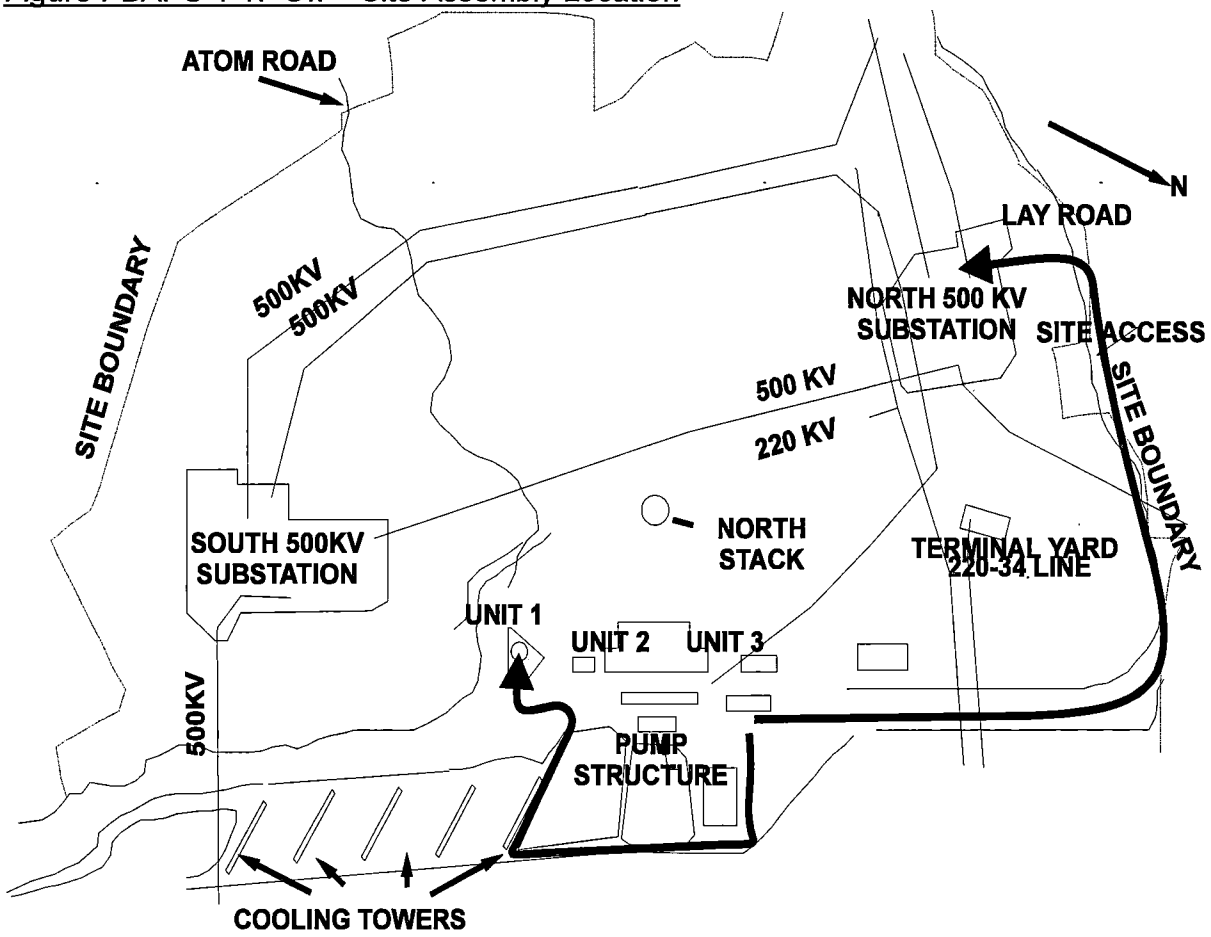
Accident management consists of those actions taken during the course of an accident, by the Emergency Response Organization (ERO), specifically: plant operations, technical support, and plant management staff in order to:

- Prevent the accident from progressing to core damage;
- Terminate core damage once it begins;
- Maintain the capability of the containment as long as possible; and
- Minimize on-site and off-site releases and their effects.

The later three actions constitute a subset of accident management, referred to as Severe Accident Management (SAM) or severe accident mitigation. The Severe Accident Management Plan (SAMP) procedures provide sound technical strategies for maximizing the effectiveness of equipment and personnel in preventing, mitigating and terminating severe accidents.

Implementation of SAMP procedures is a collaborative effort between the Shift Manager and the Station Emergency Director in the TSC (once activated). The Station Emergency Director maintains ultimate responsibility for direction of mitigating strategies. Designated TSC Technical and Operations Support personnel are also trained to assist with decision-making by evaluating plant conditions using the SAM Technical Support Guidelines (TSG).

Figure PBAPS 4-1: Off – Site Assembly Location




**TYPE OF EVACUATION**
**LOCAL EVACUATION**
**SITE EVACUATION**

**EVACUATION ASSEMBLY AREAS**
Announced on PA System
**Peach Bottom Atomic Power Station**
Unit 1, North Sub-Station

# Section 5: Emergency Facilities and Equipment

## 5.1 Emergency Response Facilities

### 5.1.1 Station Control Room

The Peach Bottom Atomic Power Station Control Room shall be the initial onsite center of emergency control. The Control Room is located on the 165' elevation of the Turbine Building (Control Structure). The ventilation system, shielding, and structural integrity are designed and built to permit continuous occupancy during the postulated design basis accident.

### 5.1.2 Technical Support Center (TSC)

Peach Bottom Atomic Power Station has established a Technical Support Center (TSC) located on the 3rd floor of the Training Center. The TSC fully meets the requirements of Section H.1.b of the Exelon Nuclear Standardized Radiological Emergency Plan and conforms to Section 8.2.1 of Supp. 1, NUREG-0737.

### 5.1.3 Operational Support Center (OSC)

Peach Bottom Atomic Power Station has designated an Operational Support Center (OSC). The OSC is located in a 2nd floor conference room at the Site Administrative Building. The OSC conforms to the requirements of Section H.1.c of the Exelon Nuclear Standardized Radiological Emergency Plan, and is the location to which operations support personnel will report during an emergency and from which they will be dispatched for assignments in support of emergency operations.

In the event the OSC is not habitable, personnel report to backup facilities that can be designated based upon specific event conditions.

### 5.1.4 Emergency Operations Facility (EOF)

The dedicated Emergency Operations Facility (EOF) is located on Exelon property at 175 North Caln Road, Coatesville, PA. The EOF supports Three Mile Island, Peach Bottom and Limerick, and is located approximately 31 miles from Peach Bottom Atomic Power Station. Separate offices are provided for Exelon Nuclear, NRC, Maryland and Pennsylvania representatives and other emergency personnel.

Plant Monitoring System data is available through the Emergency Preparedness Data System (EPDS) at the EOF. The EOF equipment includes:

a. Supplies and equipment for EOF personnel, and

b. Sanitary and food preparation facilities.

5.1.5 Joint Information Center (JIC)

The Joint Information Center (JIC) is the facility in which media personnel gather to receive information related to the emergency event. The JIC is co-located with the EOF at 175 North Caln Road, Coatesville, Pennsylvania.

5.1.6 Alternative Facility

The Alternative Facility maintains the capability for staging the TSC/OSC emergency response organization personnel in the event of a hostile action. This alternative facility has the capability for communications with the emergency operations facility, control room, and plant security and the capability for engineering assessment activities, including damage control team planning and preparation. Consistent with NRC EPFAQ No. 2013-005, the EOF will satisfy the offsite notification responsibilities for the Alternative Facility. The Alternative Facility is located at Muddy Run Information Center 172 Bethesda Church Rd, PA 17532. **(CM-1, ref. AR 1362747.44)**

## 5.2 Assessment Resources

5.2.1 Geophysical Monitors

a. Onsite Meteorological Monitoring Program

The Onsite Meteorological Monitoring Program is covered in the contractor specification and vendor procedures of the meteorological monitoring contractor. These data are used to generate wind roses and to provide estimates of airborne concentrations of gaseous effluents. Meteorological data is provided to the station Control Room from Meteorological Towers. Data include wind speed, wind direction, and temperature. Meteorological monitoring is described in the PBAPS UFSAR.

b. Seismic Monitoring

Seismic instrumentation includes time-history strong motion pressure triaxial seismic monitor accelerographs located in secondary containment and a free-field sensor located outside of the Protected Area. Peak recording accelerographs and seismic switches are discussed in the PBAPS UFSAR.

5.2.2 Radiation Monitoring Equipment

For radiological assessments, instrumentation includes area radiation monitors (ARMs), ventilation effluent radiation monitors, liquid effluent radiation monitors, stack effluent monitors, primary containment radiation monitors and miscellaneous process radiation monitors (Refer to PBAPS UFSAR Section 7 for additional information). Data from these sources would be augmented by plant and field surveys for radiation and airborne levels.

a. Radiological Effluent Gaseous Monitoring

PBAPS has five points of release of radioactive material to the atmosphere. These are the Main Off-Gas Stack, Units 2 and 3 Roof Vents and Torus Hardened Vents. Sample systems are installed for three pathways, Main Stack and two Roof Vents. The sample systems consist of isokinetic sample lines containing particulate/iodine filters, and separate sample lines to shielded gas chambers. Detector outputs associated with the gas chambers are recorded in the Control Room. Roof Vent and Main Stack flow rates are also recorded in the Control Room.

The roof vent radiation monitoring system continuously monitors the noble gas being discharged from the Peach Bottom Unit 2 and Unit 3 roof vents. Each unit has two independent monitoring stations. The monitoring stations use scintillation detectors, which read out digitally in the Control Room.

A representative sample of the Torus Hardened Vent (THV) effluent can be obtained by utilizing the Post Accident Sampling System (PASS). The PASS is capable of sampling containment atmosphere prior to and during the use of the Torus Hardened Vent. The THV radiation monitoring system consists of GM type radiation detectors. One monitor is externally mounted to the vent. Both monitors readout in cpm, and are displayed on a digital monitor in the Control Room.

The refuel floor exhaust is combined with other building exhaust streams and is monitored by the Ventilation Stack Radiation Monitoring system for each unit. All alarm functions and readouts are in the Main Control Room. There are also several Area Radiation Monitors on the refuel floors that provide both local and Main Control Room alarm and readout.

Peach Bottoms' gas chamber detector recorder readouts are converted to uCi/sec of noble gas using calibration data and effluent flow rates for each point of release. The uCi/sec Iodine and particulates are determined from the filter and charcoal cartridge samples. The dose projection system then relates meteorological and radiological data to project dose rates along the plume pathway for selected distances. Appropriate atmospheric distribution coefficients are selected for distances of interest from the point of release. Dose rates at these distances are calculated using this data.

b. Radiological Effluent Liquid Monitoring

Liquid releases are made on a batch basis from waste sample tanks. The contents of these tanks are circulated prior to sampling and analysis and release in the discharge canal. Release forms are prepared to authorize releases to the discharge canal. Potentially, plant system leaks could cause discharge to the canal directly. Radiation monitors are located on certain process water systems that indicate abnormal radioactivity levels. A point of release sampling system is located at the end of the discharge canal.

c. Laboratory Facilities

Chemical laboratories are in the Plant Entrance and Radiochemistry Laboratory (PEARL) at PBAPS. A radiochemistry section is provided. The laboratories are adjacent to the counting room for convenience in transporting prepared samples for counting.

5.2.3 Data Acquisition Methods

a. Plant Monitoring System (PMS)

The PBAPS Main Control Room (MCR) and Technical Support Center (TSC) use an emergency facility data system to aid in assessing plant response and status during emergencies. PMS is a computer-based real-time data acquisition and display system, which gathers and records, selected plant parameters for display.

The system displays are designed to aid the Control Room operator in the performance of emergency response procedures. These displays provide information pertinent to reactor core cooling, reactor coolant system integrity, reactivity control, containment integrity, and power system status. These displays are also available to personnel in the TSC.

PMS also provides concise displays of parameters selected for post-accident monitoring. These displays are designed to aid TSC personnel in assessing plant conditions and in assisting Main Control Room personnel in recovering from abnormal or accident conditions and in mitigating their consequences. The displays include parameter versus time and parameter versus parameter trending.

PMS utilizes high-speed data recording, long-term data storage and a transient analysis program package to aid the Technical Support Center staff in reconstructing the accident sequence as well as tracking the plant steady state and dynamic behavior prior to and through the course of an event. PMS displays are available in the Main Control Room and TSC, and EOF through EPDS interactive color graphic display consoles. Hardcopy output devices are available at each location. Provisions have been made to share data with State Liaisons located in the EOF.

b. Emergency Preparedness Data System (EPDS)

The Emergency Preparedness Data System (EPDS) is an emergency facility data system to aid in assessing plant response and status during emergencies. EPDS is a computer based real-time data acquisition and display system, which acquires, stores and re-packages data from PMS for display in the Technical Support Center and Emergency Operations Facility.

5.2.4 Onsite Fire Detection Instrumentation

PBAPS is afforded fire protection from various systems, selected for their applicability in coping with the several possible types of fires. These systems include an extensive fire water system, carbon dioxide system, air foam system, dry chemical system, heat and smoke detectors as well as portable fire extinguishers located throughout the plant. These systems have alarm outputs located in the Control Room. Fire protection systems are described in the PBAPS UFSAR.

5.2.5 Facilities and Equipment for Offsite Monitoring

Off-site Radiological Environmental Monitoring Program is described in the Offsite Dose Calculations Manual (ODCM). Installed radiological monitoring equipment and facilities, including process, area, and effluent, are described in the PBAPS UFSAR. Sets of instruments are available for emergency use by field survey teams. The field survey teams perform field surveys to locate and track the plume and to determine depositing of activity on the ground.

Emergency kits contain radiation survey equipment, which enables the Field Survey Teams to obtain dose rates, surface contamination, and airborne contamination including radioiodine measurements to supplement calculations based on effluent data. These emergency kits are located at facilities outside the plant for ready accessibility. The equipment in these kits is dedicated for emergency use only.

Concurrent field sampling and analysis for radioiodine provides the capability to detect $10^{-7}$ μCi/cc I-131, per NUREG-0654, FEMA-REP-1.

Exelon shall provide for the collection of environmental media samples (e.g., water, grass vegetation, etc.) under emergency conditions and transport to an offsite laboratory for analysis in accordance with NUREG-0654, FEMA-REP-1 criterion I.7 and I.8.

5.2.6 Site Hydrological Characteristics

A list of downstream users is maintained to ensure that they are notified. Should contamination of site drinking water sources be suspected, water samples shall be analyzed.

There are river water level indicators in the PBAPS Control Room. These level indicators continuously indicate river levels, which are also input to the process computer for periodic logging, and high and low level alarms. In addition to the river water indicators in the PBAPS Control Room, river levels at Conowingo Dam (downstream) and Muddy Run Pump Storage Station (upstream) are recorded in the Conowingo Control Room. Conowingo Station engineers receive upstream river stages and weather information, which are used to predict river levels and flow rates up to four days in advance. This information is available to the PBAPS Control Room personnel.

## 5.3 Protective Facilities and Equipment

a. Emergency Supplies

Refer to Table PBAPS 5-1 for a listing of Emergency Supplies and Equipment.

b. Maintenance Equipment

Maintenance equipment consists of normal and special purpose tools and devices utilized in the course of maintenance functions throughout the station. Maintenance and Radiation Protection personnel responding to the OSC are cognizant of the locations of equipment, which may normally be required in an emergency condition. The Maintenance supervision has access to keys for tool storage, shops, and other locations where maintenance equipment may be stored.

## 5.4 First Aid and Medical Facilities

First Aid kits are located in designated areas and are checked and replenished as necessary. Stretchers are also provided at designated locations.

### 5.4.1 Decontamination and Medical Response

On-site personnel decontamination facilities for emergency conditions include showers and sinks, which drain to the liquid radioactive, waste processing system, at the primary health physics decontamination area in the plant. Special decontamination materials and personnel decontamination procedures are available in the area for use under the direction of health physics supervision. Provisions are made for medical decontamination when personnel are transported to hospitals.

### 5.4.2 Emergency Medical Assistance

Medical treatment given to injured persons at the station is of a "first aid" nature. When more professional care is needed, injured persons are transported to a local hospital. Letters of Agreement are established with primary and backup hospitals. Hospital facilities are listed in Appendix 2.

Both hospitals agree in the event of a Radiological Event, including a hostile action based event, they are adequately prepared to handle contaminated individuals and capable of providing medical support for any contaminated injured individual.

5.4.3 Medical Transportation

A Letter of Agreement is established for local Emergency Medical Services to provide Emergency Medical Services to a Radiological Event, including a Hostile Action Based event, to the Peach Bottom Atomic Power Station.

This includes transportation of patients from PBAPS including those who may have been exposed to radiation or may have injuries complicated by radioactive contamination to the York Hospital or University of Maryland Harford Memorial Hospital upon dispatch by the York County Emergency Dispatch Service.

## 5.5 Communications

Refer to Section F.1 of the Exelon Nuclear Standardized Radiological Emergency Plan for a description of dedicated communications lines to support both offsite and inter-facility communications.

5.5.1 Intra-Plant Public Address (PA) System

Peach Bottom utilizes a 3-channel system permitting simultaneous use of one page line and two party lines. Loudspeakers powered by individual amplifiers are located throughout the plant and in remote structures. The in-plant system and several remote buildings are powered from two separate emergency busses through automatic transfer switches. Other remote buildings are provided with local power.

The Peach Bottom Public Address system has also been equipped with an advanced page line control system for the enhancement of page announcements throughout the site. This control system provides improved sound quality for emergency announcements made to and from the main control room. It is also capable of screening out page announcements that do not originate from designated page announcement control points such as the control room, TSC, OSC, security locations, etc.

Local area PA announcements can still be conducted by the use of the emergency page button, and the entire system can be reverted back to allow announcements from all locations as required during emergency conditions. The primary purpose of the screening function is to reduce the number of locations where site wide page announcements can originate.

The Peach Bottom PA stations in the plant can only make pages (loudspeaker announcements) to key/central locations (Main Control Room, security station and TSC). General PA announcements over all the plant speakers can only be made from the Main Control Room, Security CAS & SAS stations, OSC, and TSC areas. This system of controlling the PA page announcements dedicates the PA system to reporting emergencies and communications to the Main Control Room.

Capability exists to warn individuals in the vicinity of the river through the river warning system utilizing the plant PA system.

Peach Bottom's Main Control Room has priority page abilities that allow the MCR announcements to override normal plant page announcements.

5.5.2 Private Branch Exchange (PBX) Telephone System

The PBAPS main commercial telephone system (PBX) provides telephone communications capabilities throughout the plant, remote structures, and with off-site parties. Extensions are located in the Main Control Room, the TSC, and the OSC. The power supply for this system consists of one on-site source with an 8-hour battery backup.

The PECO Energy Main Office and Exelon Nuclear headquarters are also served by separate commercial telephone systems (PBX's). All PECO Energy and Exelon Nuclear's PBX's are networked together to create a fully-integrated voice network, providing call management and network redundancy.

5.5.3 Dedicated Emergency PBX Telephone System

The PBAPS dedicated emergency PBX telephone system provides rapid and reliable communications in the event of an emergency. It is independent of the main PBX switch. The dedicated emergency PBX allows rapid dialing and conferencing of emergency response personnel. Extensions are located in the Control Room, the TSC, the OSC, the EOF, and the JIC. The communications system provides dedicated emergency PBX tie line access capability with the Limerick dedicated emergency PBX switch. The system is powered by the Conowingo underwater line and has a battery backup.

Dedicated lines are provided between the PBAPS Control Room, PBAPS substations, and Exelon Nuclear System Operations located at the Corporate Headquarters.

5.5.4 Intra-Plant Maintenance Telephone System

The intra-plant maintenance telephone system is a part of the PBX system and consists of telephone jacks into which telephone sets may be plugged. The telephone jacks are in various plant locations (predominantly in areas of high maintenance activity) and have the effect of expanding the PBX capability.

5.5.5 EOF/JIC Private Branch Exchange (PBX)

A dedicated PBX is installed at the Coatesville EOF/JIC. This switch will control telephone communications in and between the facility, other Exelon locations, and non-Exelon locations. In the event of a PBX failure, outside dial capability is available through trunk lines from the Coatesville Service Building. The EOF/JIC PBX switch is powered by a source that is backed by a 4-hour uninterruptible power supply and an emergency diesel generator. The UPS is designed to allow sufficient time to bridge any power interruption caused by switching to diesel-supplied power.

5.5.6 Data and Facsimile Transmission Lines

Various data lines are provided to interface computer systems and facsimile machines located at Peach Bottom, Limerick, EOF/JIC.

5.5.7 Trunk Lines

Incoming and outgoing central office trunk lines are provided from the local telephone company. These lines are used to access the Public Switched Telephone Network.

5.5.8 Tie Lines

Communications are provided between PBAPS, LGS, Corporate Main Office, Exelon Nuclear, and the EOF via the Exelon data network. A redundant backup communications path is provided by the commercial communications vendor's network. This communications path allows emergency personnel to communicate between the sites and Exelon Nuclear locations supporting the emergency. Communication lines are maintained between PBAPS and Conowingo Dam. These can be used if conditions warrant securing of the plant in the event of a flood or failure at Conowingo Dam.

Company tie lines are utilized to route NRC communications (e.g., ENS, HPN and counterpart circuits) from between Exelon Nuclear emergency response facilities for Peach Bottom Atomic Power Station.

5.5.9 Emergency PBX T-1 Circuit Lines

Two dedicated T-1 circuits between the Limerick Generating Station and Peach Bottom Atomic Power Station emergency PBX telephone systems are provided for calls within and outside the Exelon voice network. This linkage also allows the continuation of 2-way commercial telephone service in the event that one of the two main commercial telephone system PBX's becomes inoperable or unavailable.

5.5.10 Fiber Optic / Microwave Tie Lines

Dedicated Fiber Optic lines exist between LGS, the Nuclear Group Headquarters (Kennett Square) and Berwyn. Also, dedicated microwave tie lines exist between PBAPS, the EOF/JIC, and Berwyn, where they are linked to the Fiber Optic lines. The microwave system is backed up by at least eight hours of battery. In addition, communication lines exist between LGS, PBAPS, Main Office, the Nuclear Group Headquarters, and the EOF/JIC.

5.5.11 Radio Equipment

A fixed base radio system with multiple channels provides primary/backup outside communication capability as shown in Figure PBAPS 5-1, "Emergency Radio Links.".

A separate group of fixed radio channels provides primary/backup communications between in-plant user groups. These channels function through a distributed antenna system located on-site to ensure proper coverage of the area.

The fixed base radio repeaters, antenna system, and radio consoles are powered from a variety of emergency AC buses (diesel backup) and dedicated alternate battery supplies.

A supplementary radio communication system at PBAPS operating on the "ACS/Fire" channel is installed at the six alternate shutdown control stations in the plant. This system is battery backed up for a minimum of 16 hours. The radio channels for this system are designed to survive an automatic isolation on any line faults produced by a Control Room fire.

5.5.12 Evacuation Alarm System

The Evacuation Alarm System consists of a siren tone generator, PA system speakers, a roof siren, and evacuation alarm beacons. The siren tone generator injects an audible evacuation alarm in the PA system, which is broadcast over the PA system speakers. The evacuation alarm beacons provide an audible and visual alarm through two mechanical sirens and flashing red beacon on each beacon unit. The evacuation alarm beacons are installed in all high noise areas of the plant and in areas not covered by the PA system. A selector switch in the Control Room manually initiates the evacuation alarm.

## 5.6 Independent Spent Fuel Storage (ISFS)

Accidents associated with dry cask storage system include natural and man-made events that are postulated to affect the storage system. The limiting impacts to the system include: (1) loss of shielding capability, and (2) loss of confinement to the system. The loss of shielding results in higher direct radiation from the cask to the environment while the loss of confinement results in a release of materials from within the cask to the environment at a postulated leak rate.

Monitoring of the fuel storage system would provide the means to detect the accident condition and initiate corrective actions. Continued assessment would be provided to the Emergency Director by in-field radiological monitoring. Emergency response procedures include guidance for performing dose projections and may be supplemented by data obtained from ERO dose assessment and environmental monitoring personnel.

## 5.7 Law Enforcement Agencies

A Letter of Agreement is established for Local Law Enforcement to support Peach Bottom Atomic Power Station to respond to a Radiological Event including a Hostile Action Based Event, in conjunction with the National Incident Management System, upon notification by the station in accordance with the established communications protocol.

## 5.8 Fire Fighting Organizations

A Letter of Agreement is established for the local volunteer fire department to respond to a Radiological Event including a Hostile Action Based Event, to support Peach Bottom Atomic Power Station's Radiological Emergency Plan in conjunction with the Mutual Aid System as requested by the York County Emergency Dispatch Service System.

## Table PBAPS 5-1: Emergency Supplies and Equipment

The following is a listing of typical equipment available for use during emergencies. While specific equipment designations and items may be subject to change, equivalent emergency activity capabilities will be maintained. Procedures define the specific locations, types, and amounts of equipment for emergency use and define requirements for applicable surveillance, testing, maintenance, and inventory activities to ensure that the equipment is in a state of readiness.

| 1.0 PROTECTIVE | LOCATIONS STORED OR AVAIL |
|---|---|
| Anti-C Clothing | 2, 7, 8, 10 |
| Dosimetry | 2, 4, 9, 10 |
| Respirator/Filters | 2, 4, 10*, 13 |
| Self-Contained Breathing Apparatus | 1, 2, 10*, 13 |
| Radiation signs, rope and tape | 2, 7, 8, 13 |
| Potassium Iodide | 2, 7, 8, 10 |

*Location 10 (Peach Bottom Unit 1) may store either Respirator/Filters or Self-Contained Breathing Apparatus

| 2.0 RADIATION MONITORING | LOCATIONS STORED OR AVAIL |
|---|---|
| Air Sampler | 2, 4, 7, 8, 10, 13 |
| Geiger Counter | 1, 2, 4, 7, 8, 10, 13 |
| Ion Chamber | 1, 2, 4, 7, 8, 10, 13 |
| Frisker | 3 |
| Radiation Survey Forms | 2, 7, 8, 10, 13 |
| Smears | 2, 7, 8, 10, 13 |
| Swipes | 2, 7, 8, 10, 13 |

| 3.0 SEARCH AND RESCUE | LOCATIONS STORED OR AVAIL |
|---|---|
| Flashlight | 3 |
| Blanket | 3 |
| Stretcher | 3 |
| Rope | 3 |

| 4.0 DECISION AIDS | LOCATIONS STORED OR AVAIL |
|---|---|
| Nuclear Emergency Plan | 1, 2, 4, 5, 13, 15 |
| PBAPS EP Procedures | 1, 2, 4, 5, 6, 7, 8, 13, 14, 15 |
| Maps | 2, 4, 5, 7 |
| Prints | 1, 4 |
| Drawings | 1, 4 |

**Table PBAPS 5-1: Emergency Supplies and Equipment (Cont'd)**

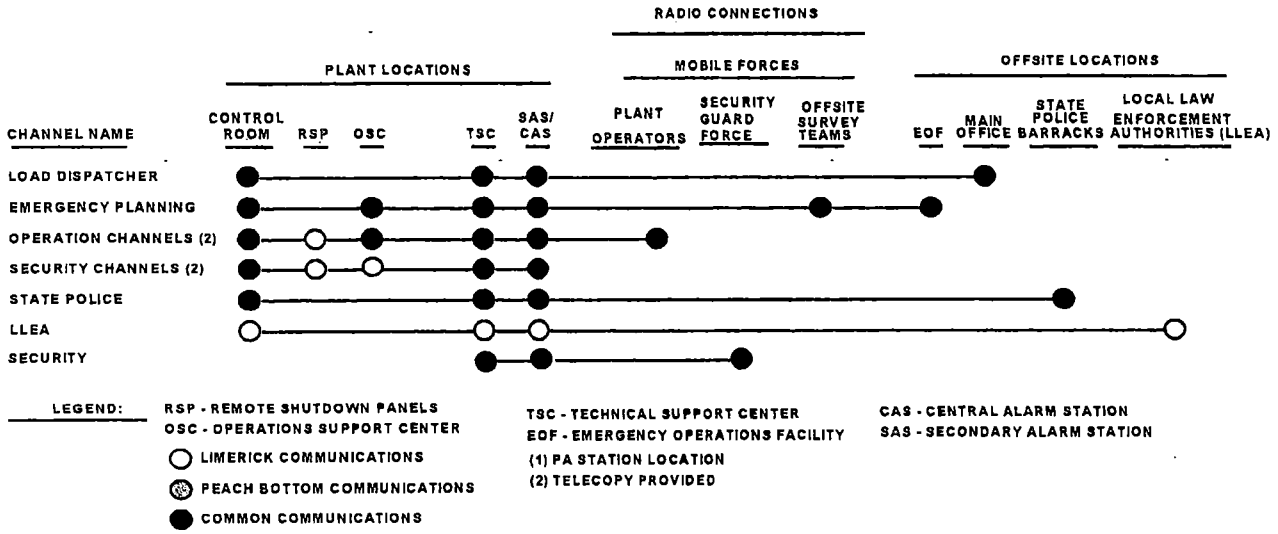
| 5.0 COMMUNICATIONS | LOCATIONS STORED OR AVAIL |
|---|---|
| Base Stations | 1, 2, 4, 5, 14 |
| Mobile Radios | 1, 2, 5, 7, 14 |

| 6.0 DECONTAMINATION | LOCATIONS STORED OR AVAIL |
|---|---|
| Soap | 8, 16 |
| Detergent | 8, 16 |
| Hose | 8 |
| Brushes | 8, 16 |
| Sponges | 8, 16 |
| Buckets | 8 |

LOCATION KEY

1 Control Room Area
2 Operations Support Center
3 Strategically located throughout Station
4 Technical Support Center
5 Emergency Operations Facility
6 Alternate Chemistry Laboratory
7 Field Monitoring Kits
8 Evacuation Assembly Area Kits
9 Personnel Dosimetry Office
10 Peach Bottom Unit 1
13 Radiation Protection Muster Area
14 Security Building
15 Joint Information Center
16 Decontamination Room

## Figure PBAPS 5-1: Emergency Radio Links



## APPENDIX 1: NUREG-0654 CROSS-REFERENCE

| Annex Section | NUREG-0654 |
|---|---|
| 1.0 | Part I, Section A |
| 1.1 | Part I, Section B |
| 1.2 | Part I, Section D |
| 1.3 | Part I, Section F |
| Table PBAPS 1-1 | Part I, Section F |
| Figure PBAPS 1-1 | Part II, Section J.10 |
| Figure PBAPS 1-2 | Part II, Section J.11 |
| 2.0 | Part II, Section B.1 |
| 2.1 | Part II, Section B.5 |
| 2.2 | Part II, Section A.3 |
| 2.3 | Part II, Section C.3 |
| 2.4 | Part II, Section C.3 |
| 3.0 | Part II, Section D |
| 4.1 | Part II, Section E.1 & J.7 |
| 4.2 | Part II, Section I.2 & 3 |
| 4.3 | Part II, Section J.10.f |
| 4.3.1 | Part II, Section E.6 |
| 4.3.2 | Part II, Section J.8 |
| 4.3.3 | Part II, Section J.6.c |
| 4.3.4a | Part II, Section G.1 & 2 |
| 4.3.4b | Part II, Section G.5 |
| 4.3.5 | Part II, Section J.7 |
| 4.4.1 | Part II, Sections I.2 & 3.a |
| 4.4.2 | Part II, Section J.5 |
| 4.4.3 | Part II, Section J.3 |
| EP-AA-111 | Part II, Section J.7 |
| Figure PBAPS 4-1 | Part II, Section J.4 |
| 5.1 | Part II, Section H.1-2, & G.3.a |
| 5.2.1 | Part II, Section H.5.a & 8 |
| 5.2.2 | Part II, Section H.5.b, H.6.c &I.2 |
| 5.2.3 | Part II, Section H.5.c |
| 5.2.4 | Part II, Section H.5.d |
| 5.2.5 | Part II, Section H.6.b & 7, I.9-10 |
| 5.2.6 | Part II, Section H.5.a & 6.a |
| 5.3 | Part II, Section H.9-10 |
| 5.4 | Part II, Section L.1 & 2 |
| 5.5 | Part II, Section F.1 |
| Table PBAPS 5-1 | Part II, Section H.11 |
| Figure PBAPS 5-1 | Part II, Section F.1.d |
| Appendix 1 | Part II, Section P.8 |
| Addendum 2 | Part II, Section J.8 |

## APPENDIX 2: SITE-SPECIFIC LETTERS OF AGREEMENT

The following is a listing of letters of agreement and contracts specific to emergency response activities in support of Peach Bottom Atomic Power Station. Letters of agreement and contracts common to the multiple Exelon Nuclear stations are listed under Appendix 3 to the Exelon Nuclear Standardized Radiological Emergency Plan.

- Pennsylvania Emergency Management Agency Memorandum of Understanding (MOU) (Letter on File)

  NOTE: Documentation of agreement for Lancaster, Chester, and York counties are contained as part of the agreement with PEMA.

- Pennsylvania State Police #
- Memo of Understanding (Letter on File) with Maryland Emergency Management Agency (MEMA), which includes the following support agencies:
  - Maryland Department of the Environment / Radiological Health Program,
  - Harford County Department of Emergency Services, and
  - Cecil County Department of Emergency Services
- Delta-Cardiff Volunteer Fire Company (Letter on File)
- University of Maryland Harford Memorial Hospital (Letter on File)
- York Hospital (Letter on File)
- Southern York County EMS (Letter on File)

# Agreements with State and local law enforcement agencies maintained by Station Security under the Nuclear Station Security Plan.

**Attachment 4**

**EP-AA-1008, Revision 31, *"Exelon Nuclear Radiological Emergency Plan Annex for Limerick Generating Station"***

**Emergency Plan Annex Revision**

Exelon Generation®

# EXELON NUCLEAR

# RADIOLOGICAL EMERGENCY PLAN ANNEX FOR LIMERICK GENERATING STATION

## Section 1: Introduction



## Section 2: Organizational Control of Emergencies



## Section 3: Classification of Emergencies



## Section 4: Emergency Measures

## Section 5: Emergency Facilities and Equipment



## APPENDICES



### ADDENDUMS

## REVISION HISTORY

| REVISION | REVISION DATE |
|---|---|
| 0 | August 2002 |
| 1 | October 2002 |
| 2 | November 2002 |
| 3 | February 2003 |
| 4 | September 2003 |
| 5 | October 2003 |
| 6 | December 2004 |
| 7 | May 2005 |
| 8 | September 2005 |
| 9 | January 2006 |
| 10 | December 2006 |
| 11 | May 2007 |
| 12 | September 2007 |
| 13 | November 2007 |
| 14 | July 2008 |
| 15 | December 2008 |
| 16 | August 2009 |
| 17 | March 2010 |
| 18 | July 2010 |
| 19 | December 2010 |
| 20 | May 2011 |
| 21 | February 2012 |
| 22 | February 2012 |
| 23 | March 2012 |
| 24 | November 2012 |
| 25 | December 2012 |
| 26 | June 2013 |
| 27 | June 2014 |
| 28 | December 2014 |
| 29 | March 2015 |
| 30 | December 2017 |
| 31 | May 2019 |

# Section 1: Introduction

As required in the conditions set forth by the Nuclear Regulatory Commission (NRC) for the operating licenses for the Exelon Nuclear Stations, the management of Exelon recognizes its responsibility and authority to operate and maintain the nuclear power stations in such a manner as to provide for the safety of the general public.

The Exelon Emergency Preparedness Program consists of the Exelon Nuclear Standardized Radiological Emergency Plan, Station Annexes, emergency plan implementing procedures, and associated program administrative documents. The Exelon Nuclear Standardized Radiological Emergency Plan outlines the basis for response actions that would be implemented in an emergency. Planning efforts common to all Exelon Nuclear stations are encompassed within the Emergency Plan.

This document serves as the Limerick Generating Station Annex and contains information and guidance that is unique to the station. This includes facility geography and location for a full understanding and representation of the station's emergency response capabilities. The Station Annex is subject to the same review and audit requirements as the Exelon Nuclear Standardized Radiological Emergency Plan per EP-AA-120, "Emergency Plan Administration".

## 1.1 Facility Description

The Limerick Generating Station (LGS) is a fixed nuclear electrical generating facility operated by Exelon Nuclear and licensed by the USNRC. The station includes two boiling water reactor (BWR) electrical generating units.

The Limerick station is located partly in Montgomery County and partly in Chester County Pennsylvania on the Schuylkill River about 1.7 miles southeast of the limits of the Borough of Pottstown. The Schuylkill River passes through the site and separates the western portion, which is located in East Coventry Township, Chester County, from the eastern portion, which is partly in Limerick Township and partly in Lower Pottsgrove Township, both in Montgomery County. Major plant structures are in Limerick Township.

For more specific site location information, refer to the Updated Final Safety Analysis Report (UFSAR) for Limerick Generating Station.

## 1.2 Emergency Planning Zones

The Plume Exposure Emergency Planning Zone (EPZ) for Limerick Generating Station shall be an area surrounding the Station with a radius of about ten miles. The exact physical boundaries are determined by the Commonwealth of Pennsylvania and affected Counties. Refer to Figure LGS 1-1.

The Ingestion Pathway Emergency Planning Zone (EPZ) for Limerick Generating Station shall be an area surrounding the Station with a radius of about 50 miles. Refer to Figure LGS 1-2.

## 1.3 Participating Governmental Agencies

The overall responsibility for the management of the effects of accidental off-site releases of radioactivity resulting from either a nuclear power plant or a transportation accident rests with state and local governments.

The Commonwealth organizations having prime responsibility in matters of radiation hazards are the Pennsylvania Emergency Management Agency and the Bureau of Radiation Protection (BRP) of the Pennsylvania Department of Environmental Protection. County and local governments are responsible for the protection of public health and safety within their jurisdiction. Similarly, organizations in the Commonwealth of Pennsylvania and States of Maryland, Delaware, and New Jersey are responsible for the protection of the public in their states. Cooperation with the States of Maryland, Delaware and New Jersey is necessary because these states are within the Ingestion Pathway EPZ.

These civil agencies will respond to provide support in the event of an emergency in the areas indicated below.

### 1.3.1 Pennsylvania Emergency Management Agency (PEMA)

Responsibilities of PEMA are outlined in Annex E, "Radiological Emergency Response to Nuclear Power Plant Incidents" of the Commonwealth of Pennsylvania Emergency Operations Plan.

### 1.3.2 Department of Environmental Protection, Bureau of Radiation Protection (DEP/BRP)

Responsibilities of DEP/BRP are outlined in Annex E of the Commonwealth of Pennsylvania Emergency Operations Plan.

### 1.3.3 Pennsylvania State Police

Responsibilities of the State Police are set forth in Annex E of the Commonwealth of Pennsylvania Emergency Operations Plan.

### 1.3.4 County Governments

Annex E of the Commonwealth of Pennsylvania Emergency Operations Plan defines "risk counties" as those within a 10-mile radius of a fixed nuclear facility. For LGS, the risk counties are:

a. Montgomery County

b. Chester County

c. Berks County

The responsibilities assigned to these Counties are outlined in Annex E of the Commonwealth of Pennsylvania Emergency Operations Plan.

1.3.5 State Of Maryland

The State of Maryland's border is located within the 50-mile Ingestion Pathway for LGS. The State would be notified if protective actions were required within that area. No direct support is provided to LGS.

1.3.6 State Of New Jersey

The State of New Jersey's border is located within the 50-mile Ingestion Pathway for LGS. The State would be notified if protective actions were required within that area. No direct support is provided to LGS.

1.3.7 State Of Delaware

The State of Delaware's border is located within the 50-mile Ingestion Pathway for LGS. The State would be notified if protective actions were required within that area. No direct support is provided to LGS.

Refer to Table LGS 1-1 for a list of offsite radiological emergency response organizations and response plans in support of the Limerick Generating Station's Emergency Preparedness Program.

## Table LGS 1-1: Offsite Radiological Emergency Response Organizations and Response Plans

The following state, local and emergency plans are available and filed under separate cover.

- Annex E - "Radiological Emergency Response to Nuclear Power Plant Incidents" - to Commonwealth of Pennsylvania Emergency Operations Plan.

- Montgomery County Radiological Emergency Response Plan for Incidents at LGS.

Municipalities

| | | |
|---|---|---|
| Collegeville Borough | Douglass Township | Green Lane Borough |
| Limerick Township | Marlborough Township | Lower Pottsgrove Township |
| Lower Frederick Township | Lower Salford Township | Lower Providence Township |
| Perkiomen Township | New Hanover Township | Royersford Borough |
| Pottstown Borough | Skippack Township | Schwenksville Borough |
| Upper Frederick Township | Trappe Borough | Upper Providence Township |
| Upper Pottsgrove Township | West Pottsgrove Township | Upper Salford Township |

School Districts

| | | |
|---|---|---|
| Methacton | Perkiomen Valley | Pottsgrove |
| Souderton | Pottstown | Spring-Ford |
| Upper Perkiomen | | |

- Chester County Radiological Emergency Response Plan for Incidents at LGS.

Municipalities

| | | |
|---|---|---|
| Charlestown Township | East Pikeland Township | East Coventry Township |
| East Nantmeal Township | East Vincent Township | North Coventry Township |
| Phoenixville Borough | Schuylkill Township | South Coventry Township |
| Spring City Borough | Upper Uwchlan Township | Uwchlan Township |
| Warwick Township | West Pikeland Township | West Vincent Township |

School Districts

| | |
|---|---|
| Downingtown | Great Valley |
| Phoenixville Area | Owen J. Roberts |

- Berks County Radiological Emergency Response Plan for Incidents at LGS.

Municipalities

| | | |
|---|---|---|
| Amity Township | Boyertown Borough | Colebrookdale Township |
| Douglass Township | Earl Township | Union Township |
| Washington Township | | |

School Districts

| | |
|---|---|
| Boyertown | Daniel Boone |

- State of Delaware Emergency Plan
- State of New Jersey Emergency Plan
- State of Maryland Emergency Plan

## Figure LGS 1-1: 10-Mile Plume Exposure Pathway EPZ

## Figure LGS 1-2: 50-Mile Ingestion Pathway EPZ

# Section 2: Organizational Control of Emergencies

This section describes the Emergency Response Organization (ERO) and its key positions. It outlines the staffing requirements which provide initial emergency response actions and provisions for timely augmentation of on-shift personnel when required. It also describes interfaces among Exelon Nuclear emergency response personnel and specifies the offsite support available to respond to the nuclear generating stations.

## 2.1 Shift Organization Staffing

Initial response to any emergency is by the normal plant organization present at the site. This organization includes positions that are onsite 24 hours per day and is described in Section B.1 of the Exelon Nuclear Standardized Radiological Emergency Plan. The Normal Shift Organization will be augmented, in an emergency, with designated/additional Emergency Response Organization (ERO) personnel within 60 minutes following the declaration of an Alert or higher emergency classification as specified under Table LGS 2-1. ERO activation is described in Section H.4 of the Exelon Nuclear Standardized Radiological Emergency Plan.

Table LGS 2-1 outlines ERO positions required to meet minimum staffing and full augmentation of the on-shift complement at an Alert or higher classification, and the major tasks assigned to each position. Responsibilities for each position are described in Section B.5 of the Exelon Nuclear Standardized Radiological Emergency Plan.

### 2.1.1 Shift Dose Assessment

The on-shift dose assessment function will be performed by a shift Radiation Protection Technician (RPT) at Peach Bottom Atomic Power Station. However, Limerick Generating Station will maintain the capability to perform a shift dose assessment, if necessary.

### 2.1.2 Shift Communicator

The Shift Communicator performs notifications to the State and County organizations until relieved by the TSC, and assists in the initiation of the ERO Callout System as directed. The Communicator position is staffed by a designated on-shift individual capable of responding to the Control Room immediately in support of the initiation of offsite notifications within 15 minutes of event classification.

A 2$^{nd}$ on-shift individual will be designated to support communications with the NRC over the Emergency Notification System (ENS) until relieved by the TSC.

2.1.3 Shift Technical Advisor (STA) / Incident Assessor

Section B.1 of the Exelon Nuclear Standardized Radiological Emergency Plan outlines the On-Shift Emergency Response Organization Assignment of the STA. Limerick Generating Station has deemed the following as an acceptable method of implementing Section B.1 in reference to the STA.

The responsibilities of the STA are delineated on OP-AA-101-111, "Roles and Responsibilities of On-Shift Personnel." If the STA is the Shift Manager or Unit Supervisor, then another Senior Reactor Operator (SRO) shall assist as Incident Assessor during unexpected conditions and transients. Per Table LGS 2-1, the on-shift STA or Incident Assessor shall also provide core/thermal hydraulics support to Control Room staff.

## 2.2 Emergency Response Organization (ERO) Staffing

Refer to Table LGS 2-1 of the LGS Annex, "Minimum Staffing Requirements", for a comparison against the Exelon Nuclear Standardized Radiological Emergency Plan of 60-minute and full augmentation commitments.

2.2.1 Emergency Onsite Organization (Figure LGS 2-2)

No changes in augmentation positions or staffing levels for the Technical Support Center (TSC), Operations Support Center (OSC) and Control Room from that specified in the Exelon Nuclear Standardized Radiological Emergency Plan.

2.2.2 Emergency Offsite Organization (Figure LGS 2-3)

Based on existing interface and staffing agreements, representatives from the Commonwealth of Pennsylvania will respond to the Emergency Operations Facility (EOF), allowing direct face-to-face communications. As such, the State Environs Communicator position, listed under the Exelon Nuclear Standardized Radiological Emergency Plan, is not staffed at the Coatesville EOF. Rather the EOF Environmental Coordinator will interface directly with State representatives present in the EOF.

2.2.3 Emergency Public Information Organization (Figure LGS 2-4)

No changes in augmentation positions or staffing levels for the Joint Information Center (JIC)) and Emergency News Center (ENC) from that specified in the Exelon Nuclear Standardized Radiological Emergency Plan.

## 2.3 Emergency Response Organization (ERO) Training

Training is conducted in accordance with Section O.5 of the Exelon Nuclear Standardized Radiological Emergency Plan per TQ-AA-113, "ERO Training and Qualification." Retraining is performed on an annual basis, which is defined as once per calendar year not to exceed 18 months between training sessions.

## 2.4 Non-Exelon Nuclear Support Groups

Agreements exist on file with or are verified current annually by the MA Region Corporate Emergency Preparedness Group for the support agencies listed in Appendix 2 of the Exelon Nuclear Radiological Emergency Plan Annex for LGS.

Additionally, Exelon Nuclear has contractual agreements common within Exelon Nuclear with several companies whose services would be available in the event of a radiological emergency. These agencies are also listed in Appendix 3 of the Exelon Nuclear Standardized Radiological Emergency Plan.

Emergency response coordination with governmental agencies and other support organizations is discussed in Section A of the Exelon Nuclear Standardized Radiological Emergency Plan.

## 2.5 Nuclear Steam Systems Supplier (NSSS)

General Electric Company maintains an Emergency Response Organization, which can provide technical assistance from their home office or at the site.

## 2.6 Architect/Engineer

Bechtel or other contractors may be involved in the technical analysis or construction activities associated with the emergency response or recovery operation. Each such organization will designate a lead representative who will have the same responsibilities, within their scope of work, as described for the NSSS Contractor.

## Table LGS 2-1: Minimum Staffing Requirements

| Functional Area | Major Tasks | Emergency Positions | Minimum Shift Size | [a]60 Minute Augmentation | Full Augmentation |
|---|---|---|---|---|---|
| 1. Plant Operations/Safe Shutdown and Assessment of Operational Aspects | Control Room Staff | Shift Manager | 1 | | |
| | | Control Room Supervisor | 1 | | |
| | | Reactor Operator | 3 | | |
| | | Equipment Operator | 3 | | |
| 2. Emergency Direction and Control | Command and Control / Emergency Operations | Shift Emergency Director (CR) | 1[d] | | |
| | | Station Emergency Director (TSC) | | 1 | |
| | | Corporate Emergency Director (EOF) | | 1 | |
| 3. Notification & Communication | Emergency Communications | Shift Personnel[b] | 2 | | |
| | | TSC Director (TSC) | | 1 | |
| | | EOF Director (EOF) | | 1 | |
| | | State/Local Communicator | | 1 (EOF) | 1 (TSC) |
| | | ENS Communicator | | 1 (TSC) | 1 (EOF) |
| | | HPN Communicator | | 1 (EOF) | 1 (TSC) |
| | Plant Status | Operations Communicator (CR/TSC) | | | 2 |
| | In-Plant Team Control | Damage Control Comm. (CR/TSC/OSC) | | | 3 |
| | Technical Activities | Technical Communicator (TSC) | | | 1 |
| | Governmental | EOC Communicator (EOF) | | | 1 |
| | | State EOC Liaison[f] (PEMA) | | | 1 |
| | | Regulatory Liaison (EOF) | | | 1 |
| 4. Radiological Accident Assessment and Support of Operational Accident Assessment | Offsite Dose Assessment | Radiation Protection Personnel[c] | 1 | | |
| | | Dose Assessment Coordinator (EOF) | | 1 | |
| | | Dose Assessor (EOF) | | | 1 |
| | | Radiation Controls Coordinator (TSC) | | | 1 |
| | Offsite Surveys | Environmental Coordinator (EOF) | | 1 | |
| | | Field Team Communicator (EOF) | | | 1 |
| | | Off-Site Field Team Personnel [j] | 2 | 2 | (e) |
| | Onsite Surveys | RP Personnel | | 2 | (e) |
| | In-plant Surveys | RP Technicians | 1 | 2 | (e) |
| | Chemistry | Chemistry Personnel | 1 | 1 | (e) |
| | RP Supervisory | Radiation Protection Manager(TSC/EOF) | | 2 | |

## Table LGS 2-1: Minimum Staffing Requirements (Cont'd)

| Functional Area | Major Tasks | Emergency Positions | Minimum Shift Size | [a]60 Minute Augmentation | Full Augmentation |
|---|---|---|---|---|---|
| 5. Plant System Engineering, Repair and Corrective Actions | Technical Support | STA / Incident Assessor[k] (CR) | 1 | | |
| | | Technical Manager (TSC) | | 1 | |
| | | Core/Thermal Hydraulics Engineer (TSC) | | 1 | |
| | | Mechanical Engineer (TSC) | | 1 | |
| | | Electrical Engineer (TSC) | | 1 | |
| | | SAMG Decision Maker (TSC) | | 1[d] | |
| | | SAMG Evaluator (TSC) | | 2[d] | |
| | | Operations Manager (TSC) | | 1 | |
| | | Radiation Controls Engineer (TSC) | | | 1 |
| | Repair and Corrective Actions | Mechanical Maintenance (OSC) | 1[d] | 2 | (e) |
| | | Rad Waste Operator | 1 | | (e) |
| | | Electrical Maintenance (OSC) | 1[d] | 2 | (e) |
| | | Instrument & Control (I&C) (OSC) | 1 | | |
| | | Maintenance Manager (TSC) | | 1 | |
| | | OSC Director (OSC) | | 1 | |
| | | Assistant OSC Director (OSC) | | | 1 |
| | | OPs Lead & Support Personnel (OSC) | | | (e) |
| | Accident Analysis | Technical Support Manager (EOF) | | | 1 |
| | | Operations Advisor (EOF) | | | 1 |
| | | Technical Advisor (EOF) | | | 1 |
| 6. In-Plant Protective Actions | Radiation Protection | RP Personnel[c] | 2[d] | 4 | (e) |
| 7. Fire Fighting | -- | Fire Brigade[g] | 5 | | |
| 8. First Aid and Rescue Operations | -- | Plant Personnel | 2[d] | | (e) |
| 9. Site Access Control and Personnel Accountability | Security & Accountability<br>EOF Security | Security Team Personnel<br>Security Coordinator[l] (TSC/EOF) | (h) | (h) | <br>2 |
| 10. Resource Allocation and Administration | Logistics / Administration | Logistics Manager (EOF) | | 1 | |
| | | Logistics Coordinator (TSC) | | | 1 |
| | | Administrative Coordinator (EOF) | | | 1 |
| | | Clerical Staff (TSC/OSC/EOF) | | | (e) |
| | | Events Recorder (EOF) | | | 1 |
| | | Computer Specialist (EOF) | | | 1 |
| | | **SUB-TOTAL:** | **23** | **34** | **26+** |

## Table LGS 2-1: Minimum Staffing Requirements (Cont'd)

| Functional Area | Major Tasks | Emergency Positions | | Minimum Shift Size | [(a)]60 Minute Augmentation | Full Augmentation |
|---|---|---|---|---|---|---|
| 11. Public Information | Media Interface | Corporate Spokesperson | (JIC) | | 1 | |
| | | Rad Protection Spokesperson | (JIC) | | | 1 |
| | | Technical Spokesperson | (JIC) | | | 1 |
| | Information Development | Public Information Director | (JIC) | | 1 | |
| | | News Writer | (JIC) | | | 1 |
| | Media Monitoring and Rumor Control | Communications Department | (JIC) | | | (e) |
| | Facility Operation and Control | JIC Director | (JIC) | | 1 | |
| | | JIC Coordinator | (JIC) | | | 1 |
| | | Administrative Coordinator | (JIC) | | | 1 |
| | | Events Recorder | (JIC) | | | 1 |
| | | Clerical Support | (JIC) | | | (e) |
| | | Access Control | (JIC) | | | 1 |
| | | **SUB-TOTAL:** | | **0** | **3[(i)]** | **7+** |

| | Minimum Shift Size | Total Minimum Staff | Total Full Augmentation |
|---|---|---|---|
| **TOTAL:** | **23** | **37** | **33+** |

(a) Response time is based on optimum travel conditions.
(b) Refer to Section 2.1.2 for a description of shift communicator staffing.
(c) Refer to Section 2.1.1 for description of on-shift dose assessment staffing.
(d) May be provided by personnel assigned other functions. Personnel can fulfill multiple functions.
(e) Personnel numbers depend on the type and extent of the emergency.
(f) Staffing of the County EOC Liaison position is not required based on agreements with offsite agencies; however, every effort will be made to dispatch an Exelon Nuclear representative upon request from County EOC Director.
(g) Fire Brigade per FSAR / TRM, as applicable.
(h) Function performed by on-shift security personnel.
(i) The following Emergency Public Information Organization personnel will be designated "minimum staffing" (on-call) positions, but are not subject to the 60-minute response time requirement: Corporate Spokesperson, Public Information Director and JIC Director.
(j) One member of each Field Survey Team is a Driver.
(k) Refer to Section 2.1.3 for description of on-shift STA/Incident Assessor staffing requirements.
(l) TSC Security Coordinator position will be staffed by LGS Security personnel. The EOF Security Coordinator position will be staffed by Corporate personnel.

Figure LGS 2-1: Exelon Overall ERO Command Structure

**Bolded Boxes** indicate minimum staffing positions.

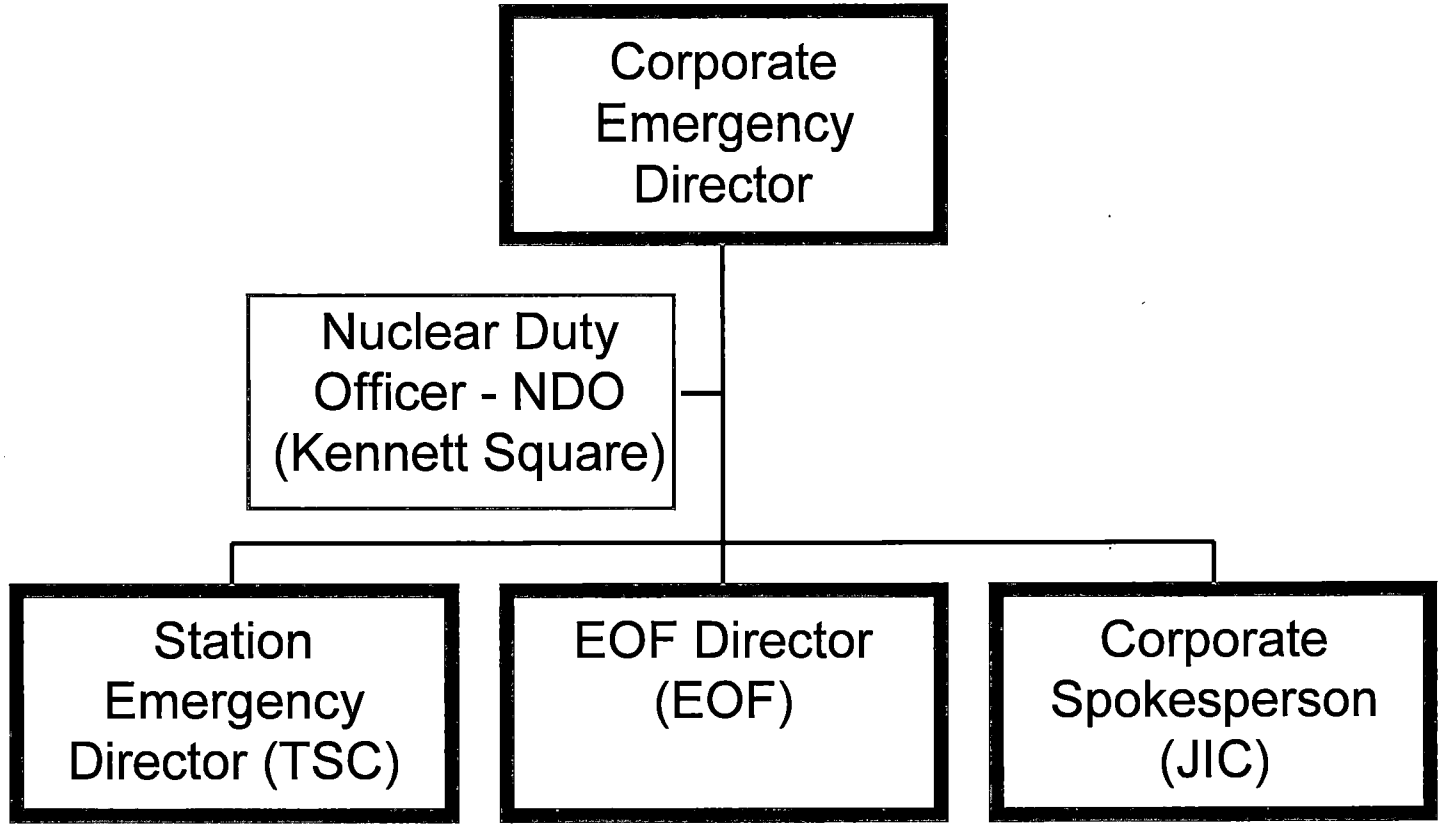
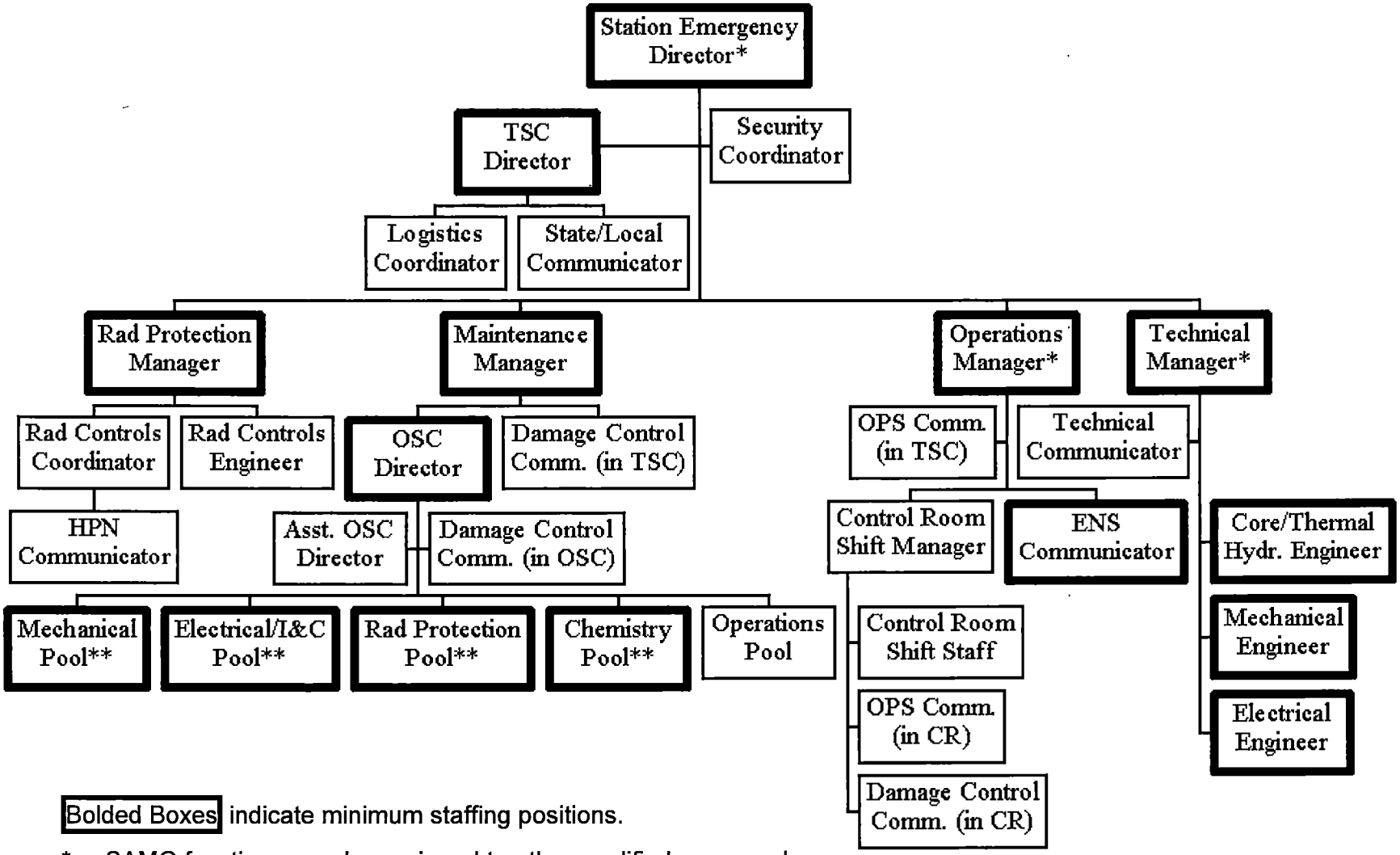


Figure LGS 2-2: Emergency Onsite Organization

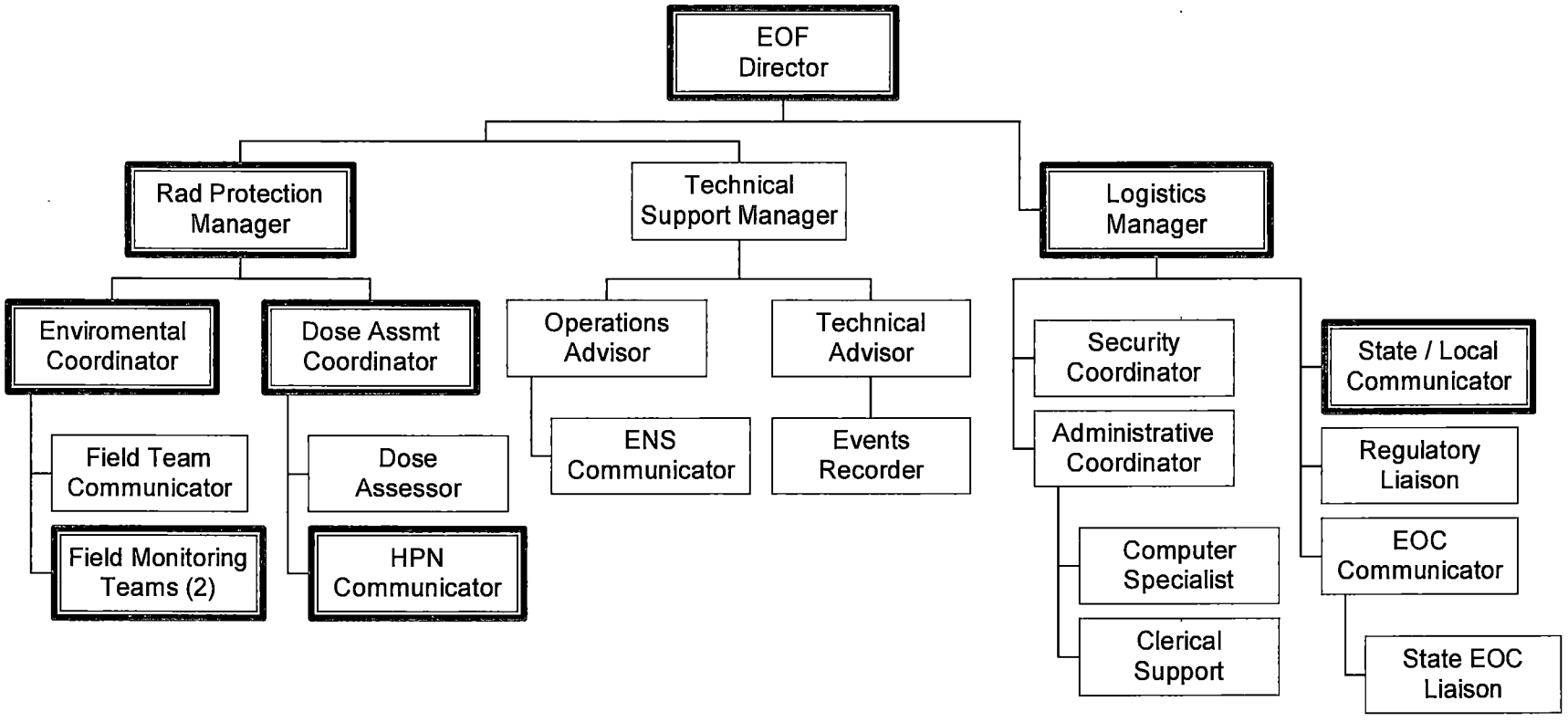



Bolded Boxes indicate minimum staffing positions.

* SAMG functions may be assigned to other qualified personnel. Minimum staffing requires 1 Decision Maker and 2 Evaluators.

** Refer to Table LGS 2-1 for required staffing levels

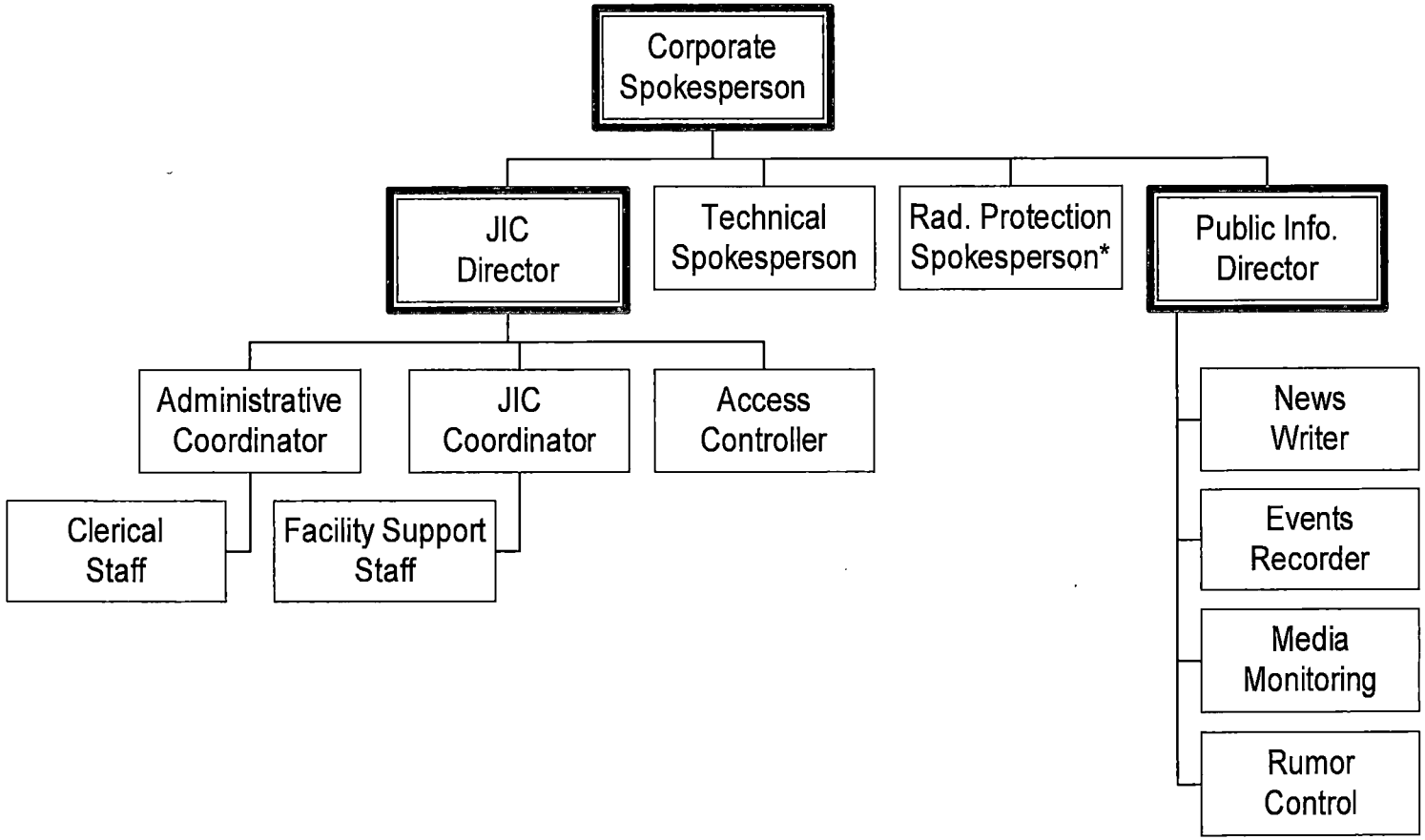
Figure LGS 2-3: Emergency Offsite Organization




**Bolded Boxes** indicate minimum staffing positions.

EOF Security Coordinator position staffed by Corporate personnel.

Figure LGS 2-4: Emergency Public Information Organization




**Bolded Boxes** indicate minimum staffing positions.

* Radiation Protection Spokesperson may be staffed by a qualified consultant.

## Section 3: Classification of Emergencies

**The Limerick Emergency Action Levels and supporting information are re-located in EP-AA-1008, Addendum 3.**

# Section 4: Emergency Measures

## 4.1 Notification of the Emergency Organization

Notifications for the Limerick Generating Station are made to the following additional State and local agencies in accordance with Section E.3 of the Exelon Nuclear Standardized Radiological Emergency Plan:

- Pennsylvania Emergency Management Agency (PEMA)
- Berks County Emergency Management Agency
- Chester County Emergency Services
- Montgomery County Office of Emergency Preparedness

Notification of PEMA and the risk counties will be directed by the Emergency Director within 15 minutes of initial event classification, reclassification, or a change in a protective action recommendation (PAR) due to plant conditions or meteorological changes per Section E.3 of the Exelon Nuclear Standardized Radiological Emergency Plan. In addition, once the EOF is activated, the Corporate Emergency Director will contact the Senior Pennsylvania State Official as designated by PEMA following the decision to recommend a protective action for the general public.

Upon notification of an emergency at Limerick Generating Station, the Pennsylvania Bureau of Radiation Protection (BRP) will contact the appropriate station to verify that an emergency exists and to obtain technical information, and then makes recommendations to PEMA regarding protective actions for the public. The BRP Support Plan For Fixed Nuclear Facility Incidents utilizes the Protective Action Guidelines in the U.S. Environmental Protection Agency (EPA) 400-R-92-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents".

Exelon Nuclear will provide follow-up information to the BRP or other off-site authorities. The follow-up information will keep these authorities apprised of existing or potential radiological releases, meteorological conditions, projected doses and contamination levels, licensee actions, recommend protective actions and other information pertinent to the authorities' responsibilities. The information may be provided over open communication paths or in person to BRP personnel.

## 4.2 Assessment Actions

The effluent radiation monitoring system provides indications of gross releases of gaseous and liquid radioactivity. By applying calibration factors, meteorological data, or river flow, the gross indications are used to calculate approximate release rates in μCi/sec and dose rates at specific distances along the release pathways. Particulate and iodine analysis depends on collecting installed filter papers and charcoal cartridges for analysis in the counting room. Similar calculation procedures are applied to approximate release rates and dose rates due to iodine.

Detectors are strategically located throughout the plant. These detectors indicate and alarm locally and in the Control Room. They serve the purpose of indicating current dose rates in those areas and are used for local evacuation action levels and re-entry operations.

Certain plant operating systems contain radiation monitors. These systems are described in the LGS UFSAR.

Portable monitoring instruments and sampling equipment consist of such items that are utilized and maintained on-site by the Chemistry and Health Physics sections for normal day-to-day plant operations and are thus available for emergency operations.

4.2.1 Core Damage Assessment Methodology

Core damage information is used to refine dose assessments and confirm or extend initial protective action recommendations. Limerick Generating Station utilizes NEDC-33045P, "Methods of Estimating Core Damage in BWRs" (Revision 0, July 2001), as the basis for the methodology for post-accident core damage assessment. This methodology utilizes real-time plant indications. In addition, Limerick Generating Station may use samples of plant fluids and atmospheres as inputs to the CDAM (Core Damage Assessment Methodology) program for core damage estimation

## 4.3 Protective Actions for the Offsite Public

PEMA interface for incidents at Limerick Generating Station will be with Berks, Chester and Montgomery Counties. County and local governments have primary responsibilities for implementing protective measures for the public following a nuclear incident.

The BRP serves as lead Pennsylvania State agency for technical assistance to other state agencies, county, and local governments regarding radiological health and accident assessment. In the absence of communications with the state, recommendations for protective actions shall be made directly to county emergency operations centers from the station.

4.3.1 Alert and Notification System (ANS) Sirens

Annex E of the Commonwealth of Pennsylvania Emergency Operations Plan addresses notification to the general public and others regarding protective actions. An Alert Notification System, which is intended for use by the counties, in conjunction with the Emergency Alert System (EAS) to provide notification to the general public, has been installed.

Alerting of the EPZ population is provided by a siren system that was installed and is maintained by Exelon Nuclear. The system consists of high-powered rotating electro-mechanical sirens mounted on Class 1 utility poles throughout the Plume Exposure Pathway (10-Mile EPZ). Personnel at the risk county communication centers operate the sirens. The Pennsylvania Emergency Management Agency (PEMA) coordinates the activation of the siren system for Limerick Generating Station.

The siren system meets or exceeds the acoustic coverage requirements outlined in NUREG-0654/FEMA-REP-1 and FEMA-REP-10. A computer-based sound propagation model determined the location of each siren site.

The sirens are controlled by digitally encoded radio signals transmitted by a transceiver at the station. Each risk county has control of the sirens that are physically located in that county. The sirens can be activated on an individual, municipal, county, or EPZ-wide basis.

A controller located at the station serves as a backup to the county controllers. After the system is activated, each siren reports the result of its activation back to the respective county controller and the controller at the station. The siren system is tested regularly to ensure its operability.

Annex E delineates risk counties as responsible to:

- Develop a system for rapid notification (in priority order) of county and local government heads, key staff, emergency forces, volunteer organizations, schools, hospitals, nursing homes, business, and industry;
- Ensure that the alert and notification system is operable on an around-the-clock basis;
- Prepare and disseminate public information material on protective actions to provide clear instructions to the population at risk;
- Prepare and maintain material current for dissemination through the EAS; and
- Include provisions in the alert plan for notification of transients.

PEMA will notify other states within the Ingestion Pathway EPZ should such action be necessary.

Annex E calls for each risk county to promptly activate their alert notification system, when appropriate. EAS radio stations will be activated and instructed as to which prepared message to use. Detailed messages with specific instructions to the public will be provided to the EAS stations by state and county public information officers on a timely basis. Various state agencies will assist the counties in assuring notifications of transients.

Backup means of notification is achieved through Route Alerting, which is contained within the State and respective counties' Radiological Emergency Response Plans and procedures. The means consists of utilizing vehicles with public address (PA) systems in the event the primary method of alerting and notification is unavailable. The backup method has the capability to alert and notify the public within the plume exposure pathway EPZ within a reasonable time, but does not need to meet the 15-minute design objective for the primary prompt public alert and notification system.

4.3.2 Evacuation Time Estimates

The ETE study used population data from the 2010 census which includes parts of three counties in Pennsylvania (Berks, Chester, and Montgomery). The evacuation times are based on a detailed consideration of the EPZ roadway network and population distribution. The ETE Study, contained in EP-AA-1008 Addendum 2, Evacuation Time Estimates for the Limerick Station Plume Exposure Pathway Emergency Planning Zone, presents evacuation times for daytime and nighttime scenarios under various weather conditions for the evacuation of various areas around the Limerick Generating Station, once a decision has been made to evacuate.

4.3.3 Potassium Iodide (KI)

The Department of Health, Commonwealth of Pennsylvania, is responsible for providing advice to PEMA on the planning for the use, stockpiling and distribution of Potassium Iodide (KI) or other thyroid blocking agents and such other radiological health materials as may be required for the protection of the general public. Their decision shall also be based on U.S. FDA guidance.

Based on the criteria established under the Appendix E of the Commonwealth of Pennsylvania Operations Plan, LGS will recommend to government officials that the general public be notified to take KI at a General Emergency classification in those sectors were an evacuation or shelter has been recommended. This notification will be approved by the Emergency Director in Command and Control of PAR decision-making and off-site notifications, and performed as part of the State / local notifications described under Sections II.B.4 and II.E.3 of the Exelon Nuclear Standardized Radiological Emergency Plan.

4.3.4 Public Information

a. Publications

Public information on protective actions is prepared and disseminated annually to provide clear instructions to the population-at-risk. Exelon Nuclear assists PEMA and risk counties in the preparation and distribution of their respective public information.

Pamphlets outlining public education response actions are readily available for transients in the 10-Mile EPZ. In addition, emergency information is provided to the operators of other recreational areas in the 10-Mile EPZ, as defined by the Commonwealth of Pennsylvania and risk counties.

These public information publications (including telephone book emergency information, etc.) instruct the public to go indoors and turn on their radios when they hear the ANS sirens operating. These publications identify the local radio stations to which the public should tune in for information related to the emergency. Additional materials (e.g., such as rumor control numbers, evacuation routes, information on inadvertent siren soundings, etc.) may also be included in these publications based on agreements with responsible State and risk county agencies.

b. News Media Education

Information kits are available to news media personnel. These kits include information on a variety of nuclear power plant related subjects.

4.3.5 Protective Action Recommendations (PARs) for the General Public

To aid the Emergency Response Organization during a developing emergency situation, EP-AA-111, "Emergency Classification and Protective Action Recommendations" has been developed based on Section J.10.m of the Emergency Plan.

## 4.4 Protective Actions for Onsite Personnel

4.4.1 Plant Evacuation

Exelon Nuclear personnel and contractors filling emergency response organization positions are considered essential personnel. As such, they will report to their emergency response locations. They will not evacuate unless specifically directed by the Emergency Director. All other personnel are considered non-essential.

In-plant evacuation is initiated primarily by area radiation monitor alarms and continuous air monitor alarms, but is also applicable for fire alarms, explosions, toxic material conditions, as well as radiation, contamination, and airborne radioactivity surveys which indicate conditions above applicable limits. Notification for personnel to proceed with in-plant evacuation will be via a local alarm or an announcement on the plant PA system. The affected area and evacuation assembly areas (if appropriate) will be announced. The immediate response by individuals in the vicinity of such an alarm or announcement is evacuation to an unaffected area or designed assembly area. In the absence of readily available radiological survey information or other logical assessment of conditions, evacuation will be, at least, to a point where other area radiation monitors, continuous air monitors, or observation of local conditions show that the area is not affected.

Assigned plant personnel report to the scene to evaluate conditions, to provide information to the Control Room, and to perform other emergency functions such as personnel accountability, decontamination, medical assistance, and control of the hazard.

Notification of a Site Evacuation is accomplished by activating the Evacuation Alarm System followed by an announcement over the plant PA system. The evacuation assembly area(s) are announced. Evacuation assembly areas are illustrated in Figure LGS 4-1. Non-essential personnel will exit via the security exit points and will proceed to the parking lot for transportation. Evacuees are expected to use their personal vehicles in evacuating to the designated evacuation assembly area(s). Designated evacuation assembly areas are located outside the protected area. Plant access roads are maintained clear during the winter months, travel on these roads is expected to be possible at all times.

Plant visitors who have not completed the required training program are escorted at all times. This ensures proper response under emergency conditions. Visitors at the station shall follow the lead of their escorts to the assembly areas.

4.4.2 Personnel Accountability

The Security personnel shall follow security procedures for personnel accountability. For evacuations, information from evacuees is an important means of accounting for plant personnel. For Site Evacuations, non-essential personnel are accounted for at the security exit point. Emergency response personnel are accounted for by badging into their assembly areas.

4.4.3 Monitoring of Evacuees

Evacuees from the Limerick Site are checked for contamination. Necessary personnel and vehicle decontamination efforts are initiated at the evacuation assembly area using in-plant equipment or emergency kit supplies. Priority for decontamination shall be given to personnel found to have the highest levels of contamination. Any personnel suspected, or

known, to have ingested or inhaled radioactive material shall be given a whole body count, as soon as conditions permit, to assess their internal exposure.

The registering and monitoring of the general public evacuating from the Plume Exposure Pathway EPZ, as described in Section II.J.12 of the Exelon Nuclear Standardized Radiological Emergency Plan, will occur at designated facilities per the respective State and County Radiological Emergency Response Plans.

## 4.5 Severe Accident Management

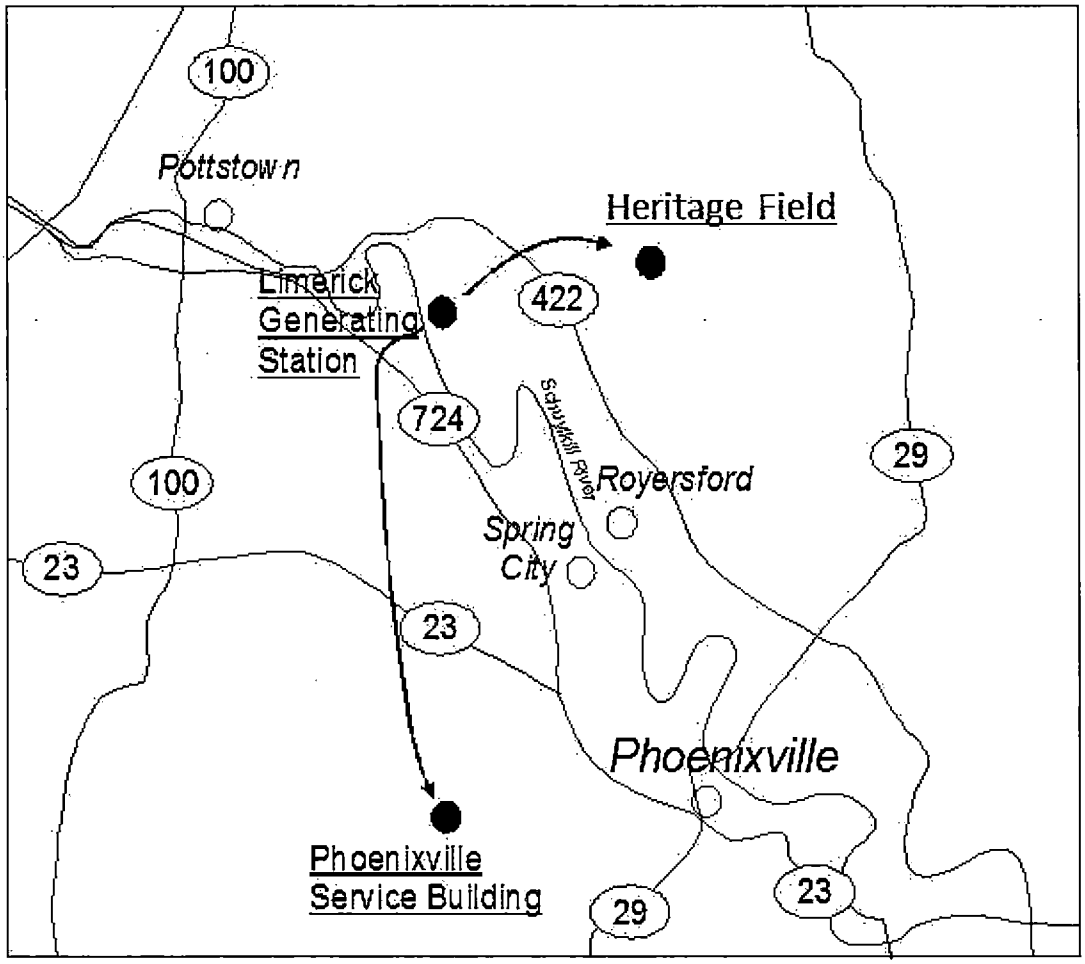
Accident management consists of those actions taken during the course of an accident, by the Emergency response Organization (ERO), specifically: plant operations, technical support, and plant management staff in order to:

- Prevent the accident from progressing to core damage;
- Terminate core damage once it begins;
- Maintain the capability of the containment as long as possible; and
- Minimize on-site and off-site releases and their effects.

The later three actions constitute a subset of accident management, referred to as Severe Accident Management (SAM) or severe accident mitigation. The Severe Accident Management Plan Procedures (SAMPs) provide sound technical strategies for maximizing the effectiveness of equipment and personnel in preventing, mitigating and terminating severe accidents.

Implementation of SAMP procedures is a collaborative effort between the Shift Manager and the Station Emergency Director in the TSC (once activated). The Station Emergency Director maintains ultimate responsibility for direction of mitigating strategies. Designated TSC Technical and Operations Support personnel are also trained to assist with decision-making by evaluating plant conditions using the SAM Technical Support Guidelines (TSG).

**Figure LGS 4-1: Off – Site Assembly Location**




**TYPE OF EVACUATION**
**LOCAL EVACUATION**
**SITE EVACUATION**

**EVACUATION ASSEMBLY AREAS**
Announced on PA System
**Limerick Generating Station**
Heritage Field, Phoenixville Service Building, Other Designated Area

# Section 5: Emergency Facilities and Equipment

## 5.1 Emergency Response Facilities

### 5.1.1 Station Control Room

The Limerick Generating Station Control Room shall be the initial onsite center of emergency control. The Control Room is located on the 269' elevation of the Control Structure. The ventilation system, shielding, and structural integrity are designed and built to permit continuous occupancy during the postulated design basis accident.

### 5.1.2 Technical Support Center (TSC)

Limerick Generating Station has established a Technical Support Center (TSC) adjacent to the Protected Area Main Access Facility. The TSC fully meets the requirements of Section H.1.b of the Exelon Nuclear Standardized Radiological Emergency Plan and conforms to Section 8.2.1 of Supp. 1, NUREG-0737.

### 5.1.3 Operational Support Center (OSC)

Limerick Generating Station has designated an Operational Support Center (OSC). The OSC is located on the 217' elevation in the Health Physics Field Office, adjacent to the Turbine Enclosure. The OSC conforms to the requirements of Section H.1.c of the Exelon Nuclear Standardized Radiological Emergency Plan, and is the location to which operations support personnel will report during an emergency and from which they will be dispatched for assignments in support of emergency operations.

In the event the OSC is not habitable, personnel report to backup facilities that can be designated based upon specific event conditions.

### 5.1.4 Emergency Operations Facility (EOF)

The dedicated Emergency Operations Facility (EOF) is located on Exelon property at 175 North Caln Road, Coatesville, PA. The EOF supports Three Mile Island, Peach Bottom and Limerick, and is located approximately 20 miles from Limerick Generating Station. Separate offices are provided for Exelon Nuclear, NRC, Maryland and Pennsylvania representatives and other emergency personnel.

Plant Monitoring System data is available through the Emergency Preparedness Data System (EPDS) at the EOF.

The EOF equipment includes:

a. Supplies and equipment for EOF personnel, and

b. Sanitary and food preparation facilities.

5.1.5 Joint Information Center (JIC)

The Joint Information Center (JIC) is the facility in which media personnel gather to receive information related to the emergency event. The JIC is co-located with the EOF at 175 North Caln Road, Coatesville, Pennsylvania.

5.1.6 Alternative Facility

The Alternative Facility maintains the capability for staging the TSC/OSC emergency response organization personnel in the event of a hostile action. This alternative facility has the capability for communications with the emergency operations facility, control room, and plant security and the capability for engineering assessment activities, including damage control team planning and preparation. Consistent with NRC EPFAQ No. 2013-005, the EOF will satisfy the offsite notification responsibilities for the Alternative Facility. The Alternative Facility is located within Exelon Powerlabs Facility at 175 North Caln Road, Coatesville, Pennsylvania. **(CM-1, ref. AR 1362747.44)**

## 5.2 Assessment Resources

5.2.1 Geophysical Monitors

a. Onsite Meteorological Monitoring Program

The Onsite Meteorological Monitoring Program is covered in the contractor specification and vendor procedures of the meteorological monitoring contractor. These data are used to generate wind roses and to provide estimates of airborne concentrations of gaseous effluents. Meteorological data is provided to the station Control Room from Meteorological Towers. Data include wind speed, wind direction, and temperature. Meteorological monitoring is described in the LGS UFSAR.

b. Seismic Monitoring

Seismic instrumentation includes time-history strong motion pressure triaxial seismic monitor accelerographs located in secondary containment and a free-field sensor outside of the PPC. Peak recording accelerographs, and seismic switches are discussed in the LGS UFSAR.

5.2.2 Radiation Monitoring Equipment

For radiological assessments, instrumentation includes area radiation monitors (ARMs), ventilation effluent radiation monitors, liquid effluent radiation monitors, stack effluent monitors, primary containment radiation monitors and miscellaneous process radiation monitors (Refer to LGS UFSAR Sections 11, 12 and 15 for additional information). Data from these sources would be augmented by plant and field surveys for radiation

and airborne levels.

a. Radiological Effluent Gaseous Monitoring

LGS has four monitored points of release of radioactive material to the atmosphere. These are South Stack 1 and 2, Hot Maintenance Shop, and the North Stack. Sample systems are installed for these four pathways. The sample system consists of isokinetic sample lines containing particulate/iodine filters and separate sample lines to shielded gas chambers. Detector output data associated with the gas chambers are available in the Control Room.

The stacks radiation monitoring system continuously monitors the noble gas being discharged from Unit 1 and Unit 2. Each unit has two independent monitoring skid stations for its North and South stacks and a common North stack Wide Range Accident Monitor (WRAM). The monitoring stations use scintillation detectors which readout in the Main Control Room in uCi/sec and uCi/cc.

Gas chamber detectors readouts are in uCi/cc. The WRAM readout is in units of uCi/sec. The uCi/sec Iodine and particulate concentrations are determined from the filter and charcoal cartridge samples.

b. Radiological Effluent Liquid Monitoring

Liquid releases are made on a batch basis from waste sample tanks. The contents of these tanks are circulated prior to sampling and analysis. Permits are prepared to authorize releases to the cooling tower blowdown line. Radiation monitors are located on certain process water systems, which indicate abnormal radioactivity levels. Procedures describe the technique for determining consequences of an abnormal release.

c. Laboratory Facilities

Chemical laboratories are located adjacent to the radwaste enclosure at LGS. A radiochemistry section is provided. The laboratories are adjacent to the counting room for convenience in transporting prepared samples for counting.

5.2.3 Data Acquisition Methods

a. Plant Monitoring System (PMS)

The LGS Main Control Room (MCR) and Technical Support Center (TSC) use an emergency facility data system to aid in assessing plant response and status during emergencies. PMS is a computer-based real-time data acquisition and display system, which gathers and records, selected plant parameters for display.

The system displays are designed to aid the Control Room operator in the performance of emergency response procedures. These displays provide information pertinent to reactor core cooling, reactor coolant system integrity, reactivity control, containment integrity and power system status. These displays are also available to personnel in the TSC.

PMS also provides concise displays of parameters selected for post-accident monitoring. These displays are designed to aid TSC personnel in assessing plant conditions and in assisting Main Control Room personnel in recovering from abnormal or accident conditions and in mitigating their consequences. The displays include parameter versus time and parameter versus parameter trending.

PMS utilizes high-speed data recording, long-term data storage and a transient analysis program package to aid the Technical Support Center staff in reconstructing the accident sequence as well as tracking the plant steady state and dynamic behavior prior to and through the course of an event.

PMS displays are available in the Main Control Room and TSC, and EOF through EPDS interactive color graphic display consoles. Hardcopy output devices are available at each location. Provisions have been made to share data with State Liaisons located in the EOF.

b. Emergency Preparedness Data System (EPDS)

The Emergency Preparedness Data System (EPDS) is an emergency facility data system to aid in assessing plant response and status during emergencies. EPDS is a computer based real-time data acquisition and display system, which acquires, stores and re-packages data from PMS and RMMS plant parameters for display in the Technical Support Center and Emergency Operations Facility.

5.2.4 Onsite Fire Detection Instrumentation

LGS is afforded fire protection from various systems, selected for their applicability in coping with the several possible types of fires. These systems include an extensive fire water system, air foam system, dry chemical system, heat and smoke detectors as well as portable fire extinguishers located throughout the plant. These systems have alarm outputs located in the Control Room. Fire protection systems are described in the LGS UFSAR.

5.2.5 Facilities and Equipment for Offsite Monitoring

Off-site Radiological Environmental Monitoring Program is described in the Offsite Dose Calculations Manual (ODCM). Installed radiological

monitoring equipment and facilities, including process, area, and effluent, are described in the LGS UFSAR. Sets of instruments are available for emergency use by field survey teams. The field survey teams perform field surveys to locate and track the plume and to determine depositing of activity on the ground.

Emergency kits contain radiation survey equipment, which enables the Field Survey Teams to obtain dose rates, surface contamination, and airborne contamination including radio iodine measurements to supplement calculations based on effluent data. These emergency kits are located at facilities outside the plant for ready accessibility. The equipment in these kits is dedicated for emergency use only.

Concurrent field sampling and analysis for radio iodine provides the capability to detect $10^{-7}$ μCi/cc I-131, per NUREG-0654, FEMA-REP-1.

The services of Exelon Industrial Services (EIS) are contracted to provide for the collection of environmental media samples (e.g., water, grass vegetation, etc.) under emergency conditions and their transport to an offsite laboratory for analysis.

5.2.6 Site Hydrological Characteristics

A list of downstream users is maintained to ensure that they are notified. Should contamination of site drinking water sources be suspected, water samples shall be analyzed.

## 5.3 Protective Facilities and Equipment

5.3.1 Emergency Supplies

Refer to Table LGS 5-1 for a listing of Emergency Supplies and Equipment.

5.3.2 Maintenance Equipment

Maintenance equipment consists of normal and special purpose tools and devices utilized in the course of maintenance functions throughout the station. Maintenance and Radiation Protection personnel responding to the OSC are cognizant of the locations of equipment, which may normally be required in an emergency condition. The Maintenance supervision has access to keys for tool storage, shops, and other locations where maintenance equipment may be stored.

## 5.4 First Aid and Medical Facilities

First Aid kits are located in designated areas and are checked and replenished as necessary. Stretchers are also provided at designated locations.

5.4.1 Decontamination and Medical Response

An on-site personnel decontamination facility for emergency conditions include showers and sinks that drain to the liquid radioactive waste processing system, at the primary health physics decontamination area in

the plant. Special decontamination materials and personnel decontamination procedures are available in the area for use under the direction of health physics supervision. Provisions are made for medical decontamination when personnel are transported to hospitals.

5.4.2 Emergency Medical Assistance

Medical treatment given to injured persons at the station is of a "first aid" nature. When more professional care is needed, injured persons are transported to a local hospital. Letters of Agreement are established with primary and backup hospitals. Hospital facilities are listed in Appendix 2.

Both hospitals agree in the event of a Radiological Event, including a Hostile Action Based Event, to ensure the capability for the evaluation and treatment for victims of radiological accidents, including contaminated individuals from Limerick Generating Station.

5.4.3 Medical Transportation

Transportation of injured personnel, who may or may not be radioactively contaminated, to medical treatment facilities is provided by local ambulance services. (Refer to Section 2.4 of the Limerick Annex)

A Letter of Agreement is established for Local Ambulance Service to provide Emergency Medical Services in response to a Radiological Event, including a Hostile Action Based Event. This includes transportation of patients from the Limerick Generating Station, including those who may have been exposed to radiation or may have injuries complicated by radioactive contamination to either Pottstown Hospital – Tower Health or Einstein Medical Center Montgomery (EMCM) upon dispatch by the Emergency Dispatch Service.

## 5.5 Communications

Refer to Section F.1 of the Exelon Nuclear Standardized Radiological Emergency Plan for a description of dedicated communications lines to support both offsite and inter-facility communications.

5.5.1 Intra-Plant Public Address (PA) System

The LGS PA system is a six-channel system powered from a Class IE bus permitting simultaneous use of one-page line and five party lines. Loudspeakers powered by individual amplifiers are located throughout the plant and in remote structures.

The LGS Public Address system has also been equipped with an advanced page line control system for the enhancement of page announcements throughout the site. This control system provides improved sound quality for emergency announcements made to and from the main control room. It is also capable of screening out page announcements that do not originate from designated page

announcement control points such as the Control Room, TSC, OSC, security locations, etc.

Local area PA announcements can still be conducted by the use of the emergency page button, and the entire system can be reverted back to allow announcements from all locations as required during emergency conditions. The primary purpose of the screening function is to reduce the number of locations where site wide page announcements can originate.

The LGS Public Address stations within the plant are equipped with two page buttons. One is for normal plant pages, and the other is for emergency pages to the Control Room. When used, the emergency page button unlocks the PA speakers in the Control Room for the incoming message. The Control Room speakers are silent (muted) for all normal plant pages. This arrangement allows for a more orderly Control Room and emphasizes the emergency pages made to the Control Room. A PA station is located in the Main Control Room, Operations Support Center, and TSC. Capability exists to warn individuals in the vicinity of the river through the river warning system utilizing the plant PA system.

The Main Control Room has priority page abilities that allow the MCR announcements to override normal plant page announcements.

5.5.2 Private Branch Exchange (PBX) Telephone System

The LGS on-site commercial telephone system provides telephone communications capabilities throughout the plant, remote structures, and with off-site parties. Extensions are located in the Main Control Room, the TSC, and the OSC.

The power supply for this system consists of two separate on-site sources. Both the primary and backup sources are supplied from motor control centers. The backup source is powered from a Unit 1 Division 3 safeguard bus. The PBX Telephone System is automatically shed on a LOCA signal, but can be manually reset at the MCC. If both sources of power are unavailable, an uninterruptible power supply (UPS) with a minimum of two hours of emergency battery power will supply the telephone system. The 2-hour UPS is designed to allow sufficient time to restore the diesel-generator supplied power source, if necessary. This power configuration is designed to maintain this communication system during a total station blackout.

The PECO Energy Main Office and Exelon Nuclear headquarters are also served by separate commercial telephone systems (PBX's). All PECO Energy and Exelon Nuclear's PBX's are networked together to create a fully integrated voice network, providing call management and network redundancy.

5.5.3 Dedicated Emergency PBX Telephone System

The LGS dedicated emergency (PBX) telephone system provides rapid and reliable communications in the event of an emergency. It is independent of the main PBX switch. The dedicated emergency PBX allows rapid dialing and conferencing of emergency response personnel. Extensions are located in the Control Room, the TSC, the OSC, the EOF, and the JIC. The communications system provides tie line access capability with the Peach Bottom dedicated emergency PBX switch.

The power supply for this system consists of two separate on-site sources, which are different than the sources for the main PBX switch. The primary source is backed-up by an emergency diesel generator. The secondary source backup is a 15-minute Uninterruptible Power Supply (UPS). The power configuration is designed to maintain this communication system during a total station blackout.

5.5.4 Intra-Plant Maintenance Telephone System

The intra-plant maintenance telephone system is a part of the PBX system and consists of telephone jacks into which telephone sets may be plugged. The telephone jacks are in various plant locations (predominantly in areas of high maintenance activity) and have the effect of expanding the PBX capability.

5.5.5 EOF/JIC Private Branch Exchange (PBX)

A dedicated PBX is installed at the Coatesville EOF/JIC. This switch will control telephone communications in and between the facility, other Exelon locations, and non-Exelon locations. In the event of a PBX failure, outside dial capability is available through trunk lines from the Coatesville Service Building. The EOF/JIC PBX switch is powered by a source that is backed by a 4-hour uninterruptible power supply and an emergency diesel generator. The UPS is designed to allow sufficient time to bridge any power interruption caused by switching to diesel-supplied power.

5.5.6 Data and Facsimile Transmission Lines

Various data lines are provided to interface computer systems and facsimile machines located at Limerick, Peach Bottom, and EOF/JIC.

5.5.7 Trunk Lines

Incoming and outgoing central office trunk lines are provided from the local telephone company. These lines are used to access the Public Switched Telephone Network.

5.5.8 Tie Lines

Communications are provided between LGS, PBAPS, Corporate Main Office, Exelon Nuclear, and the EOF via the Exelon data network. A

redundant backup communications path is provided by the commercial network. This communications path allows emergency personnel to communicate between the sites and Exelon Nuclear locations supporting the emergency..

Company tie lines are utilized to route NRC communications (e.g., ENS, HPN and counterpart circuits) from between Exelon Nuclear emergency response facilities for Limerick Generating Station.

5.5.9 Emergency PBX T-1 Circuit Lines

Two dedicated T-1 circuits between the Limerick Generating Station and Peach Bottom Atomic Power Station emergency PBX telephone systems are provided for calls within and outside the Exelon voice network. This linkage also allows the continuation of 2-way commercial telephone service in the event that one of the two main commercial telephone system PBX's becomes inoperable or unavailable.

5.5.10 Fiber Optic / Microwave Tie Lines

Dedicated Fiber Optic lines exist between LGS, the Nuclear Group Headquarters (Kennett Square) and Berwyn. Also, dedicated microwave tie lines exist between PBAPS, the EOF/JIC, and Berwyn, where they are linked to the Fiber Optic lines. The microwave system is backed up by at least eight hours of battery. In addition, communication lines exist between LGS, PBAPS, Main Office, the Nuclear Group Headquarters, and the EOF/JIC.

5.5.11 Radio Equipment

A fixed base radio system with multiple channels provides primary/backup outside communication capability as shown in Figure LGS 5-1, "Emergency Radio Links".

A separate group of fixed radio channels provides primary/backup communications between in-plant user groups. These channels function through a distributed antenna system located on-site to ensure proper coverage of the area.

The fixed base radio repeaters, antenna system, and radio consoles are powered from a variety of emergency AC buses (diesel backup) and dedicated alternate battery supplies.

The LGS radio system was designed to maintain communications between facilities as described in the Fire Protection Evaluation Report, UFSAR.

5.5.12 Evacuation Alarm System

The Evacuation Alarm System consists of a siren tone generator, PA system speakers, a roof siren, and evacuation alarm beacons. The siren tone generator injects an audible evacuation alarm in the PA system,

which is broadcast over the PA system speakers. The evacuation alarm beacons provide an audible and visual alarm through two mechanical sirens and flashing red beacon on each beacon unit. The evacuation alarm beacons are installed in all high noise areas of the plant and in areas not covered by the PA system. A selector switch in the Control Room manually initiates the evacuation alarm.

## 5.6 Law Enforcement Agencies

A Letter of Agreement is established for Local Law Enforcement to support Limerick Generating Station to respond to a Radiological Event, including a Hostile Action Based Event, in conjunction with the National Incident Management System, upon notification by the station in accordance with the established communications protocol,

## 5.7 Fire Fighting Organizations

A Letter of Agreement is established for the local fire company to respond to a Radiological Event, including a Hostile Action Based Event, in conjunction with the Mutual Aid System at the Limerick Generating Station as requested via the Emergency Dispatch System.

## Table LGS 5-1: Emergency Supplies and Equipment

The following is a listing of typical equipment available for use during emergencies. While specific equipment designations and items may be subject to change, equivalent emergency activity capabilities will be maintained. Procedures define the specific locations, types, and amounts of equipment for emergency use and define requirements for applicable surveillance, testing, maintenance, and inventory activities to ensure that the equipment is in a state of readiness.

| I. PROTECTIVE | LOCATIONS STORED OR AVAILABLE |
|---|---|
| Anti-C Clothing | 2, 5 |
| Dosimeters | 2, 3, 6 |
| Dosimeter Charging Unit | 2, 3, 6 |
| Dosimeter of Legal Record (DLR) | 2 |
| Respirator/Filters | 2 |
| Self-Contained Breathing Apparatus | 1, 2, 3 |
| Radiation Signs, Rope & Tape | 2, 3, 7, 8 |
| Potassium Iodide | 3 |

NOTE: Equipment from the above list utilized by field survey personnel is stored in Field Survey Kits in the Site Management Building.

| II. RADIATION MONITORING | LOCATIONS STORED OR AVAILABLE |
|---|---|
| Air Sampler | 2, 3, 5 |
| G. M. Counter | 2, 3, 5, 6, 7, 8 |
| Ion Chamber | 2, 3, 5 |
| Frisker | 2, 3, 5, 6, 7, 8, 10 |
| Radiation Survey Forms | 2, 3, 5, 7, 8, 9, 10 |
| Smears | 2, 3, 5, 7, 8, 9, 10 |
| CAM | 3 |
| Area Monitors | 2, 3, 10 |

NOTE: Equipment from the above list utilized by field survey personnel is stored in Field Survey Kits in the Site Management Building.

**Table LGS 5-1: Emergency Supplies and Equipment (Cont'd)**

| III. | SEARCH AND RESCUE | LOCATIONS STORED OR AVAILABLE |
|---|---|---|
| | Flashlight | 10 |
| | Blanket | 10 |
| | Stretcher | 10 |
| | Rope | 10 |
| | First Aid Kits | 10 |

| IV. | DECISION AIDS | LOCATIONS STORED OR AVAILABLE |
|---|---|---|
| | Nuclear Emergency Plan | 1, 3, 4, 11 |
| | LGS EP Procedures | 1, 2, 3, 4, 11 |
| | EP-Corporate Procedures | 3, 4, 11 |
| | Maps & Overlays | 3, 4 |
| | Prints | 3, 4 |
| | Drawings | 3, 4 |
| | P&ID | 1, 2, 3, 4 |

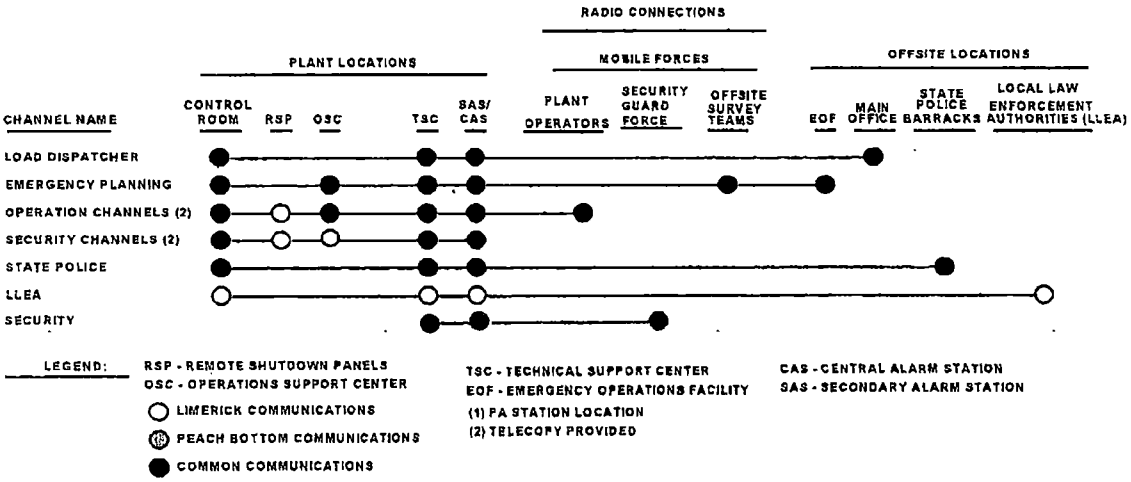
| V. | COMMUNICATIONS | LOCATIONS STORED OR AVAILABLE |
|---|---|---|
| | Base Stations | 1, 2, 3, 4, |
| | Mobile Radios | 1, 2, 3 |

| VI. | DECONTAMINATION | LOCATIONS STORED OR AVAILABLE |
|---|---|---|
| | Soap/Detergent | 3, 6, 7, 8, 9 |
| | Brushes or Sponges | 3, 6, 7, 8, 9 |

LOCATION KEY

1. Control Room Area
2. Operations Support Center/ Health Physics Office
3. Technical Support Center
4. Emergency Operations Facility
5. Field Monitoring Kits
6. Support Hospitals
7. Phoenixville Service Building Station Kit
8. Heritage Field Kit
9. Decontamination Room
10. Strategically located throughout Station
11. Joint Information Center

## Figure LGS 5-1: Emergency Radio Links



## APPENDIX 1: NUREG-0654 CROSS-REFERENCE

| Annex Section | NUREG-0654 |
|---|---|
| 1.0 | Part I, Section A |
| 1.1 | Part I, Section B |
| 1.2 | Part I, Section D |
| 1.3 | Part I, Section F |
| Table LGS 1-1 | Part I, Section F |
| Figure LGS 1-1 | Part II, Section J.10 |
| Figure LGS 1-2 | Part II, Section J.11 |
| 2.0 | Part II, Section B.1 |
| 2.1 | Part II, Section B.5 |
| 2.2 | Part II, Section A.3 |
| 2.3 | Part II, Section C.3 |
| 2.4 | Part II, Section C.3 |
| 3.0 | Part II, Section D |
| 4.1 | Part II, Section E.1 & J.7 |
| 4.2 | Part II, Section I.2 & 3 |
| 4.3 | Part II, Section J.10.f |
| 4.3.1 | Part II, Section E.6 |
| 4.3.2 | Part II, Section J.8 |
| 4.3.3 | Part II, Section J.6.c |
| 4.3.4a | Part II, Section G.1 & 2 |
| 4.3.4b | Part II, Section G.5 |
| 4.3.5 | Part II, Section J.7 |
| 4.4.1 | Part II, Sections I.2 & 3.a |
| 4.4.2 | Part II, Section J.5 |
| 4.4.3 | Part II, Section J.3 |
| EP-AA-1008, Addendum 2 | Part II, Section J.10 & Appendix 4 |
| EP-AA-111 | Part II, Section J.7 |
| Figure LGS 4-1 | Part II, Section J.4 |
| 5.1 | Part II, Section H.1-2, & G.3.a |
| 5.2.1 | Part II, Section H.5.a & 8 |
| 5.2.2 | Part II, Section H.5.b, H.6.c &I.2 |
| 5.2.3 | Part II, Section H.5.c |
| 5.2.4 | Part II, Section H.5.d |
| 5.2.5 | Part II, Section H.6.b & 7, I.9-10 |
| 5.2.6 | Part II, Section H.5.a & 6.a |
| 5.3 | Part II, Section H.9-10 |
| 5.4 | Part II, Section L.1 & 2 |
| 5.5 | Part II, Section F.1 |
| Table LGS 5-1 | Part II, Section H.11 |
| Figure LGS 5-1 | Part II, Section F.1.d |
| Appendix 1 | Part II, Section P.8 |
| Addendum 2 | Part II, Section J.8 |

## APPENDIX 2: SITE-SPECIFIC LETTERS OF AGREEMENT

The following is a listing of letters of agreement and contracts specific to emergency response activities in support of Limerick Generating Station. Letters of agreement and contracts common to the multiple Exelon Nuclear stations are listed under Appendix 3 to the Exelon Nuclear Standardized Radiological Emergency Plan.

- Pennsylvania Emergency Management Agency Memorandum of Understanding (MOU) (Letter on File)

  NOTE: Documentation of agreement for Berks, Chester and Montgomery Counties are contained as part agreement with PEMA.

- Pennsylvania State Police#
- Goodwill Ambulance Service (Letter on File)
- Linfield Fire Company (Letter on File)
- Limerick Fire Company (Letter on File)
- Einstein Medical Center Montgomery (Letter on File)
- Pottstown Hospital – Tower Health (Letter on File)
- Trappe Fire Company Ambulance (Letter on File)
- Limerick Aviation LP (Lease Agreement)
- Phoenixville Service Building (Lease Agreement)
- Affidavit, PECo Bus Driver Pool* [T04510]

# Agreements with State and local law enforcement agencies maintained by Station Security under the Nuclear Station Security Plan

* Refers to "Affidavit of Joseph W. Gallagher (VP, PECo Nuclear Operations) in Response to the Request in ALAB-857 for Confirmation of the Status of Licensee's Volunteer Employee Bus Driver Pool", dated January 12, 1987, to augment bus driver staffs for Spring-Ford Area School District and Owen J. Roberts School District. (NOTE: Bus driver pool was reduced from 200 to 100 under separate 10 CFR 50.54(q) and 10 CFR 50.59 evaluations approved by the LGS Plant Manager on 04/11/96 (PORC Mtg. #96-034, 04/04/96).

**Attachment 5**

**EP-AA-1011, Revision 3, *"Exelon Nuclear Radiological Emergency Plan Annex for Calvert Cliffs Station"***

**Emergency Plan Annex Revision**

Exelon Generation®

EP-AA-1011
Revision 3

# EXELON NUCLEAR

# RADIOLOGICAL EMERGENCY PLAN ANNEX FOR CALVERT CLIFFS STATION

# REVISION HISTORY

| | | |
|---|---|---|
| Revision 0: 04/15 | | |
| Revision 1: 06/16 | | |
| Revision 2: 04/18 | | |
| Revision 3: 05/19 | | |
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# CALVERT CLIFFS NUCLEAR POWER PLANT
# EMERGENCY RESPONSE PLAN

## TABLE OF CONTENTS

## APPENDICES

**CALVERT CLIFFS NUCLEAR POWER PLANT**

**EMERGENCY PLAN**

# Section 1: Introduction

As required in the conditions set forth by the Nuclear Regulatory Commission (NRC) for the operating licenses for the Exelon Nuclear Stations, the management of Exelon recognizes its responsibility and authority to operate and maintain the nuclear power stations in such a manner as to provide for the safety of the general public.

The Exelon Emergency Preparedness Program consists of the Exelon Nuclear Standardized Radiological Emergency Plan, Station Annexes, emergency plan implementing procedures, and associated program administrative documents. The Exelon Nuclear Standardized Radiological Emergency Plan outlines the basis for response actions that would be implemented in an emergency. Planning efforts common to all Exelon Nuclear stations are encompassed within the Emergency Plan.

This document serves as the Radiological Emergency Plan Annex for Calvert Cliffs Station and contains information and guidance that is unique to the station. This includes facility geography and location for a full understanding and representation of the station's emergency response capabilities. The Station Annex is subject to the same review and audit requirements as the Exelon Nuclear Standardized Radiological Emergency Plan per EP-AA-120, "Emergency Plan Administration".

## 1.1 Site Description

Calvert Cliffs Nuclear Power Plant is a fixed nuclear facility located in Lusby, Maryland. It is owned and operated by Exelon Generation. The site consists of two units. Each unit includes a two-loop pressurized water reactor. The reactors are designed for a gross electrical output of approximately 910 MWE. Cooling water is supplied by the Chesapeake Bay. The site contains an Independent Spent Fuel Storage Installation (ISFSI). The ISFSI is a life-of-plant storage facility for spent nuclear fuel assemblies discharged from Calvert Cliffs Units 1 and 2.

## 1.2 Purpose

The Emergency Preparedness program for the Calvert Cliffs Nuclear Power Plant consists of the Exelon Nuclear Standardized Radiological Emergency Plan, Calvert Cliffs Station Annex, off-site radiological emergency plans, and procedures for protection of plant personnel and the general public. This program helps provide dose savings for a spectrum of accidents. Some of these accidents could produce off-site dose in excess of the Environmental Protection Agency's Protective Action Guides. The Calvert Cliffs Emergency Plan and

Maryland Core Emergency Operations Plan ensure the following are achieved:

- Effective coordination of activities among response organizations.
- Early warning and instructions for the population-at-risk.
- Continuous assessment of on-site and off-site actual or potential consequences.
- Effective emergency measures implementation.
- Continuous emergency preparedness maintenance.

## 1.3 Concept

1.3.1 Calvert Cliffs Nuclear Power Plant Emergency Plan has been developed to protect the general public and site personnel from possible consequences of emergency conditions. Combined with its implementation procedures and radiological emergency plans of the State and local agencies, the Emergency Plan allows for:

- Early emergency condition recognition and classification.
- Prompt notification of agencies via reliable communication channels and personnel to augment the normal operating personnel.
- Prompt pre-planned protective actions for protecting the population-at-risk.

1.3.2 Calvert Cliffs Nuclear Power Plant is staffed with personnel trained to respond to emergencies. Additionally, written agreements are maintained with federal agencies, private contractors, and State and local agencies that are required by law to provide assistance to ensure resources can be readily available in as short a time as possible to cope with emergencies and to protect the population-at-risk. The agencies and resources provided are described in:

- Exelon Nuclear Standardized Radiological Emergency Plan
- Calvert Cliffs Nuclear Power Plant Radiological Emergency Plan Annex
- Maryland Core Emergency Operations Plan – Fixed Nuclear Facilities (FNF) Appendix (Formerly Annex Q) to Radiological Incident Annex
- Calvert County, Dorchester County, and St. Mary's County Radiological Emergency Plans and Standard Operating Procedures
- Virginia, Radiological Emergency Response Plan
- Delaware, Radiological Emergency Plan
- District of Columbia, District Response Plan.

Maryland Core Emergency Operations Plan, describes State and local agency roles and interfaces for carrying out protective and parallel actions in a 10-mile-radius plume zone and 50-mile-radius ingestion zone from Calvert Cliffs Nuclear Power Plant. Figure 1-1, Emergency Planning Zone, and Figure 1-2, 10-Mile

Emergency Planning Zone Boundary, shows the geographical area within the plume and ingestion zones.

1.3.3. Documents used in developing the Emergency Plan and implementation procedures are listed in Section 8, Calvert Cliffs Nuclear Power Plant Emergency Plan References.

## 1.4 Emergency Response Documents

### 1.4.1 Emergency Plan (Standard Plan, Station Annex and Addendums)

The Emergency Plan ensures that emergency situations, including those involving radiation or radioactive material, are handled properly and efficiently. The Emergency Plan covers a spectrum of emergencies from minor localized emergencies to major emergencies involving off-site emergency response. The Emergency Plan provides for advance planning required to develop implementation methods. The Emergency Plan describes:

1. An emergency classification system used at the plant and emergency measures to be taken that are compatible with those used by Federal, State and county emergency response agencies and organizations.
2. Organizational control of emergencies by on-site, off-site, and augmentation organizations, including identification of normal and emergency operating organizations.
3. Identification of Federal, State, and County authorities and agencies and other outside organizations that are available for assistance, including plans and agreements pertaining to participating off-site organizations and agencies.
4. Requirements for ensuring a high degree of emergency preparedness and operational readiness such as through training, drills, reviews, and audits.
5. Information pertaining to on-site and off-site emergency facilities and equipment such as the Emergency Operations Facility, Technical Support Center, Operational Support Center, and Joint Information Center.
6. Figures and tables that display information and data such as organizations, maps, and population distributions.

### 1.4.2 Emergency Plan Implementation Procedures

Emergency Plan Implementation Procedures are used in conjunction with plant operating, chemistry, radiological control, security, and other technical procedures, as appropriate, to respond to emergency conditions and mitigate accident consequences.

These documents are made available to those individuals, facilities, and

organizations where immediate use of such instructions would be required during an emergency.

These documents provide:

1. Specific instructions for emergency organizations including responsibilities, facilities, equipment, emergency classification, and seeking emergency assistance used to implement the Emergency Plan and support implementation of the State Radiological Emergency Response Plan.
2. Specific authorities and responsibilities for emergency response personnel responsible for assessing emergency conditions and providing steps to be taken to mitigate the consequences of an accident.
3. Specific instructions to ensure prompt actions, notifications, and communications.
4. A record of completed actions.
5. A mechanism for maintaining emergency preparedness.

Emergency Plan Implementation Procedures are developed to respond to a variety of accident scenarios. These include minor events up to core melt situations with unplanned radioactive material release to the environment. While the emergency level(s) listed in the procedures is sufficient to cause their implementation, it is not necessary to implement all Emergency Plan Implementation Procedures under these conditions. Specific procedures may not be used if the actual emergency does not call for their use. For example: a security threat may not result in plant damage and an unplanned release; therefore, radiological monitoring procedures may not be used.

The following types of documents include the Emergency Plan Implementation Procedures:

- Fleet EP Procedures and T&RMs (Training and Reference Materials)
- Station/Region EP procedures and T&RMs
- Position Specific Checklists and Forms

**Figure 1-1**

**EMERGENCY PLANNING ZONE**

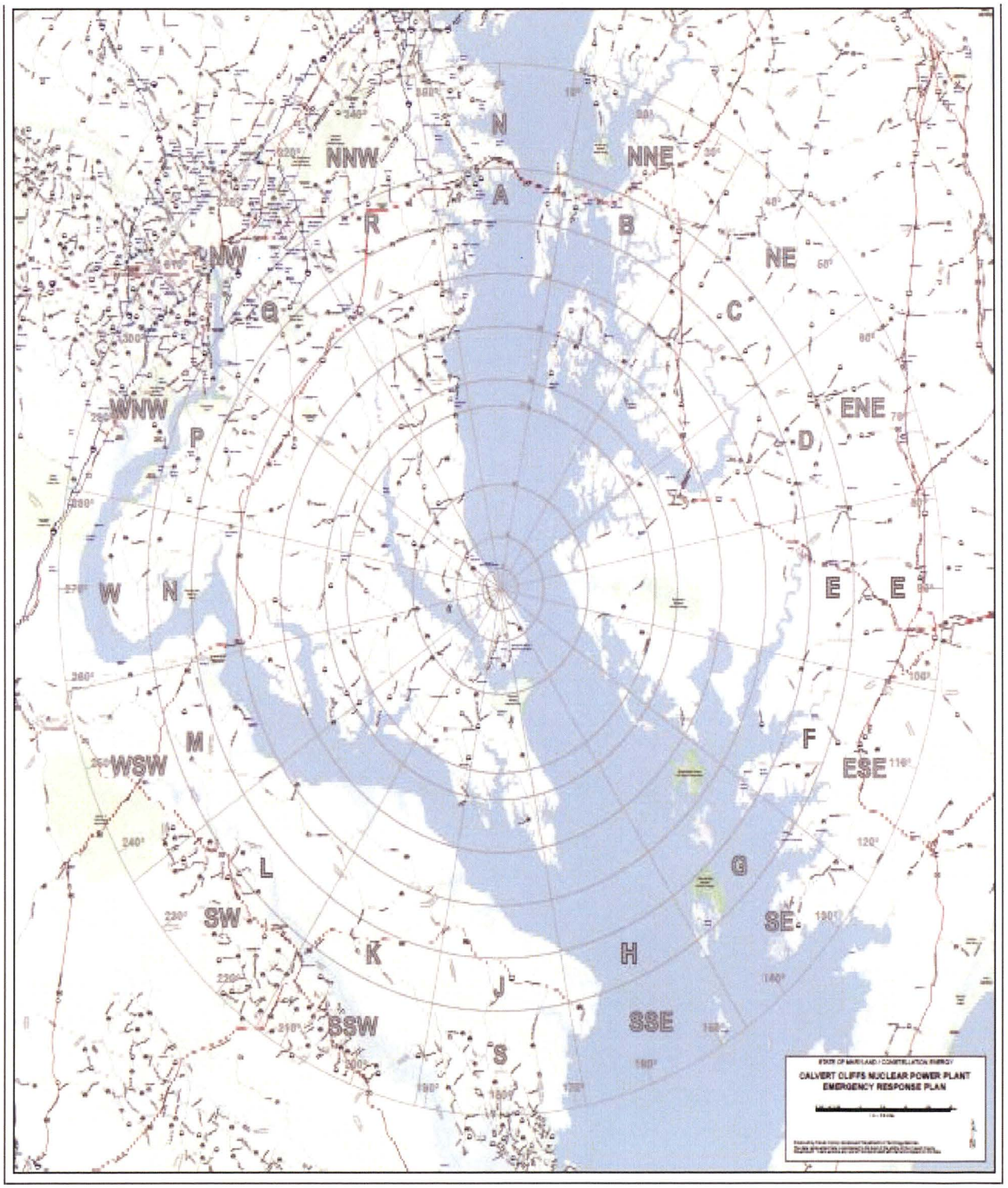
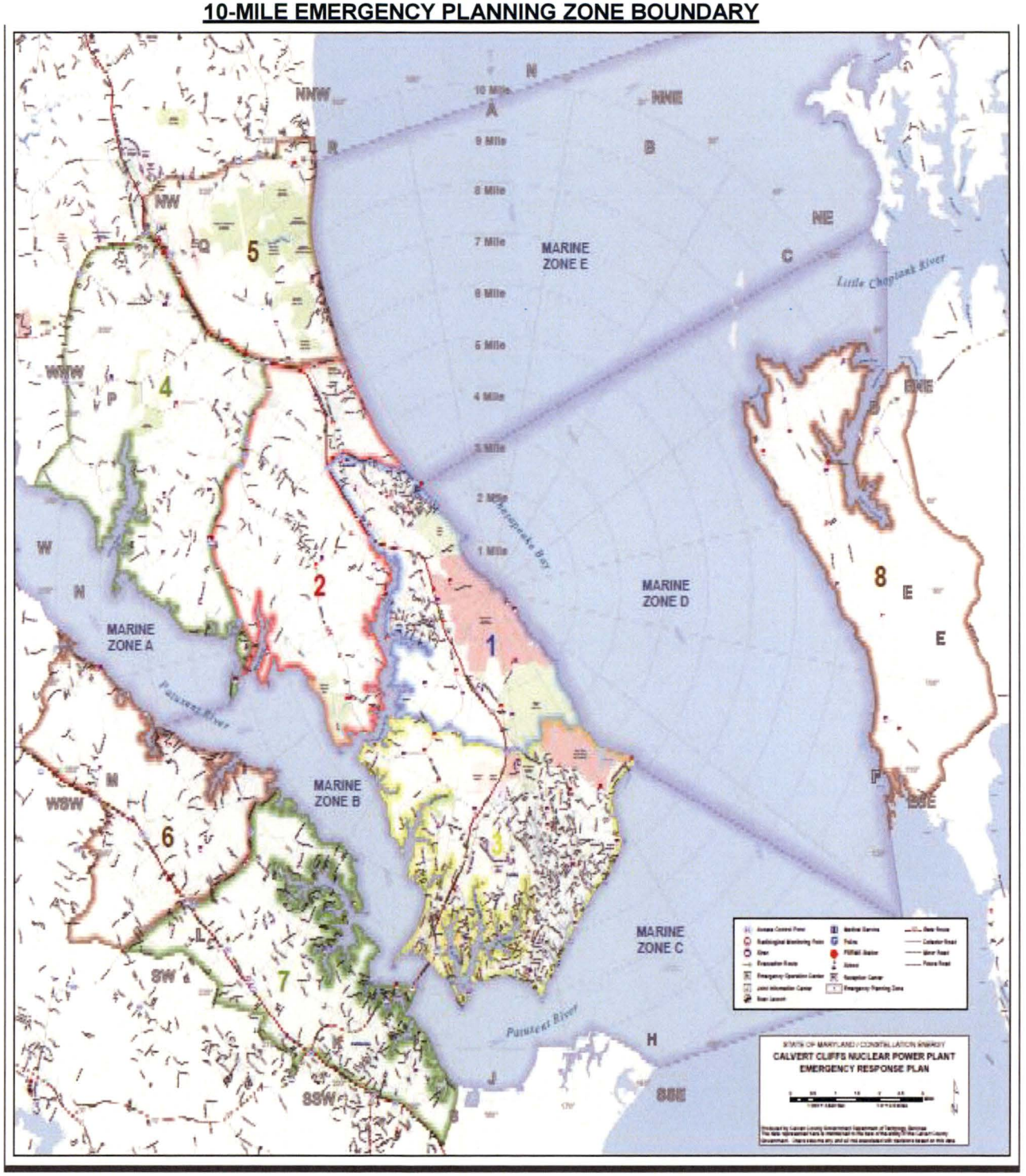


**Figure 1-2**
**10-MILE EMERGENCY PLANNING ZONE BOUNDARY**



# Section 2: Organizational Control of Emergencies

This section describes the Exelon Emergency Response Organization (ERO) at Calvert Cliffs, its key positions and associated responsibilities. It outlines the staffing requirements which provide initial emergency response actions and provisions for timely augmentation of on-shift personnel when required. It also describes interfaces among emergency response personnel and specifies the offsite support available to respond to the nuclear generating stations.

## 2.1 Operating Organization

The first line of control of any emergency at Calvert Cliffs Nuclear Power Plant lies with the normal shift personnel on duty at such time as an emergency situation should occur. Assistance is available within one hour from other plant staff and operating personnel. Additional assistance is available from Exelon Generation, Federal, and State agencies and contractor personnel. Corporate Headquarters supports the ERO in the following functional areas: Corporate Communications is able to field rumor control issues while providing feedback to the Joint Information Center representatives. Additionally, Headquarters aligned personnel assigned to CCNPP are considered available for assignment to the ERO if their duties do not include extended travel and they have the approval of their corporate sponsor. Emergency positions are staffed so relations to responsibilities and duties of the normal staff complement are essentially unchanged. Operating Organization personnel resources provide the means for continuous (24-hour) plant operations, including manning of communications links.

## 2.2 Emergency Organization

Emergency Preparedness Unit maintains a list of personnel assigned as primary and alternates to emergency positions. Emergency titles apply to interim, alternate, and primary candidates alike. The first person assuming an emergency position retains title, authority, and responsibilities until relieved. Figure 2-1, Minimum On-Site Staffing Requirements, lists the minimum on-site staffing. The following attachments show Emergency Organization relationships:

- Figure 2-2, Emergency Response Organization
- Figure 2-3, Recovery Organizations
- Figure 2-4, Center Interface: Unusual Event
- Figure 2-5, Center Interface: Alert, Site Area and General Emergency

Description of ERO positions are contained in Appendix 4. For Calvert Cliffs, the ERO position descriptions within the Annex supersede descriptions contained in

the Standard Plan.

2.2.1 Shift Manager

The Shift Manager has authority and responsibility for reactor plant manipulations including implementation of normal, abnormal, and emergency procedures. The Shift Manager will perform the duties of the Shift Emergency Director. Emergency Director non-delegable duties are transferred in time to another qualified individual. After transferring the non-delegable duties, the Shift Emergency Director reports to the Operations Manager in the TSC.

Direct reports to the Shift Manager are the:

- Shift Operations Personnel

  Perform plant operations functions from the Control Room and in the plant.

- Shift Technical Advisor:

  The Shift Technical Advisor assists the Shift Manager by making recommendations pertaining to plant safety, operations, accident assessment, and procedures.

- First Aid Responders:

  Nuclear Plant Operations, under the supervision of the Shift Manager, provides first aid medical services to injured persons.

- Fire Brigade Responders:

  Nuclear Plant Operations, under the supervision of the Shift Manager, provides firefighting services to the site.

2.2.2 Emergency Director

The Shift Emergency Director has the authority and responsibility to manage and direct the emergency response and serves as the main contact at the site. In addition to directing staff and operations personnel, he or she can call on additional Company and outside agencies' assistance as needed.

The Emergency Director is also responsible for on-site protective actions and reentry operations.

The Shift Manager (staffed 24 hours) assumes the Shift Emergency Director duties at the onset of an emergency and retains it until certain non-delegable duties are relieved by augmenting personnel. When physically present and updated on plant conditions, another qualified Shift Emergency Director from the operations department may relieve the Shift Manager until responsibilities are transferred to individuals assigned to the Station/Corporate Emergency Director position as their primary responsibility.

Additional staff will be called upon to support overall operations of the Emergency Operations Facility and Technical Support Center which may include additional personnel to support administrative, accountability, media control, etc.

Emergency Director responsibilities include, but are not limited to, emergency classification, immediate and unilateral initiation of emergency actions, including making notifications and providing protective action recommendations to authorities responsible for implementing off-site measures; and requesting Federal assistance.

The Corporate Emergency Director has primary responsibility for interface with governmental agencies having responsibilities to ensure the protection of the population at risk within the Calvert Cliffs Nuclear Power Plant emergency planning zones. The decision to notify and make off-site protective action recommendations to off-site authorities may not be delegated.

The Station Emergency Director reports to the Corporate Emergency Director and supervises and directs the station ERO. The Station Emergency Director's responsibilities include organizing and coordinating the onsite emergency efforts. The responsibility for classification and Emergency Exposure Controls for the event may not be delegated.

Transfer of authority and responsibility is by voice acknowledgment of relieving party.

## 2.3 Contracted Services

### 2.3.1 Contractors

Contractors and private organizations may be requested to provide assistance to and augmentation of the emergency organization. Assisting groups may include the NSSS supplier, plant Architect-Engineer or any industry support company. These support services are outlined in memorandums of agreement described in the Standard Plan or the Station Annex and maintained by the corporate organization.

## 2.4 Local Services

Appendix 2, Letters of Agreement, contains written agreements identifying services provided by local agencies for handling emergencies, (e.g., medical, hospital, local law enforcement, and firefighting organizations). Agreement letters identify authorities, responsibilities, and limits on the actions of the respective agency.

### 2.4.1 Local Law Enforcement

A Letter of Agreement is established for Local Law Enforcement to support Calvert Cliffs Power Plant to respond to a Radiological Event, including a Hostile Action Based Event, in conjunction with the National Incident Management System (NIMS) upon notification by the station in accordance with the established communications protocol.

2.4.2 Medical Facilities

The Calvert Health Medical Center, Inc. and MedStar St. Mary's Hospital agree in the event of a Radiological Event, including a hostile action-based event, to ensure the capability for the evaluation of radiation exposure and uptake, including assurance that persons providing these services are adequately prepared to handle contaminated individuals and capable of providing medical support for any contaminated injured individual.

2.4.3 Fire Fighting Services

A Letter of Agreement is established for the Local Fire Department to respond to a Radiological Event, including a Hostile Action Based Event, in conjunction with the Mutual Aid Box Alarm System (MABAS).

2.4.4 EMS Support

A letter of Agreement is established for the local ambulatory services to provide Emergency Medical Services in response to a Radiological Event, including a Hostile Action Based Event. This includes transportation of patients from the Calvert Cliffs Nuclear Power Plant, including those who may have been exposed to radiation or may have injuries complicated by radioactive contamination, to Calvert Health Medical Center, Inc. or to MedStar St. Mary's Hospital upon request through established protocols.

## 2.5 Participating Governmental Agencies

Functions performed by Federal, State, and county agencies are summarized in the following subsections. Appendix 2, Letters of Agreement, contains written agreements identifying services provided.

Detailed information is contained in:

- Maryland Core Emergency Operations Plan – Fixed Nuclear Facilities (FNF) Appendix (Formerly Annex Q), Radiological Emergency Plan
- Calvert County, Dorchester County, and St. Mary's County Radiological Emergency Plans and Standard Operating Procedures.
- Virginia Radiological Emergency Response Plan
- Delaware Radiological Emergency Plan
- District of Columbia, District Response Plan

2.5.1 State of Maryland

The Maryland Core Emergency Operations Plan is the official State plan for responding to radiological emergencies. State officials and agencies identified in the Plan having overall command, coordination, key, and support responsibilities include:

1. The Governor

2. Maryland Emergency Management Agency (MEMA)
3. Department of Health and Mental Hygiene
4. Maryland Department of Agriculture
5. Maryland Department of Environment
6. Department of Natural Resources
7. Maryland State Police
8. Department of Human Resources
9. Department of Transportation
10. Maryland State Department of Education
11. Department of Housing and Community Development
12. Maryland Military Department/National Guard
13. Maryland Institute for Emergency Medical Services System
14. Office of the Comptroller of the Treasury
15. Office of the State Fire Marshal

2.5.2 Functions and Responsibilities of Key Agencies and Officials

1. The Secretary – Maryland Department of the Environment has the authority of the Governor and maintains responsibility for overall command of an emergency response. Major areas of action under his/her command include:
   a. Accident assessment
   b. Notification and communication
   c. Command and coordination
   d. Protective actions
      1) Evacuation
      2) Ingestion of Potassium Iodide or thyroid protection
      3) Take shelter
      4) Access control
      5) Food, water, and milk control
   e. Parallel actions
      1) Emergency medical services
      2) Radiation exposure control
      3) Law enforcement and crime prevention
      4) Mass Care
      5) Re-entry

6) Return

7) Relocation

f. Public Information

2. The MEMA coordinates State, private, and Federal agency response to and from CCNPP to aid County emergency operations. The MEMA directs County requests for assistance to appropriate State and Federal agencies.
3. The State Department of Environment makes available resources and personnel to perform the following:

   a. Provide technical information to the Secretary-Department of the Environment.

   b. Dispatch field monitoring teams to emergency area(s).

   c. Set up headquarters for direction of activities by the State Radiological Health Administrator at the Accident Assessment Center in the near site Emergency Operations Facility.

   d. Determine when assistance is required from the Federal Department of Energy and request such assistance.

   e. Determine when protective actions for the public are required and inform State and local authorities.

   f. Provide guidance in establishing public restricted areas.

   g. Provide contamination control action guides.

   h. Request outside radiological monitoring assistance when needed.

   i. Provide guidance for external human and animal decontamination.

   j. Provide guidance for facilities, equipment, and area decontamination.

   k. Provide guidance to the State Departments of Agriculture and Health and Mental Hygiene for controlling the use of milk and agricultural products.

   l. Determine and notify appropriate authorities when people may return to evacuated areas.

   m. Provide direction of Ingestion Pathway Coordinating Committee activities.

4. The State Department of Health and Mental Hygiene makes available resources and personnel to perform the following:

   a. Dispatch agricultural sampling teams to effected areas.

   b. Provide guidance to the State Department of Agriculture for controlling the use of milk and agricultural products.

   c. Provide laboratory analysis of field samples.

d. Support Ingestion Pathway Coordination Committee activities.

5. The Maryland State Police render assistance as follows:

   a. Establish off-site command post in vicinity of the plant site.

   b. Evacuate and exclude individuals from designated public and private areas.

   c. Control traffic into and out of designated areas.

   d. Transport Maryland Department of Environment Monitoring Teams on request.

   e. Assist in medical evacuation via helicopter.

   f. Aid in emergency communications.

   g. Coordinate with County Sheriffs to assist in communications, evacuations, and traffic control.

6. The Maryland Department of Natural Resources Police Force and the Fisheries Service render assistance as follows:

   a. Evacuate and prevent entry to designated water areas.

   b. Aid in emergency communications.

   c. Assist in radiological monitoring.

   d. Assist in waterborne population evacuation as required.

7. The Maryland Emergency Management Agency Public Information Officer is responsible for coordination of State and local information releases. The Public Information Officer coordinates with Calvert Cliffs Nuclear Power Plant's Joint Information Center Director to prevent conflicting statements between State/local and Calvert Cliffs Nuclear Power Plant's spokespersons.

2.5.3 Planning Zone Support

1. Plume Exposure Emergency Planning Zone

   Calvert County, Dorchester County, and St. Mary's County Radiological Emergency Plans and Standard Operating Procedures summarize the plan used by county agencies within the Plume Exposure Emergency Planning Zone. Command of county agencies is under the direction of the Board of County Commissioners, or County Council for each county. Coordination and responsibility for implementing protective actions is the responsibility of the Director of each county's Emergency Management Agency.

2. Ingestion Emergency Planning Zone

   a. Maryland

      The ingestion EPZ for CCNPP includes all or portions of thirteen Maryland counties.

      - Anne Arundel County
      - Calvert County

- Caroline County
- Charles County
- Dorchester County
- Kent County
- Prince George's County
- Queen Anne's County
- Somerset County
- St. Mary's County
- Talbot County
- Wicomico County
- Worcester County

Functions and responsibilities of agencies responsible for emergency response are described in the Maryland Emergency Operations Plan, Annex Q, and Radiological Emergency Plan.

b. Commonwealth of Virginia

The ingestion EPZ for CCNPP includes all or portions of the following Virginia political subdivisions:

| Counties | Cities |
|---|---|
| Accomack (Tangier Island) | Alexandria |
| Arlington | Falls Church |
| Caroline | |
| Essex | |
| Fairfax | |
| King George | |
| King and Queen | |
| Lancaster | |
| Middlesex | |
| Northumberland | |
| Prince William | |
| Richmond | |
| Stafford | |
| Westmoreland | |

Functions and activities of these agencies are described in the Virginia Radiological Emergency Response Plan.

c. State of Delaware

Functions and activities of agencies responsible for emergency response in the Delaware portion of the ingestion EPZ are described in the Delaware Radiological Emergency Plan and Implementing Procedures.

d. District of Columbia

Functions and activities of agencies responsible for emergency response in the Washington, D.C., portion of the ingestion EPZ are described in the District of Columbia, District Response Plan.

2.5.4 Support From Federal Agencies

Calvert Cliffs Nuclear Power Plant is located about 70 miles south of Baltimore

and 50 miles southeast of Washington, D.C. The site is less than 2 hours driving time from either city or their respective airports (Baltimore-Washington International; Ronald Reagan National). A helicopter landing can be accommodated at Calvert Cliffs Nuclear Power Plant and the Emergency Operations Facility. Emergency facilities have been designed to meet the space and communications needs of a small scale Federal response. Federal Radiological Emergency Response Plan implementation may require the use of Andrews Air Force Base and/or Federal, State or local facilities to accommodate the large volume of associated personnel.

## Figure 2-1

## MINIMUM ON-SITE STAFFING REQUIREMENTS

Page 1 of 2

| MAJOR FUNCTIONAL AREA | MAJOR TASKS | POSITION, TITLE, OR EXPERTISE | ON SHIFT | WITHIN (a) APPROX. 60 MINUTES |
|---|---|---|---|---|
| Plant operations and assessment of operational aspects | | Senior Reactor Operator<br>Reactor Operators<br>Auxiliary Operators<br>Shift Technical Advisor<br>Ops Technical Assistant | 2<br>4<br>5<br>1<br>Per UFSAR | – |
| Emergency direction and control (c) | | Shift Manager<br>Corporate Emergency Director | 1 | <br>1 |
| Notification/ communication | Notify licensee, Federal, State, and local personnel and maintain communications | Shift Communicator<br>State/Local Communicator<br>ENS Communicator | 1 | <br>1<br>1 |
| Support of operational accident assessment | Site emergency coordination | Station Emergency Director | – | 1 |
| Radiological accident assessment | a. Off-site dose assessment | EOF Radiation Protection Manager (RPM) | – | 1 |
| | b. Off-site surveys | OMT Team Members | – | 4 |
| | c. On-site surveys | RP Tech | – | 2 |
| | d. In-plant surveys | RP Tech | 1 | 2 |
| | e. Chemistry/radio-chemistry | Chemistry Technicians | 1 | 1 |
| Plant System<br><br>Engineering, repair and corrective actions | Technical support | Core / Thermal Hydraulic Engineer | – | 2 |
| | | Electrical Engineer | – | 1 |
| | | Mechanical Engineer | – | 1 |
| | Repair and corrective actions | OSC Director | | 1 |
| | | Mechanical maintenance | – | 3 |
| | | Rad Waste Operator | 1(b) | – |
| | | Electrical maintenance | – | 2 |
| | | Instrument and Control (I&C) Technician | – | 2 |
| | | Assistant OSC Director | | 1 |
| Protective actions (in/plant) operational aspects | Radiation protection:<br>a. Access control<br>b. HP coverage for repair, corrective actions, search and rescue first-aid and firefighting<br>c. Personnel monitoring<br>d. Dosimetry | RP Tech<br>TSC Rad. Protection Manager<br>RP Lead | 1 | 4<br>1<br>1 |
| Firefighting | | Fire Brigade personnel | 5 (f) | Local Support (d) |

## FIGURE 2-1

## MINIMUM ON-SITE STAFFING REQUIREMENTS



| MAJOR FUNCTIONAL AREA | MAJOR TASKS | POSITION, TITLE, OR EXPERTISE | ON SHIFT | WITHIN (a) APPROX. 60 MINUTES |
|---|---|---|---|---|
| Rescue operations and first aid | | First Aid Team personnel | 2(e) | Local Support (d) |
| Site access control and personnel accountability | Security, communications, personnel accountability | Security personnel | per Security Plan | -- |

Notes:

(a) Additions required for Alert, Site Area Emergency and General Emergency.

(b) Provided by shift personnel assigned other functions.

(c) Overall direction of facility response to be assumed by the person assigned to the Emergency Director position as primary responsibility when all centers are fully manned. Direction of minute-to-minute facility operations remains with the Station Emergency Director in the Technical Support Center.

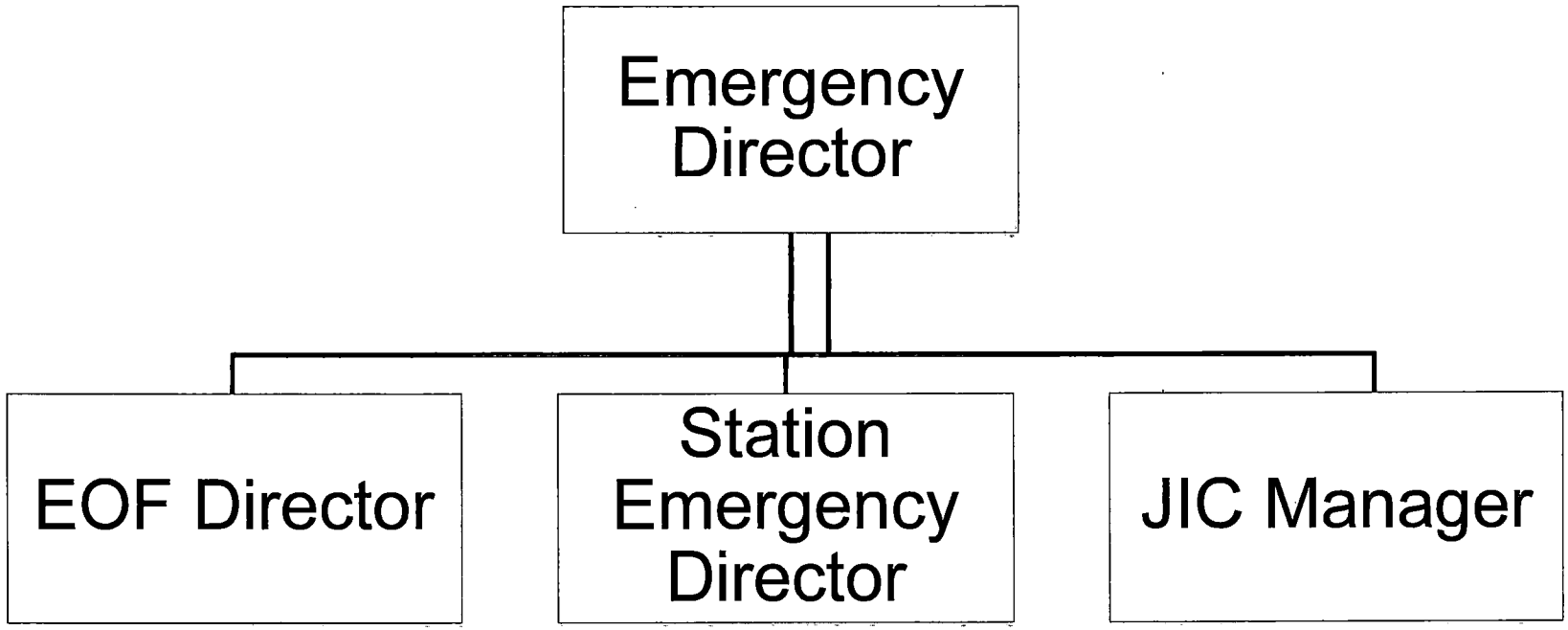
(d) Additions within approximately 30 minutes.

(e) Rescue operations and first aid is a collateral duty of the designated Fire Brigade (Fire & Safety Watch and Fire & Safety Responder)

(f) Per the Calvert Cliffs UFSAR, the fire brigade leader and at least two fire brigade members must have sufficient training and knowledge of nuclear safety systems to understand the effects of fire and fire suppression on nuclear safety performance criteria. If the Fire Brigade does not meet this requirement, the sufficient training and knowledge is permitted to be provided by an additional Operations Technical Advisor dedicated to respond with the fire brigade.

**FIGURE 2-2**

**Emergency Response Organization**




**Off-site ERO**
Interface with Off-site Response Organizations (Federal, State and Local) to coordinate Protective Actions for the public

**On-site ERO**
On-site (OCA) Protective Response and Mitigative Actions

**Public Information ERO**
Provides information to the Public through the News Media, addresses phone inquiries, conducts Rumor Control operations.

**FIGURE 2-2**
**Emergency Response Organization**

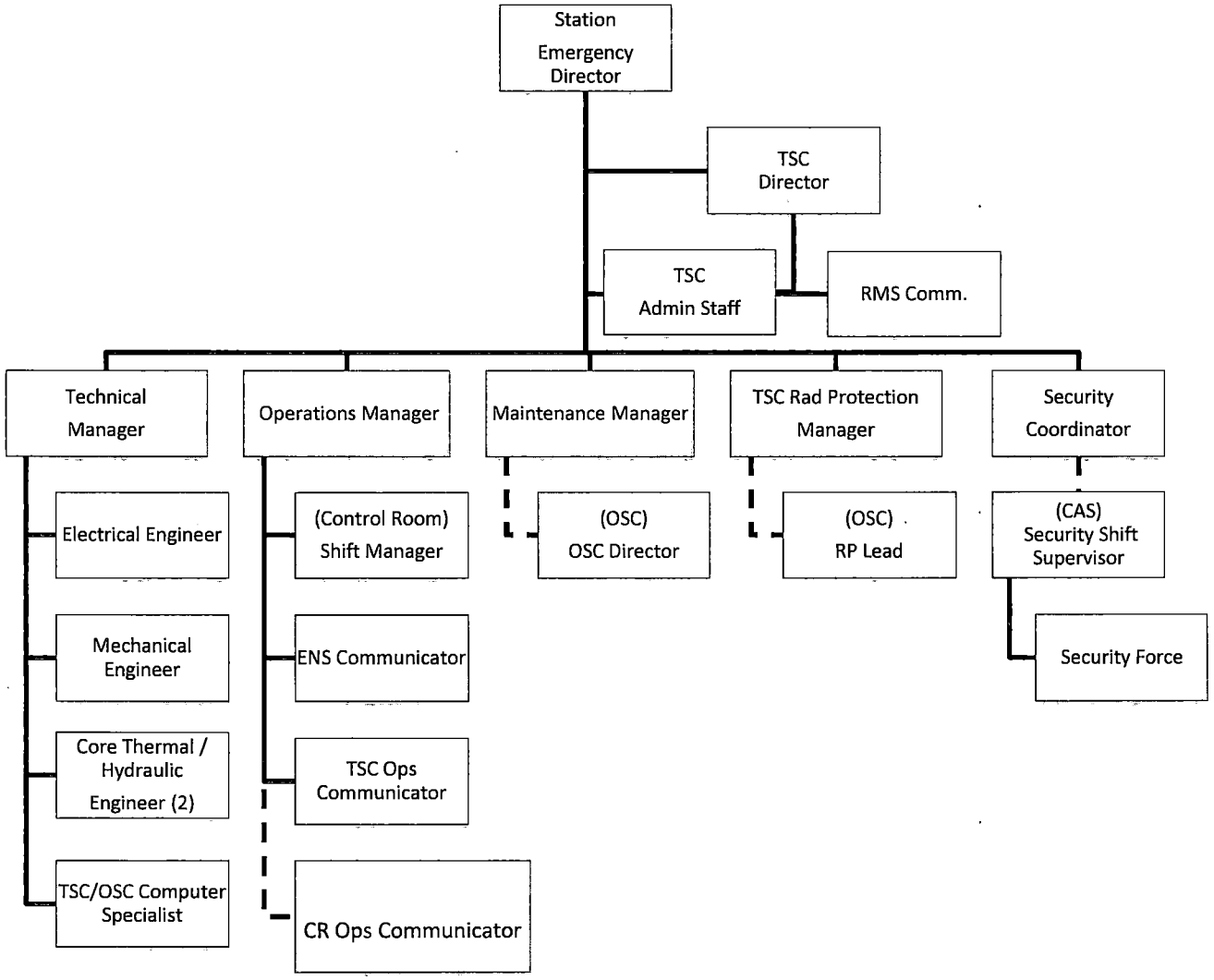


**FIGURE 2-2**

**Emergency Response Organization**

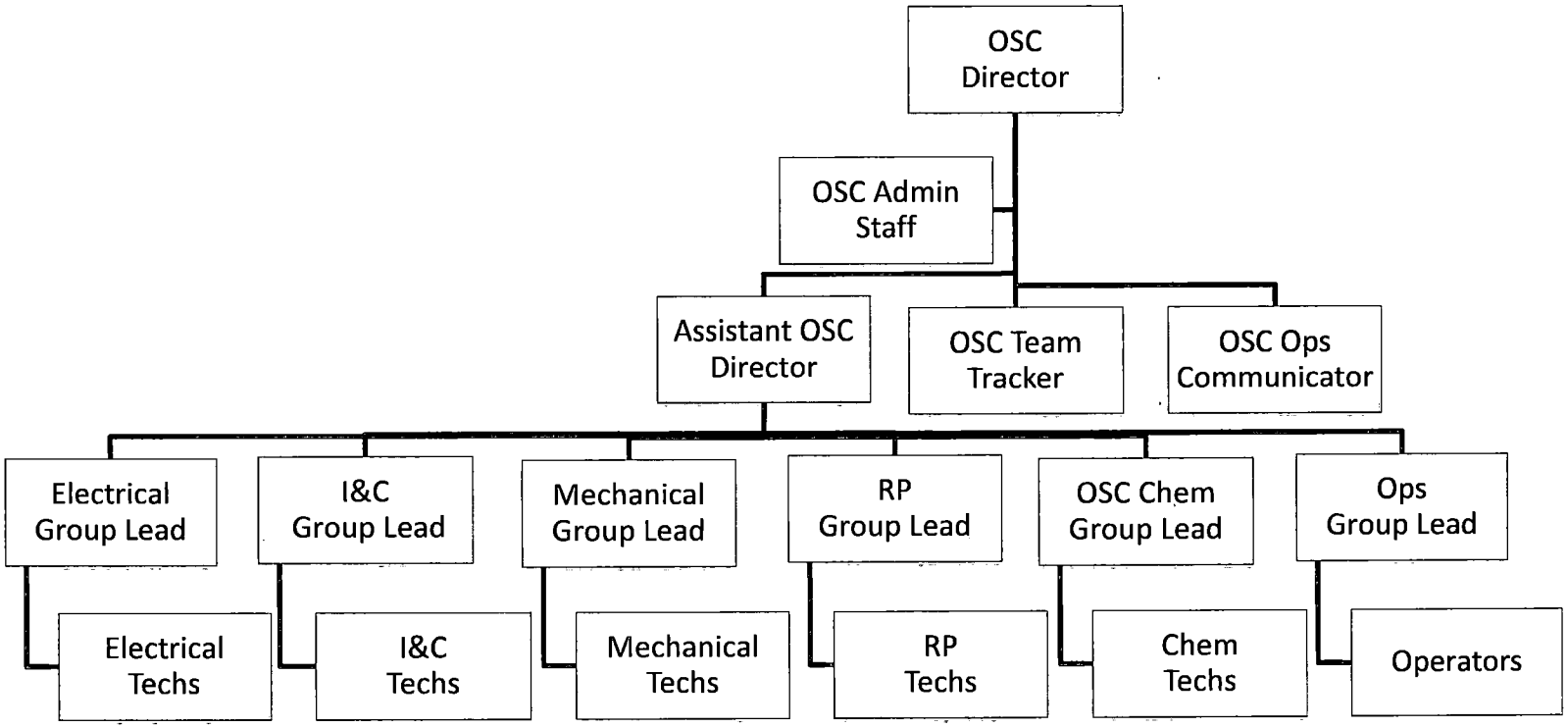


**FIGURE 2-2**

**Emergency Response Organization**

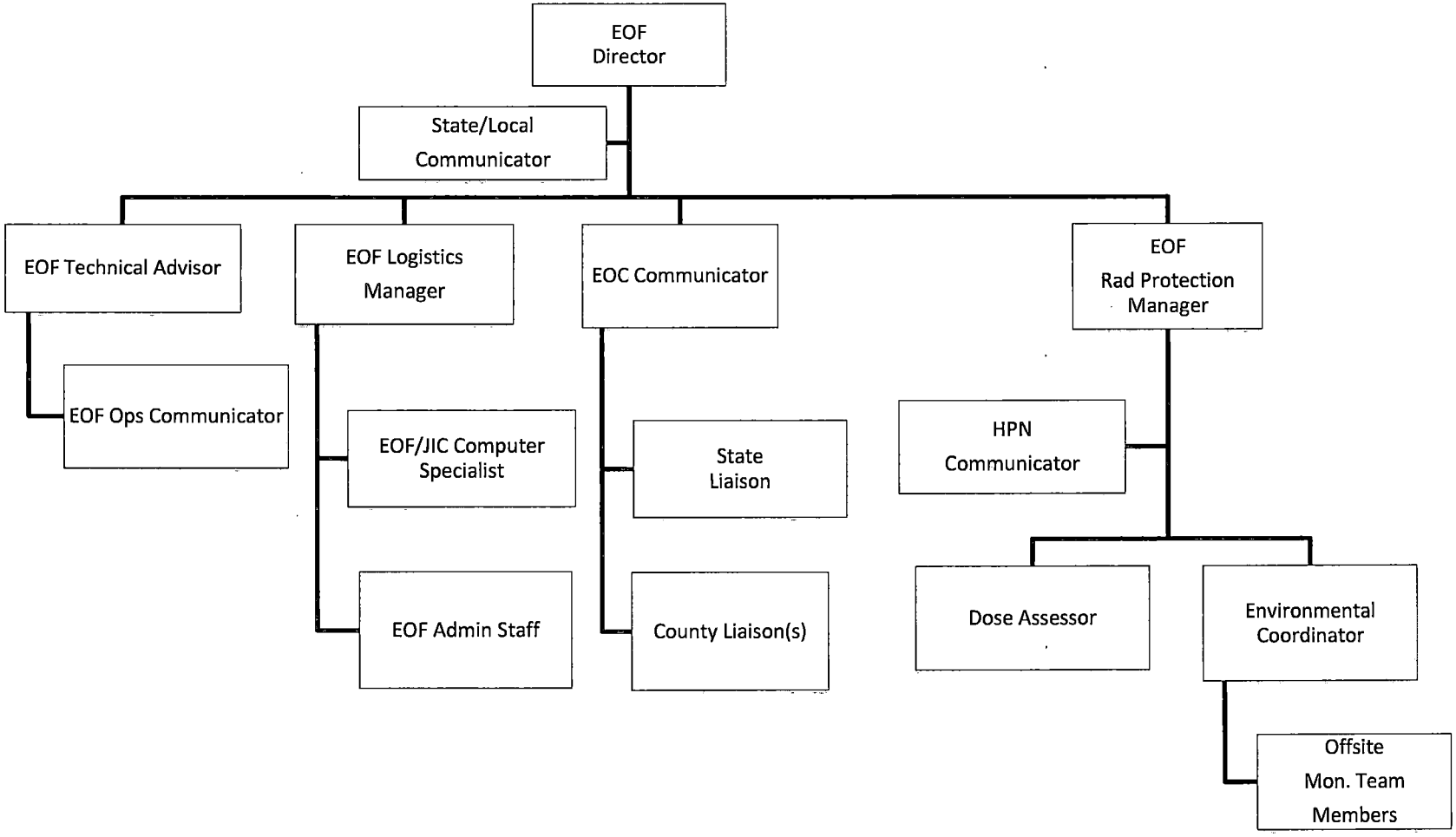


**FIGURE 2-2**
**Emergency Response Organization**

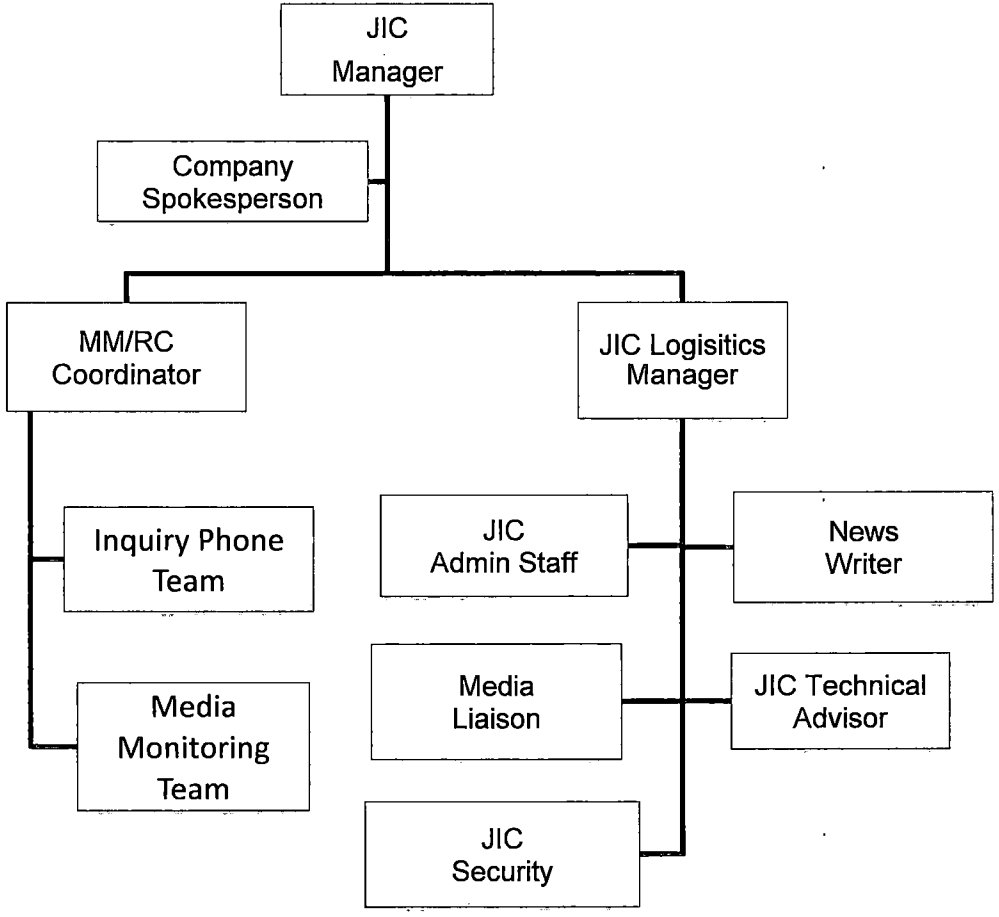
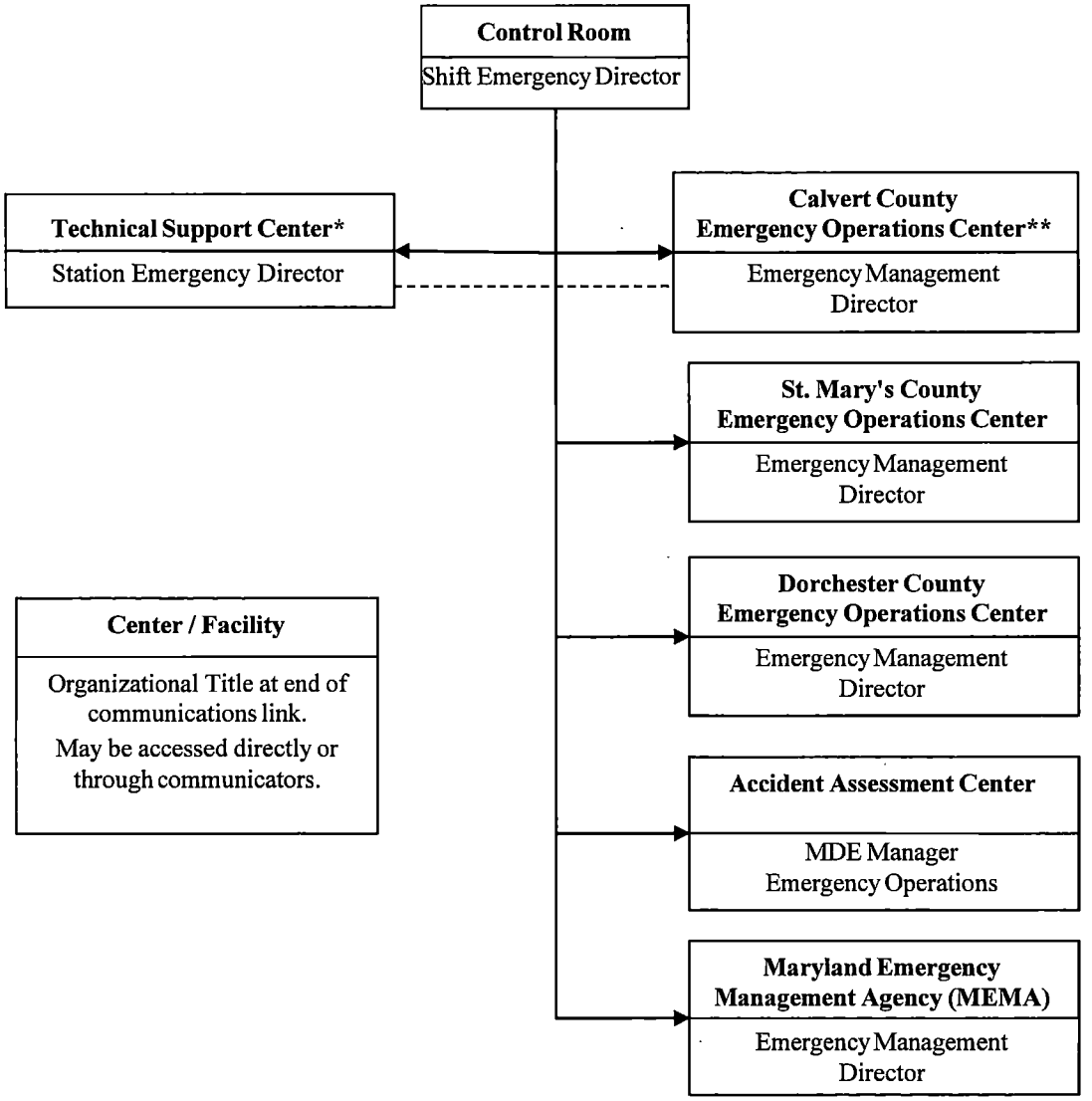


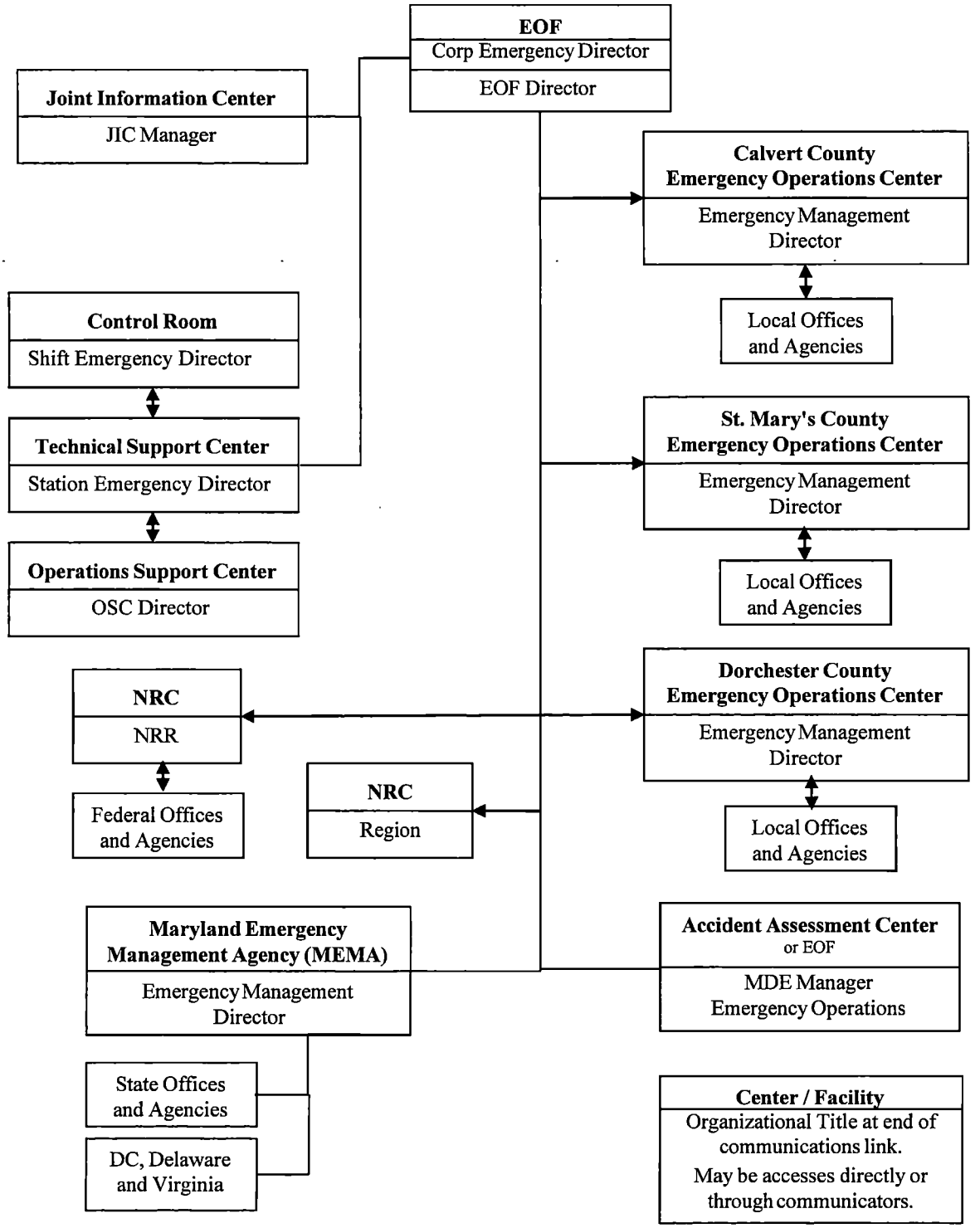
**FIGURE 2-3**
**Center Interfaces: Unusual Event**




* If TSC is staffed at Unusual Event to support Control Room

** Interface with local agencies (e.g., police, fire, rescue, hospital) is through Calvert County Emergency Operations Center.

**FIGURE 2-4**
**Center Interfaces: Alert, Site Area and General Emergencies**



# Section 3: Classification of Emergencies

## 3.1 Classification System

Emergency classifications are:

1. Unusual Event
2. Alert
3. Site Area Emergency
4. General Emergency

Each classification requires immediate action to classify the accident, notify off-site agencies and support groups, and mobilize emergency organizations as required to cope with the emergency. Accidents are classified and reclassified (more and less severe) as situations warrant.

Unusual Event and Alert classifications provide early notification of minor events and ensure timely response for more severe emergencies. Assembly of Calvert Cliffs Emergency Response Organization is initiated for an Alert classification. Full mobilization of emergency personnel and organizations is initiated for Site Area and General Emergency.

Each emergency classification is characterized by Emergency Action Levels consisting of specific plant parameters or conditions. The Emergency Action Level scheme is consistent with R.G. 1.101, Emergency Planning and Preparedness for Nuclear Power Reactors, Revision 4, July 2003, as modified by CCNPP, Inc., submittals to the NRC. Satisfying Emergency Action Level criteria other than a General Emergency does not necessitate immediate protective action implementation; it ensures time is available to confirm in-plant readings by implementing assessment measures on-site and off-site.

Classification philosophy is to declare the highest class emergency for Emergency Action Levels met or exceeded. For example, a Site Area Emergency would be declared immediately, if the Emergency Action Level is met or exceeded, lower classes will not be declared first.

## 3.2 Unusual Event

### 3.2.1 Description

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. No releases of radioactive material requiring off-site response or monitoring are expected unless further degradation of safety systems occurs.

### 3.2.2 Emergency Action Levels

Initiating conditions established as Emergency Action Levels for determining an Unusual Event classification are listed in EP-AA-1011, Addendum 3. An Unusual Event is declared any time that respective Emergency Action Levels are met or exceeded. All minor events are analyzed in light of their potential for degrading the level of plant safety.

## 3.3 Alert

### 3.3.1 Description

Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life-threatening risk to site personnel or damage to site equipment because of hostile action. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

Alert classification ensures personnel are available to:

A. Respond to worsening situations.

B. Perform confirmatory radiation monitoring.

C. Provide off-site authorities with information.

### 3.3.2 Emergency Action Levels

Initiating conditions established as Emergency Action Levels for determining an Alert emergency classification are listed in EP-AA-1011, Addendum 3. An Alert is declared any time that respective Emergency Action Levels are met or exceeded.

## 3.4 Site Area Emergency

### 3.4.1 Description

Events are in process or have occurred which involve an actual or likely major failures of plant functions needed for protection of the public or hostile action that result in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) prevents effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary.

Site Area Emergency classification ensures:

1. Response centers are manned.
2. Survey teams are dispatched.
3. Personnel required for near site evacuation are at their duty stations.
4. The public is updated through off-site authorities.

### 3.4.2 Emergency Action Levels

Initiating conditions established as Emergency Action Levels for determining Site Area Emergency classification are listed in EP-AA-1011, Addendum 3. A Site Area Emergency is declared any time that respective Emergency Action Levels are met or exceeded.

## 3.5 General Emergency

A. Description

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 off-site for more than the immediate site area.

General Emergency classification ensures:

1. Initiation of predetermined warning and protective actions for the public.
2. Continuous plant information and off-site measurement assessment.
3. Initiation of additional measures as indicated by actual or potential releases.
4. Consultation with off-site authorities.
5. Public updates through off-site authorities.

B. Emergency Action Levels

Initiating conditions established as Emergency Action Levels for determining General Emergency are listed in EP-AA-1011, Addendum 3. A General Emergency is declared any time that a respective Emergency Action Level is met or exceeded.

# Section 4: Emergency Measures

## 4.1 Recognition and Classification

Calvert Cliffs Nuclear Power Plant staff recognizes and responds to off-normal plant conditions. Abnormal and Emergency Operating Procedures allow personnel to mitigate emergency consequences and correct off-normal conditions quickly. These procedures reference the Emergency Plan Implementation Procedures. Emergency Plan Implementation Procedures contain procedures and guidance for accident assessment and emergency classification. These procedures implement the Emergency Plan.

Figure 4-1, Off-Normal Condition Response Sequence, shows the basic response sequence followed during off-normal conditions.

## 4.2 Notification

### 4.2.1 On-Site Personnel

Emergency Plan Implementation Procedures provide for 24-hour on-site personnel warning, alerting, activating, and advising for emergency situations. This includes:

1. Employees without emergency assignments.
2. Visitors and persons in on-site public access areas.
3. Contract and construction personnel.

### 4.2.2 Off-Site Agencies

Emergency Plan Implementation Procedures provide for 24-hour alerting, notifying, and mobilizing Exelon off-site response organizations and for 24-hour alerting and notifying non-Exelon off-site response organizations as provided in Figure 4-2, Off-site Agency Notification. These procedures include means for message verification.

### 4.2.3 Messages

1. Initial emergency messages sent from the plant are detailed in the Emergency Plan Implementation Procedures. Messages contain:
   a) Emergency class and nature of incident.
   b) Whether a release is taking place.
   c) Potentially affected population and areas.
   d) Whether protective measures are necessary.
2. Emergency Plan Implementation Procedures provide for facility follow-up messages to off-site authorities. These procedures contain:
   a) Incident location, caller name, and communications identification.
   b) Nature of incident, date/time, and classification.
   c) Actual or projected release type (airborne, waterborne, surface spill) and estimated duration/impact times.
   d) Radioactive material release quantity estimates and release points/heights.

e) Released material chemical and physical form including relative quantities and concentrations of noble gases, iodines, and particulates.

f) Meteorological conditions (wind speed, direction-to and from), stability indicator, precipitation.

g) Actual or projected site boundary dose rate; site boundary projected integrated dose.

h) Projected dose rates and integrated dose at projected peak and at 2, 5, and 10 miles including sector(s) affected.

i) In-plant, on-site, off-site surface radioactive contamination estimate.

j) Facility response actions in progress.

k) Recommended emergency actions, protective measures, and recommendations set forth in Environmental Protection Agency's Manual of Protective Action Guides and Protective Actions for Nuclear Incidents (EPA-400-R-92-001), Tables 2-1 and 2-2.

l) Support requests.

m) Incident prognosis (worsening/terminating).

3. Initial and follow-up messages provide supporting information for messages developed by State and local agencies for the public. Initial and follow-up messages are consistent with the classification scheme addressed in the Emergency Plan Implementation Procedures.

4. Off-site authorities responsible for implementing protective measures within the plume exposure pathway Emergency Planning Zone receive initial (prompt notification) and follow-up messages directly. Provision exists to make Initial Notifications within 15 minutes of emergency declaration.

4.2.4 Prompt Public Notification

Prompt public notification using sirens or backup methods such as mass communications or route alerting that facilitates public awareness to turn on their televisions or radios and listen for information or instructions broadcast by state or local government authorities on the Emergency Alert System.

A physical means has been established and demonstrated to exist for providing prompt public notification within the plume exposure pathway Emergency Planning Zone. The Public Alert and Notification System Design Report is described in detail in the upgraded Public Alert and Notification System for Calvert Cliffs Nuclear Power Plant and subsequent correspondence with the Federal Emergency Management Agency.

## 4.3 Augmentation

4.3.1 Staffing

Figure 2-1, Minimum On-Site Staffing Requirements outlines ERO positions required to meet minimum staffing and full augmentation of the on-shift complement at an Alert or higher declaration. Minimum staffing is to occur within

approximately 60 minutes of an Alert or higher classification with the exception of the Joint Information Center (JIC) which will achieve minimum staffing within approximately 120 minutes of event declaration.

4.3.2 Activation

It is the goal to activate the ERO facilities within 15 minutes of achieving minimum staffing. The facility can be declared activated when the following conditions are met:

1. Minimum staffing has been achieved.
2. Personnel are ready to perform their function.
3. Personnel have been briefed on the situation.

## 4.4 Accident Assessment

Accident assessment consists of a variety of actions taken to determine the nature, effects, and severity of an accident and includes evaluation of reactor operator status reports, damage assessment reports, meteorological observations, seismic observations, fire reports, radiological dose projections, in-plant radiological monitoring, off-site (environmental) radiological monitoring, etc.

Emergency Plan Implementation Procedures provide methods and techniques for:

A. Determining radioactive material release source term.

   Example: Relationship between Containment radiation monitor reading and radioactive material available for release from Containment.

B. Determining radioactive material release based on plant system parameters and effluent monitors (graphic recorders and the plant computer provide records to back calculate total amounts of plant released radioactivity).

C. Establishing the relationship between effluent monitor readings and on-site/off-site exposure and contamination for various meteorological conditions.

D. Determining release rate/projected dose if assessment instrumentation is off-scale or inoperable.

E. Rapid assessment and chemical sampling and analysis of magnitude and location of radiological hazards (actual or potential) through liquid or gaseous release pathways.

F. Relating measured parameters (e.g., Containment levels, water and air activity levels) to dose rates for key isotopes (i.e., NUREG-0654, Table 3, Page 18) and gross radioactivity measurements. Provisions are made for estimating integrated dose from projected and actual dose rates and for comparing these estimates with protective action guides.

G. Periodically estimating total population exposure.

H. Relaxing protective measures to allow reentry into an evacuated area and for return of areas to normal use. This condition includes provision for informing the response organizations that a recovery operation is being

initiated and of any changes in the organization structure that may occur.

## 4.5 Repair and Mitigative Action

Those emergency measures taken to lessen or terminate an emergency situation at or near the source of the problem includes measures taken to prevent an uncontrolled release of radioactive material, or to reduce the magnitude of a release. Mitigative action includes equipment repair or shutdown, installation of emergency structures, firefighting, and damage control.

## 4.6 Protective Actions

### 4.6.1 Accountability

Emergency Plan Implementation Procedures provide the capability to account for all individuals in the Protected Area during a Site Area Emergency or General Emergency, to ascertain the names of missing individuals within 30 minutes of and Alert (for Security Event) Site Area Emergency or General Emergency declaration, and to account for all Protected Area individuals continuously thereafter. To accomplish accountability, site assembly is executed at Alert level emergency in anticipation of emergency escalation. The accountability process begins when assembly is complete.

### 4.6.2 Evacuation

1. Evacuation routes for on-site individuals allow access to Maryland Route 2/4 via the plant access road and Camp Canoy Road (through Camp Canoy facility). Transportation is by personal vehicle.

   Two roads allow alternative evacuation routes for inclement weather, high traffic density, and specific radiological conditions.

2. Emergency Plan Implementation Procedures provide for on-site, non-essential personnel evacuation during an Alert (for Security Event), Site Area Emergency or General Emergency.

### 4.6.3 Off-Site Recommendations

1. Guidelines for the choice of protective actions during an emergency, consistent with Federal Guidance, are provided in the Emergency Plan Implementation Procedures. The effectiveness of evacuation and protection afforded in residential units and other shelters is assumed to be that which is described in Federal Guidance.

## 4.7 Exposure Control

4.7.1 Emergency Plan Implementation Procedures and Radiation Protection Procedures provide an on-site radiation protection program including exposure guidelines implementation methods for use during emergencies. Provisions are made for distribution of dosimeters (both direct reading and permanent record devices); ensuring dosimeters are read at appropriate frequencies; maintaining dose records for emergency workers.

4.7.2 The Emergency Plan Implementation Procedures permit on-site workers to receive radiation exposures while carrying out lifesaving or other emergency activities. They facilitate expeditious decision making and a reasonable consideration of relative risks.

1. Exposure guidelines are consistent with Environmental Protection Agency's Guidance on Dose Limits for Workers Performing Emergency Services (EPA-400-R-92-001)
2. Guidelines are established for:
   a) Providing first aid and medical treatment service.
   b) Undertaking corrective actions.
   c) Performing assessment actions.
   d) Performing personnel decontamination.
   e) Injured person removal and ambulance service.

## 4.8 Contamination Control

4.8.1 Radiation Protection Procedures provide on-site contamination/ decontamination control measures for:

1. Area access control.
2. Equipment, supplies, and instruments.
3. Personnel (including wounds).

These procedures specify levels at which decontamination needs to be performed and provides for decontaminants suitable for expected contamination types including radio/iodine skin contamination.

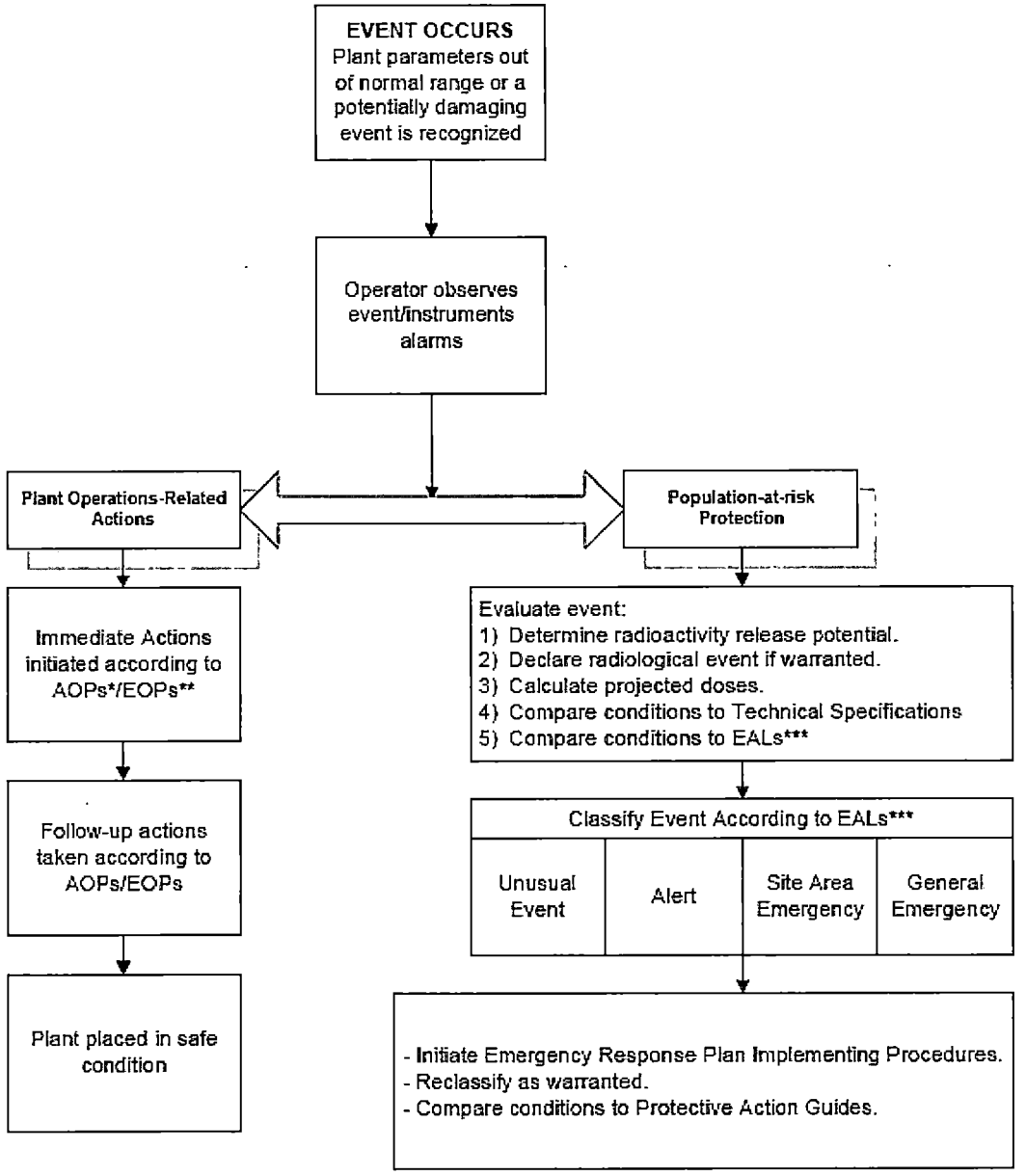
Emergency food and water supplies will be brought to the site as needed. Food and water brought to the site will be protected against contamination.

4.8.2 Radiation Protection Procedures provide for radiological monitoring of people evacuated from the site.

## 4.9 Personnel Emergencies

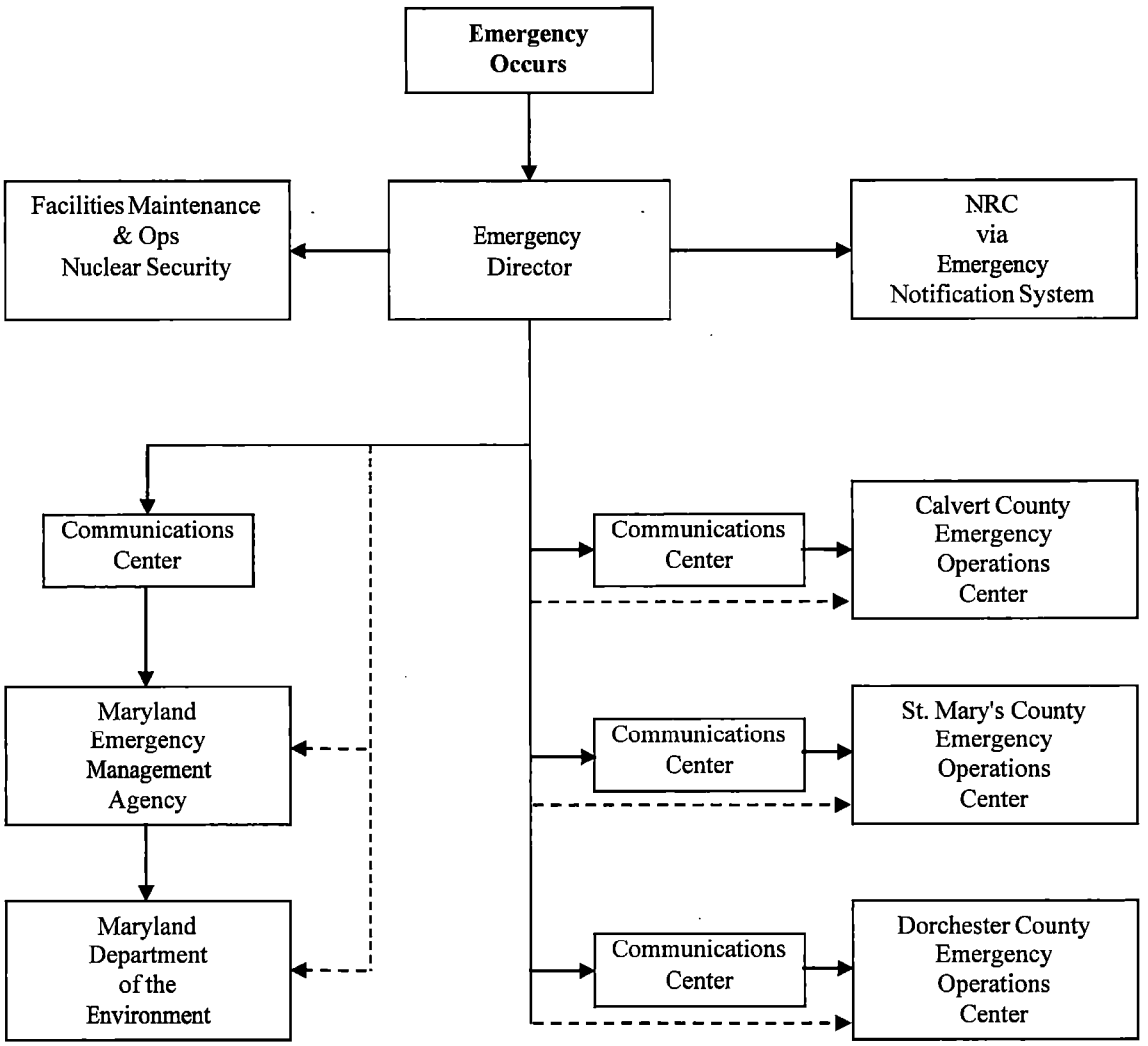
Emergency Plan Implementation Procedures describe actions taken in response to emergencies (with and without contamination considerations). Other procedures such as Fire, Medical, Safety, etc. may also be used to respond to personnel emergencies when the emergency plan is not implemented.

## FIGURE 4-1
## OFF-NORMAL CONDITION RESPONSE SEQUENCE




*AOP -Abnormal Operating Procedure
**EOP -Emergency Operating Procedure
***EAL -Emergency Action Level

**FIGURE 4-2**
**OFF-SITE AGENCY NOTIFICATION**



# Section 5: Facilities and Equipment

## 5.1 Facilities

Specific locations on-site and off-site have been designated as emergency control and support centers. These centers are equipped to control, assess, and correct emergency conditions and allow timely communication between centers. The centers' functional objectives are presented in Figure 5-1, Facilities Functional Objectives.

### 5.1.1 Control Room

Plant operations are directed from the Control Room. Nuclear plant instrumentation, Area and Process Radiation Monitoring System instrumentation, controls and instrumentation for reactor and turbine generator operation are provided here. A description of the Control Room is contained in the Updated Final Safety Analysis Report (Ref. 55) Section 7.6.2. Emergency equipment available to the Control Room is listed in Emergency Plan Implementation Procedures.

### 5.1.2 Emergency Operations Facility (EOF)

1. The Emergency Operations Facility floor plan is shown in Figure 5-2, Emergency Operations Facility, and its location in Calvert County is shown in Figure 5-3, Emergency Operations Facility and Joint Information Center Location.
2. The EOF is the location where the Corporate Emergency Director will direct a staff in evaluating and coordinating the overall company activities involved with an emergency.

   The EOF has facilities and capabilities for:

   - Management of overall emergency response
   - Coordination of radiological and environmental assessment (including receipt and analysis of field monitoring data and sample media coordination)
   - Determination of recommended public protective actions and Notification of off-site agencies.
   - Coordination of event, plant and response information provided to public information staff for dissemination to the media and public
   - Staffing and activation of the facility within time frames and at emergency classification levels defined in the emergency plan
   - Coordination of emergency response activities with Federal, State, and local agencies
   - Provisions are made for acquisition, displaying, and evaluation of radiological, meteorological, and plant system data
   - Analyzing plant technical information and providing technical briefing on event conditions and prognosis to licensee staff and off-site agencies

The EOF is used for continued evaluation and coordination of activities related to an emergency having actual or potential environmental consequences. The EOF is activated during an Alert, Site Area Emergency or General Emergency. Space is provided so that NRC, Federal, State, and local response agencies can coordinate their activities from this location.

3. The Emergency Operations Facility is located about twelve miles from the site, in Calvert Industrial Park, Skipjack Road at Hallowing Point Road. It is a well- engineered structure for design life of Calvert Cliffs Nuclear Power Plant. Detailed emergency equipment listing for the Emergency Operations Facility is contained in Emergency Plan Implementation Procedures.

5.1.3 Technical Support Center

1. The location of the Technical Support Center at Calvert Cliffs Nuclear Power Plant is shown in Figure 5-4, TSC Location Relative to Control Room.
2. The Technical Support Center is a work area for designated technical, engineering, and management personnel who provide technical support to plant operations personnel during emergency conditions. Technical Support Center resources are used to provide guidance and technical assistance to the Control Room and supports the SED assigned Command and Control Functions. Technical Support Center facilitates reactor operator relief from peripheral duties and communications not directly related to reactor system operations. The Technical Support Center will be fully operational within approximately one hour after declaration.
3. The Technical Support Center is located on the 55-foot elevation with an Annex on the 58 foot elevation. It is contiguous with and has direct (door) access from the Control Room (can also be accessed from the Turbine Hall). Habitability duplicates Control Room for postulated accident conditions. Space available is considered adequate for personnel and equipment assigned (NRC Inspection Report dated 5/26/1982 EP Appraisal Combined Inspection Report Nos. 50- 317/81-19 and 50-318/81-18). Radiological protection of personnel is afforded by radiation monitoring personnel.
4. The Plant Process Computers provide data gathering, trending, storage, and display to permit accurate accident assessment with minimum interference of Control Room operation:
   - Safety Parameter Display System provides continuous indication of plant parameters from which quick assessments of plant safety status can be made.
   - Plant Process Computer provides real time and historical displays and reports to assist in analysis of unit shutdown.

These systems have backup battery power supply to maintain continuity of Technical Support Center functions and immediately resume data acquisition, storage, and display if primary source loss occurs.

Parameters monitored in the Technical Support Center include NUREG 0737 Supplement 1 variables as modified by Calvert Cliffs Nuclear Power Plant's submittals to NRC.

5. The Technical Support Center contains or has access to complete and up-to-date plant records and procedures including:
   a. Drawings/Schematics
   b. Technical Specifications
   c. Operating Instructions/Abnormal Operating Procedures/Emergency Operating Procedures
   d. Final Safety Analysis Report
   e. Emergency Plan Implementation Procedures
6. Detailed emergency equipment listing is contained in Emergency Plan Implementation Procedures.

5.1.4 Operations Support Center

The Operations Support Center is located within the protected area (co-located with the Outage Control Center (OCC)) separate from Control Room and Technical Support Center. It provides space for the assembly of support personnel during an emergency. From this location in-plant support (e.g., operations and maintenance), required to bring the plant to a safe, stable condition is coordinated. In this way, access to the Control Room is restricted to personnel specifically requested by the Control Room. No specific habitability criteria are established. Detailed Operations Support Center emergency equipment listing is contained in Emergency Plan Implementation Procedures. Implementation Procedures include provisions for performing Operations Support Center functions by essential support people from a second (alternate) location.

5.1.5 Joint Information Center

1. The Joint Information Center location is shown in Figure 5-3, Emergency Operations Facility and Joint Information Center Location.
2. The Joint Information Center is a central location for Calvert Cliffs Nuclear Power Plant personnel to meet with NRC, State and County representatives for releasing emergency announcements to news media.
3. The Joint Information Center is located about twelve miles from the site, in Calvert Industrial Park, Skipjack Road at Hallowing Point Road. It is a well-engineered structure for design life of Calvert Cliffs Nuclear Power Plant.
4. The Joint Information Center will be activated for a Site Area Emergency and General Emergency. In the first few hours of an emergency (while the Joint Information Center is being activated) Corporate Communications will provide an information clearing house from their current location. Should a crisis

assume prolonged proportions after the center has been activated, Corporate Communications can provide additional personnel. The Joint Information Center, once activated, provides media representatives and public information officers immediate access to accurate emergency related information. The Joint Information Center contains equipment for document reproduction, telecopying, web access, communications, and television electrical connections. The Joint Information Center is a central clearing house for regular information exchange such that all parties have the most current and accurate information to communicate to the public. Figure 5-5, Public Information Flow identifies the flow of public information after Joint Information Center activation.

5.1.6. Laboratories

1. On-site

   The Chemistry Laboratory (Auxiliary Building) is available for emergency response during a design basis accident. This availability includes design basis accidents that are coincident with a loss of off-site power. The laboratory can receive power from the plant's emergency diesel generators. General capabilities include:

   - Radionuclide identification in various sample media.
   - Analysis and measurement of radionuclides in samples taken within the plant and samples taken in the plant site and off-site environment.

2. Off-site

   The Technical and Support Services Division, Exelon Generation Group maintains a fixed counting laboratory in the Fort Smallwood Road Shops Complex:

   - Dosimetry of Legal Record processing.
   - Radiological Environmental monitoring equipment and sample media.
   - Radiological Environmental sampling, and analysis of soil, water, air, vegetation, etc.
   - Radiological Environmental Consulting.

5.1.7 Decontamination

Facilities:

- 69-foot Auxiliary Building, Rad-Con area.
- Farm Demonstration Building (on-site). Serves relocated on-site personnel.
- Calvert Health Medical Center, Inc., Prince Frederick

These facilities contain provisions for radiological decontamination of personnel, their wounds, supplies, instruments and equipment. These facilities have extra clothing and decontaminants suitable for the type of contamination expected, including radioiodine skin contamination. Detailed inventory lists and instructions for these facilities are part of Emergency Plan Implementation Procedures. Waste disposal, subsequent to decontamination activities, is according to

Radiation Protection procedures.

5.1.8 Medical

1. On-Site

   A first aid room located in the Auxiliary Building (69 foot level) facilitates medical treatment and initial assessment of radiation exposure and uptake. Emergency Plan Implementation Procedures coupled with Operations Instructions provide detailed listing of emergency equipment kept there.

2. Off-Site

   Arrangements have been made for local and back-up hospitals and medical services having the capability for evaluation of radiation exposure and uptake and treatment of injuries involving radiation exposure and contamination as well as hostile based event injuries. This arrangement includes assurance that persons providing these services are adequately prepared to handle contaminated individuals. Arrangements with other hospitals having similar capabilities are contained in the Maryland Core Emergency Operations Plan – Fixed Nuclear Facilities (FNF) Appendix (Formerly Annex Q), Radiological Incident Annex.

   Equipment kept at the local off-site facility is listed in the Emergency Plan Implementation Procedures.

3. Transport

   Agreements are maintained for transporting victims of radiological accidents to medical support facilities including transport of contaminated injured individuals or those injured as a result of a Hostile Action Based event.

5.1.9 Alternative Emergency Response Facilities

The Alternative Facility maintains the capability for staging the TSC/OSC emergency response organization personnel in the event of a hostile action. This alternative facility has the capability for communications with the emergency operations facility, control room, and plant security and the capability for engineering assessment activities, including damage control team planning and preparation. Consistent with NRC EPFAQ No. 2013-005, the EOF will satisfy the offsite notification responsibilities for the Alternative Facility. The Alternative Facility is located at the College of Southern Md, Prince Frederick.

## 5.2 Communications

Emergency Plan Implementation Procedures describe the primary and backup means of communications between Calvert Cliffs Nuclear Power Plant, local, State and Federal response organizations. Systems are compatible with one another and include:

- A minimum of a telephone link and alternate (State/local).
- Provision for communications with contiguous State/local governments within the Emergency Planning Zones.
- Provision for communications as needed with Federal emergency response organizations.

- Provision for communications between Plant, Emergency Operations Facility, alternate and alternative facilities, State and local emergency operations centers and radiological monitoring teams.
- Provision for alerting or activating emergency personnel in each response organization.
- Provision for Calvert Cliffs Nuclear Power Plant communication with NRC headquarters and NRC Regional Office Emergency Operations Center and the Emergency Operations Facility and radiological monitoring team assembly area.
- Coordinated communication link for fixed and mobile medical support facilities.

See Appendix 6 for a description of the Calvert Cliffs Communication equipment.

## 5.3 Monitoring Instrumentation

### 5.3.1 Geophysical Phenomena Monitors

1. On-site
   a. Meteorological/Hydrologic
      1) Primary Systems: Meteorological tower is equipped with:
         - 10m & 60m - wind speed/direction sensors.
         - 10m to 60m - Temperature Gradient System with Aspirated Radiation Shields and RTD sensors (10m & 60m ambient temperature).
         - Ground level Precipitation Gauge.
      2) Backup System: The Emergency Plan Implementation Procedures provide instructions for accessing back-up meteorological data in the event the primary meteorological data becomes unavailable.

         This equipment is used to initiate emergency measures according to Emergency Plan Implementation Procedures, Emergency Action Levels. Primary systems produce current local meteorological data that provides the means to estimate radioactive material dispersion due to accidental, atmospheric releases by the plant and is consistent with recommendations addressed in Regulatory Guide 1.23, as supplemented by Supplement 1 to NUREG-0737. The backup system utilizes near site meteorological data that provides information when the primary system is out of service.

   b. Seismic

      The Updated Final Safety Analysis Report (Reference 55) Section 7.5.7 identifies seismic monitoring systems used to initiate emergency classification according to Emergency Plan Implementation Procedures.

2. Off-Site
   a. Agreements are maintained with off-site agencies to acquire geophysical phenomena monitor data for emergency access when necessary. These

agencies are identified in the Emergency Response Facility Directory.

b. Regional meteorological information is available via contracted services with a weather monitoring center that provides appropriate National Weather Service warnings directly to control room personnel. Regional weather information is also available at Exelon's Electric Systems Operations Building, Rutherford Business Center. Capabilities include weather radar monitor and National Weather Service information via the satellite-based data system (National Weather Wire System) from the Washington Weather Forecast Office in Sterling, Virginia.

5.3.2 Meteorological Model

A Class A, atmospheric transport and diffusion assessment model (Ref. 21, App. 2) is maintained on independent, redundant, computers in the Control Room, Technical Support Center, and Emergency Operations Facility (includes a separate computer for state use).

Provisions exist for remote access of site meteorological parameters for Federal, State, and local authorities. The variable trajectory, puff advection, atmospheric dispersion model is used to determine the magnitude of the impact of an accidental release of radioactivity and provides continuous real time (as the release is occurring) assessment of predicted effluent transport and diffusion. The model uses input from meteorological data systems and source term estimates to provide estimates of exposure rates, and dose to 10 miles. It also internally calculates deposition rates and total deposition and uses them, in conjunction with the meteorological and source term data mentioned above, to calculate dose due to ground contamination out to 50 miles. The model accounts for source decay, plume depletion mechanisms, building wake, plume rise and mixing height. For the 10-mile EPZ, the model uses finite cloud techniques to estimate plume exposure dose rates, four-day external dose rates from deposition, thyroid dose rates and dose rates due to inhalation.

Avoided dose is calculated as the sum of external exposure to the plume, internal exposure due to inhalation in the plume and external exposure to ground deposition according to EPA-400 guidance. A complete description is referenced in the Emergency Plan Implementation Procedures and in the URI System Requirements Specification Site Annex.

5.3.3 Radiological Monitors

The Updated Final Safety Analysis Report (Reference 55) Chapter 11, identifies radiological monitors (e.g., process, area, effluent, wound and portable monitors and sampling equipment) available for initiating emergency measures according to Section 3, Classification of Emergencies. Specific instruments are incorporated in Emergency Plan Implementation Procedures.

5.3.4 Process Monitors

The Updated Final Safety Analysis Report (Reference 55) Chapter 7, identifies process monitors (e.g., reactor coolant system pressure and temperature, containment pressure and temperature, liquid levels, flow rates, status or line-up of equipment components) available for initiating emergency measures

according to Section 3, Classification of Emergencies. Specific instruments are incorporated in Emergency Plan Implementation Procedures.

5.3.5 Fire/Combustion Monitors

The Updated Final Safety Analysis Report (Reference 55) Section 9.9, identifies fire and combustion products detectors available for initiating emergency measures according to Section 3, Classification of Emergencies.

5.3.6 Field Monitoring

Emergency Plan Implementation Procedures describe field monitoring capabilities and resources within plume exposure Emergency Planning Zone which are intrinsic to Calvert Cliffs Nuclear Power Plant's concept of operation. These capabilities include transportation and monitoring equipment (dose rate meters and sampling devices). Sampling devices are capable of detecting and measuring radioiodine concentrations in air as low as 1E-7 uCi/cc under field conditions. Interference from noble gas presence and background radiation do not decrease the stated minimum detectable activity. Maps identify preselected sampling and monitoring points using sector and zone designators such as those in Reference 21, Table J-1.

5.3.7 Environmental Monitoring

The Updated Final Safety Analysis Report (Reference 55) Section 11.2.3.4 and Off-site Dose Calculation Manual, describe the off-site radiological monitoring program for the area surrounding Calvert Cliffs Nuclear Power Plant. Appropriate equipment is provided to facilitate this program. The monitoring equipment meets, as a minimum, the NRC Radiological Assessment Branch Technical Position for the Environmental Radiological Monitoring Program.

5.3.8 Post Accident Sampling

The Updated Final Safety Analysis Report (Reference 55) Section 9.6.2.2 describes capabilities and resources available to provide initial values and continuing assessment through the course of an accident for post-accident sampling. Capability to sample and analyze the containment atmosphere and Reactor Coolant System meets or exceeds NUREG 0737, Item II.B.3 requirements as modified by Calvert Cliffs Nuclear Power Plant's submittals to NRC. Calvert Cliffs Nuclear Power Plant procedures detail system operations.

5.3.9 In-plant Iodine Instrumentation

Radiation Protection Procedures and Emergency Plan Implementation Procedures describe in-plant iodine instrumentation which provides on-site capabilities for determining initial iodine values and continuing assessment through the course of an accident.

## 5.4 Emergency Kits

Emergency Plan Implementation Procedures identify emergency kits/lockers and their contents (protective equipment, communications equipment, radiological monitoring equipment and emergency supplies).

## 5.5 Respiratory Protection

Radiation Protection Procedures provide for individual respiratory protection for individuals remaining or arriving on-site during emergencies.

Site specific ERO Respirator qualification requirements contained in the ERO Training and Qualification procedure take precedence over requirements contained in the Exelon Standardized Radiological Emergency Plan for Calvert Cliffs Station.

## 5.6 Protective Clothing

Supplies of apparel include coveralls, rubber gloves, shoe covers and boots, and hoods. Inventories are maintained for normal plant use by Radiation Protection personnel. Emergency clothing supplies are kept at specific areas and emergency centers. This clothing is issued to personnel required to enter areas of known or suspected radioactive contamination. For emergency conditions, normal street clothing is considered as protective apparel. It can be supplemented, as necessary, to protect skin surfaces.

## 5.7 Radioprotective Drugs

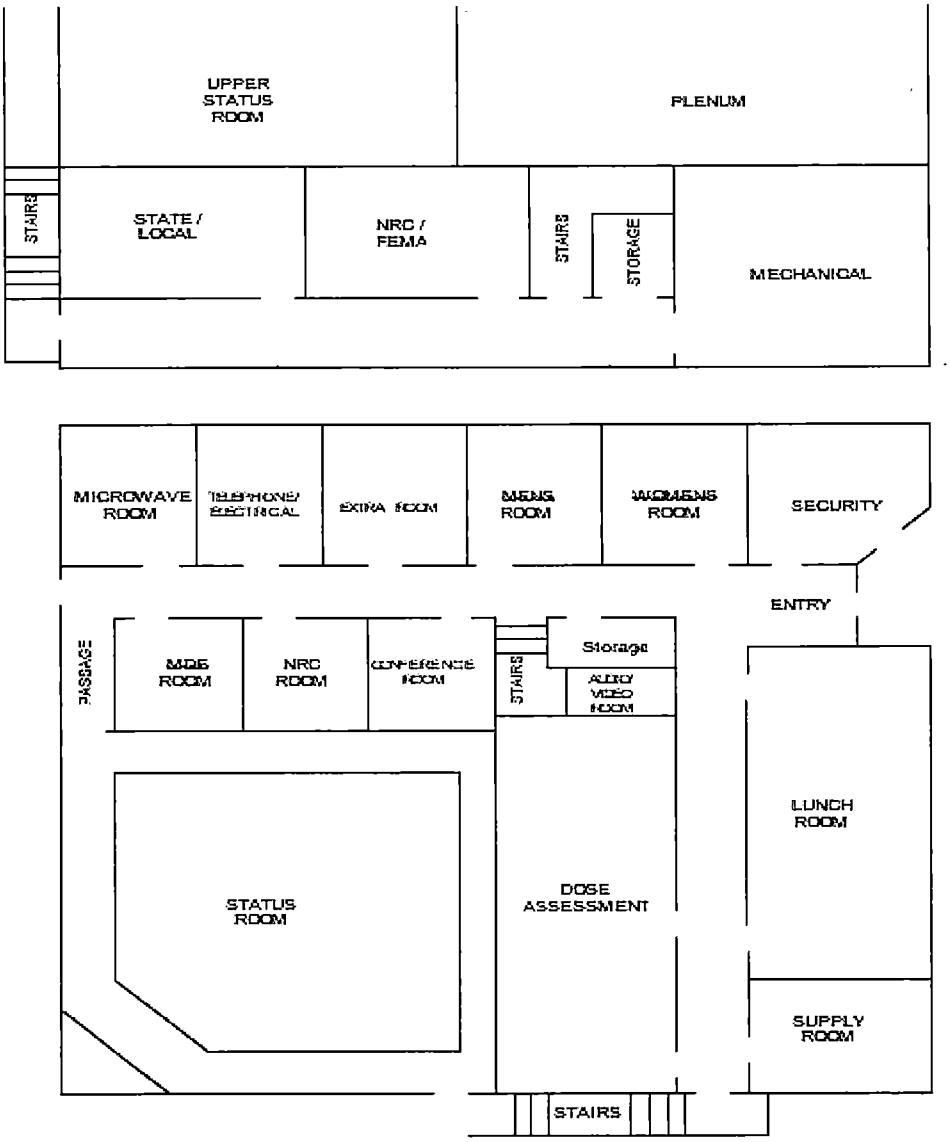
Emergency Plan Implementation Procedures provide for use of radioprotective drugs (e.g., individual thyroid protection) for individuals remaining or arriving on-site during emergencies.

**FIGURE 5-1**

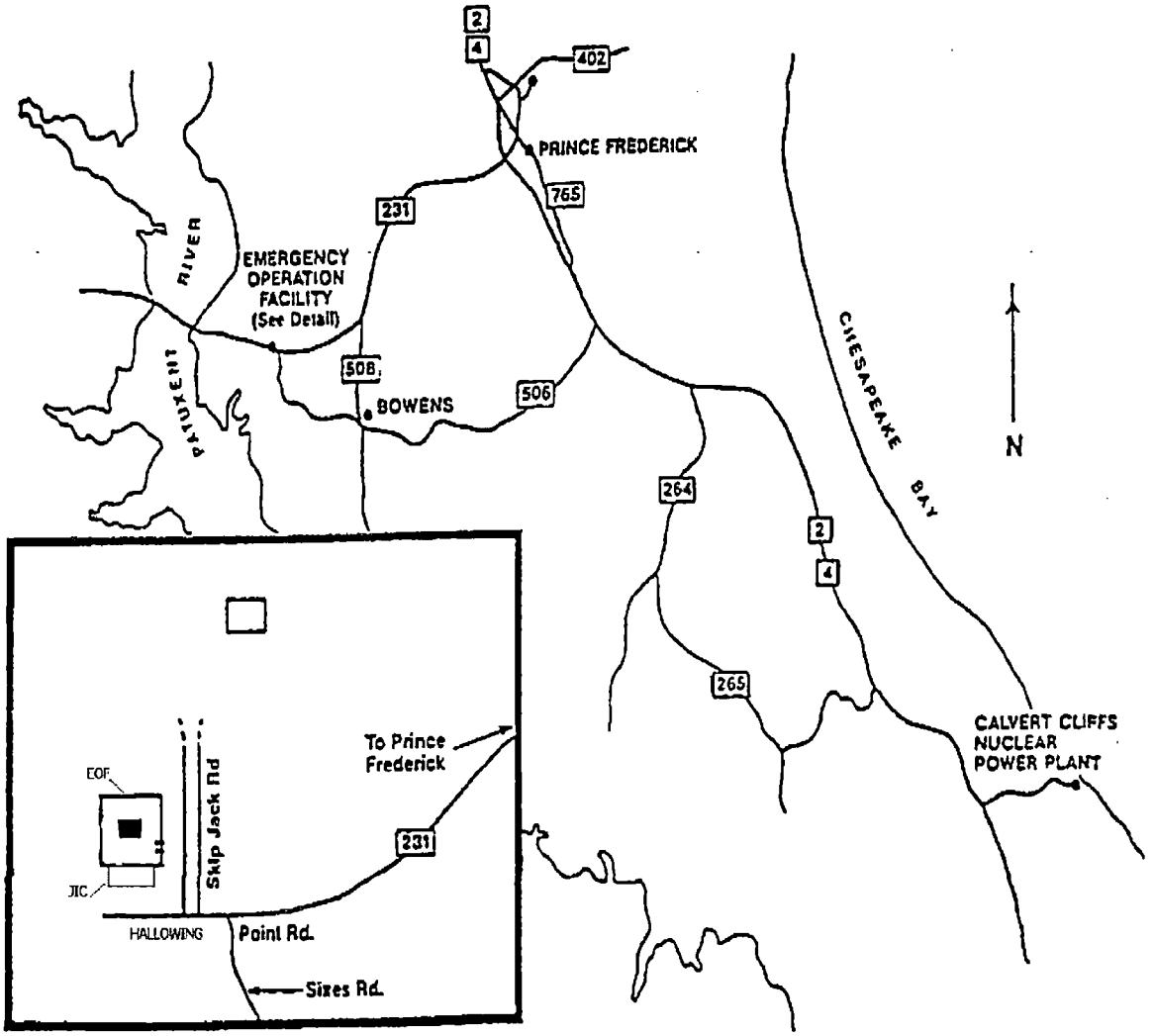
**FACILITY FUNCTIONAL OBJECTIVES**

| FACILITY NAME | FUNCTIONAL OBJECTIVES |
|---|---|
| Emergency Operations Facility (EOF) | 1) Management of overall emergency response<br>2) Coordination of radiological and environmental assessment (including receipt and analysis of field monitoring data and sample media coordination)<br>3) Determination of recommended public protective actions and Notification of off-site agencies<br>4) Coordination of event, plant and response information provided to public information staff for dissemination to the media and public<br>5) Staffing and activation of the facility within time frames and at emergency classification levels defined in the emergency plan<br>6) Coordination of emergency response activities with Federal, State, and local agencies<br>7) Provisions are made for acquisition, displaying, and evaluation of radiological, meteorological, and plant system data<br>8) Analyzing plant technical information and providing technical briefing on event conditions and prognosis to licensee staff and off-site agencies |
| Technical Support Center (TSC) | 1) Provide plant management and analytical support to Operations personnel during emergency conditions.<br>2) Relieve reactor operators of peripheral duties and communications not directly related to reactor system manipulations.<br>3) Provide and coordinate engineering support for emergency response.<br>4) Prevent congestion in the Control Room<br>5) Classification of Emergencies<br>6) Authorization of Emergency Exposures and the use of Potassium Iodide. |
| Operations Support Center (OSC) | 1) Provide and coordinate logistic support (i.e., maintenance, etc.) to bring the plant to a safe, stable condition.<br>2) Restrict Control Room access to personnel specifically requested by Shift Manager or TSC Operations Manager. |
| Joint Information Center (JIC) | 1) Provide media representatives with immediate access to accurate emergency related information, generated by all involved agencies.<br>2) Provide equipment for document reproduction, telecopying, communications, and television electrical connections. |
| Alternative Facilities | 8.1 Staging area for the TSC/OSC emergency response organization personnel in the event of a hostile action.<br>8.2 Communication capability with EOF, Control Room and Plant Security.<br>8.3 Capability to perform engineering assessment activities including damage control team planning and preparation. |

## Figure 5-2, Emergency Operations Facility



## FIGURE 5-3, EMERGENCY OPERATIONS FACILITY AND JOINT INFORMATION CENTER LOCATION



## FIGURE 5-4

## TSC LOCATION RELATIVE TO CONTROL ROOM

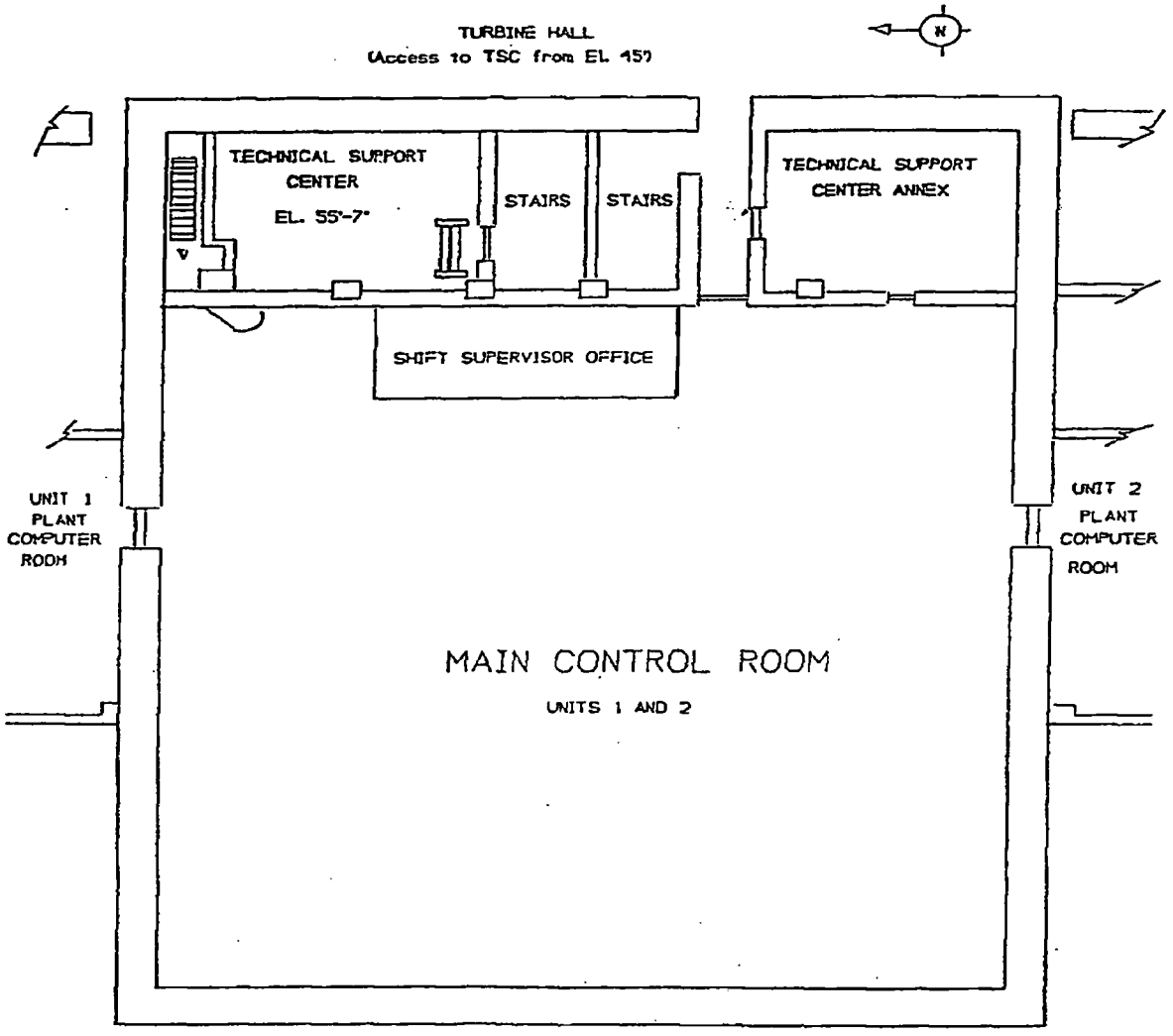
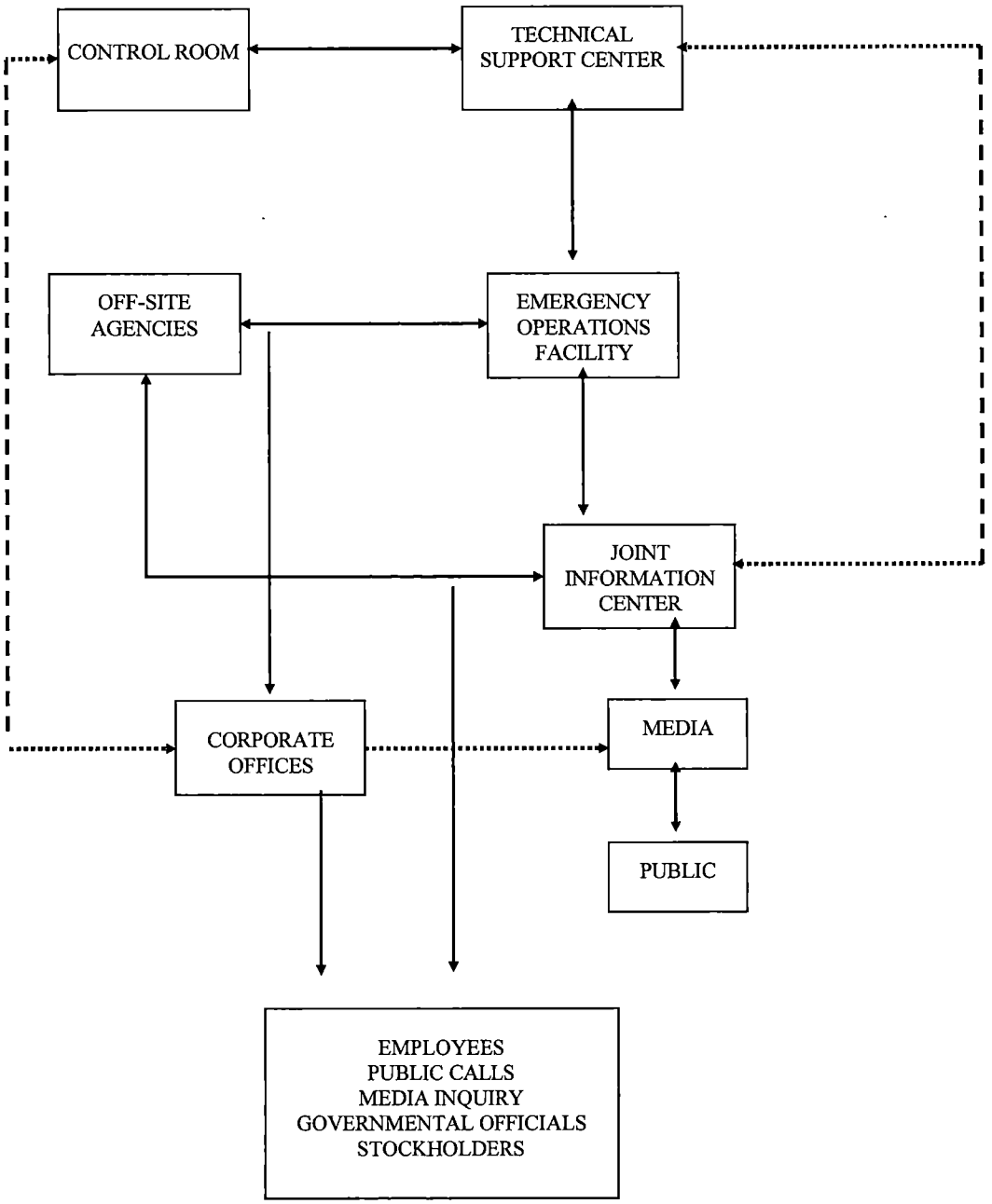


**FIGURE 5-5**

**PUBLIC INFORMATION FLOW**




_____ Normal Information Flow (JIC Activated)

_____ Back-up Information Flow (Prior to JIC Activation or JIC communications directly with station)

# Section 6: Maintaining Nuclear Emergency Preparedness

## 6.1 Training

An integrated training program provides for and ensures initial, annual, and continuing training of appropriate individuals and groups involved in emergencies.

### 6.1.1 General Orientation

General Employee Training describes the program that provides training to all persons having access to Calvert Cliffs Nuclear Power Plant and includes Emergency Plan indoctrination.

### 6.1.2 Emergency Personnel

Plant procedures establish a training program for instructing personnel who implement radiological emergency plans. Specialized initial training, annual, and continuing training programs (including scope, nature and frequency) is provided for:

1. Directors or coordinators of response organizations.
2. Personnel responsible for accident assessment.
3. Radiological monitoring teams and radiological analysis personnel.
4. Security and firefighting personnel.
5. On-site repair and damage control/correctional action teams.
6. First aid and rescue personnel. This training includes courses equivalent to or exceeding Red Cross Multi-Media.
7. Local support services personnel including Emergency Management/Emergency Services personnel. Site specific training is provided to those off-site organizations who may be called upon to provide assistance.
8. Medical support personnel.
9. Recovery Organization personnel.
10. Personnel responsible for transmission of emergency information instructions.

Annual requalification training as applied to those personnel assigned Exelon ERO positions is defined as once per calendar year not to exceed 18 months between training sessions. The training program for members of the emergency organizations includes practical drills in which individuals demonstrate ability to perform assigned emergency functions. The training frequency for the practical drills is at least once every 2 years.

### 6.1.3 Public

1. Calvert Cliffs Nuclear Power Plant coordinates annual updating and dissemination of information to the public regarding how they will be notified and what their actions should be in an emergency. The information includes but is not necessarily limited to:
   a. Educational information on radiation.
   b. Contact for additional information.

c. Protective measures, e.g., evacuation routes and reception centers, sheltering, respiratory protection, radioprotective drugs.

d. Special needs of the handicapped.

Means for accomplishing this dissemination include publication distribution, and signs or notices to refer the transient population to radio stations or another source of local emergency information.

This program provides the permanent and transient adult population within the plume exposure Emergency Planning Zone an adequate opportunity to become aware of the information annually. Publications and information provide written material that is likely to be available in a residence during an emergency.

2. Calvert Cliffs Nuclear Power Plant disseminates information annually to acquaint news media with emergency plans, information concerning radiation, and points of contact for release of public information in an emergency.

6.1.4 Emergency Preparedness Organization

The Emergency Preparedness Organization maintains a training program for Emergency Preparedness Organization members responsible for the planning effort. Training includes attendance at emergency planning seminars, information workshops and training classes, and literary reviews.

## 6.2 Exercises and Drills

Plant procedures provide for periodic exercises to evaluate major portions of emergency response capabilities; drills to develop and maintain skills; tests to verify communications operability; and correction of deficiencies identified as a result of any of the preceding. During drills, on-the-spot correction of performance errors is made with a demonstration of proper performance offered by the controller. Correction of errors made in exercises is through Self-Assessment and Corrective Actions programs described in plant procedures.

## 6.3 Program Responsibility

The Emergency Preparedness Manager has authority and responsibility for Calvert Cliffs Nuclear Power Plant radiological emergency response planning. This responsibility includes emergency plan development and updating and coordination of plans with other response organizations.

## 6.4 Equipment Inventory and Maintenance

Emergency equipment and instrumentation are inspected, inventoried and/or operationally checked once each calendar quarter, after each use and/or whenever tampering is suspected.

Equipment calibration is according to plant procedures that endorse manufacturers' calibration recommendations. Sufficient reserves are available to replace items removed from emergency kits for calibration and repair.

## 6.5 Program Review and Update

6.5.1 Calvert Cliffs Emergency Plan and plant procedures and agreements contained there-in are updated as needed. Updates include changes identified by drills and exercises.

6.5.2 Calvert Cliffs Emergency Plan changes and revisions shall be reviewed by the Plant Operations and Review Committee. The Plant Operations and Review Committee shall submit recommended changes to the Nuclear Safety Review Board according to plant procedures.

6.5.3 Calvert Cliffs Emergency Plan and Emergency Plan Implementation Procedures and approved changes are forwarded to appropriate organizations and individuals having responsibility for their implementation. Revised pages are marked to show changes, except where changes are extensive. An Emergency Plan distribution list is maintained according to standard plant practices for document control. The Calvert Cliffs Emergency Plan is submitted to the Nuclear Regulatory Commission (NRC) Document Control Desk through standard plant practices for transmitting approved documentation to the NRC.

6.5.4 The Calvert Cliffs Emergency Plan is certified by the Emergency Preparedness Manager to be current on an annual basis. Emergency Plan Implementation Procedures are certified by the Emergency Preparedness Manager to be current on a biennial basis.

6.5.5 Documents that are associated with the Calvert Cliffs Emergency Plan that contain telephone numbers are updated quarterly.

6.5.6 Emergency Preparedness will ensure that all emergency preparedness program elements are reviewed by persons who have no direct responsibility for the implementation of the emergency preparedness program either:

1. At intervals not to exceed 12 months or,
2. As necessary, based on an assessment against performance indicators, and as soon as reasonably practicable after a change occurs in personnel, procedures, equipment, or facilities that potentially could adversely affect emergency preparedness, but not longer than 12 months after the change. In any case, all elements of the emergency preparedness program are to be reviewed at least once every 24 months.

This review includes an evaluation for adequacy of interfaces with the State and local governments and of drills, exercises, capabilities, and procedures. The Emergency Preparedness Manager will evaluate and correct review findings. The results of the review, along with the recommendations for improvement, must be documented and reported to corporate and plant management. Parts of the review involving the adequacy evaluation of the interface with the State and local governments are made available to them. Review results are retained for five years.

6.5.7 Annually, emergency action levels are reviewed with State and local government authorities.

## 6.6 Records

6.6.1 Plant procedures describe retention requirements for records generated as a result of the implementation of the Emergency Plan.

6.6.2 Records pertaining to the independent review of the emergency preparedness program will be collected, stored, maintained and retrieved according to plant procedures. Independent review records include:

1. Review report (includes findings and recommendations).
2. Review findings and recommendations resolution.
3. Reports pertaining to interface with off-site agencies shall be made available to the appropriate state or local government.

# SECTION 7: DEFINITIONS AND ACRONYMS

## 7.1 Abbreviations & Acronyms

| | |
|---|---|
| ALARA | As Low As Reasonably Achievable |
| ANSI | American National Standards Institute |
| AOP | Abnormal Operating Procedures |
| CCNPP | Calvert Cliffs Nuclear Power Plant |
| CFR | Code of Federal Regulations |
| DHS | Department of Homeland Security |
| DOE | Department of Energy |
| DOT | Department of Transportation |
| EAL | Emergency Action Level |
| RM | Recovery Manager |
| EOC | Emergency Operations Center |
| EOF | Emergency Operations Facility |
| EOP | Emergency Operating Procedures |
| EPA | Environmental Protection Agency |
| EPZ | Emergency Planning Zone |
| EPlan | Emergency Plan |
| EPIP | Emergency Plan Implementation Procedure |
| EWP | Emergency Work Permit |
| FEMA | Federal Emergency Management Agency |
| FRMAP | Federal Radiological Monitoring and Assessment Program |
| HEW | Health Education and Welfare |
| HP | Health Physics |
| HSM | Horizontal Storage Module |
| INPO | Institute of Nuclear Power Operations |
| ISFSI | Independent Spent Fuel Storage Installation |
| JIC | Joint Information Center |
| LNG | Liquefied Natural Gas |
| LOCA | Loss of Coolant Accident |
| MDE | Maryland Department of the Environment |
| MEMA | Maryland Emergency Management Agency |
| NFPA | National Fire Prevention Association |
| NRC | Nuclear Regulatory Commission |

| | |
|---|---|
| NRR | Nuclear Reactor Regulation (Branch of NRC) |
| NSRB | Nuclear Safety Review Board |
| OI | Operating Instructions |
| OP | Operating Procedures |
| OSC | Operational Support Center |
| PAG | Protective Action Guidelines |
| PAR | Protective Action Recommendation |
| PAXNAS | Patuxent River Naval Air Station |
| PORC | Plant Operation Review Committee |
| PPRP | Power Plant Research Program |
| REAC/TS | Radiation Emergency Assistance Center/Training Site |
| RMS | Radiation Monitoring System |
| RPM | Radiation Protection Manager |
| SCBA | Self-Contained Breathing Apparatus |
| TSC | Technical Support Center |
| U-1 | Unit 1 |
| U-2 | Unit 2 |
| USCG | United States Coast Guard |
| UFSAR | Updated Final Safety Analysis Report |

## 7.2 Definitions

- Emergency - situation that may result in undue risk to public/site personnel health and safety, or significant damage to plant equipment. Emergency phases:
  a) Occurrence - actual physical event with associated alarms, warning signals, and immediate protective actions provided within the facility.
  b) Emergency - actions taken to protect lives and property. These actions are taken by on-site personnel at the time of event. Only equipment and resources immediately available are of value in this phase.
  c) Recovery/Restoration - actions are planned, organized, and directed towards recovery from the results of the event. Actions include restoring equipment and condition to original, or acceptable intermediate state. Off-site equipment and personnel may be used. When situation control is established, restoration efforts are abandoned.
- Emergency Operations Center (EOC) - designated State and local facilities designed and equipped for agency emergency operations coordination and control.
- Emergency Planning Zones (EPZs)

a) Plume EPZ area, about 10 miles in radius from Calvert Cliffs Nuclear Power Plant center point, for which plume exposure emergency planning considerations have been given to protect people and property.

b) Ingestion EPZ area, about 50 miles in radius from Calvert Cliffs Nuclear Power Plant center point, for which ingestion exposure emergency planning consideration has been given to protect people and property.

- Exclusion Boundary - That area of CCNPP site within 1150-meter radius of either containment as defined in Section 100.3(a) of 10 CFR 100.
- Ingestion Exposure Pathway - Pathway where principal exposure would be from ingestion of contaminated water or food (e.g., milk, fresh vegetables). Potential exposure time could range from hours to months.
- Off-site - area outside Calvert Cliffs property boundary.
- On-site - area within Calvert Cliffs property boundary.
- Plume Exposure Pathway - Pathway where principal exposure source is from:

  a) Plume and deposited materials for whole body external gamma radiation exposure.

  b) Passing radioactive plume for inhalation exposure. Exposure time could range from hours to days.

- Position Specific Checklist - Checklist directing actions of an ERO position.
- Projected Dose - calculated or estimated radiological dose that the affected population could receive if no protective actions are taken.
- Projected Dose Commitment - calculated or estimated future dose commitment which could be received by population-at-risk individual(s) from inhalation or ingestion of radioactive material if no protective actions are taken.
- Property Boundary - outer limits Calvert Cliffs Nuclear Power Plant property.
- Protected Area - the site-specific area which normally encompasses all controlled area within the security Protected Area fence (does not include ISFSI).
- Protective Actions - measures taken to prevent or minimize a projected dose.
- Protective Action Guides - projected total effective dose equivalent to individuals in the general population that warrants protective action as described in the Environmental Protection Agency's Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, October 1991 (EPA-400-R-92-001).
- Protective Action Recommendations (PAR) - protective actions recommended by Calvert Cliffs Nuclear Power Plant to State and County decision makers to prevent or minimize a projected total effective dose equivalent to individuals in the general population.
- Radiation Incident - unexpected event, occurrence, or circumstance involving radiation exposure or radioactive contamination requiring a report pursuant to 10CFR20.2203.
- Radiologically Controlled Area (RCA) [Restricted Area] – Any plant area(s)

where radiation levels are equal to or greater than 2.0 mrem in one hour, OR where a person could receive a Total Effecting Dose Equivalent (TEDE) of 100 mrem in a year, OR removable radioactive contamination exists at levels detectable above background, OR any room which contains radioactive materials in excess of 10 times the quantity of material specified in 10 CFR 20, Appendix C.

- Recovery Actions - actions taken after an emergency to restore the plant as nearly as possible to pre-emergency condition.

## SECTION 8: REFERENCES


8.1 ANSI/ANS-3.7.1.-1979, American National Standard for Facilities and Medical Care in On-site Nuclear Power Plant Radiological Emergencies.

8.2 ANSI/ANS-3.7.2.-1979, American National Standard for Emergency Control Centers for Nuclear Power Plants.

8.3 ANSI/N320-1979, American National Standard Performance Specifications for Reactor Emergency Radiological Monitoring Instrumentation.

8.4 ANS-3.2/ANSI N18.7-1976, Administrative Controls and Quality Assurance for the operations Phase of Nuclear Power Plants.

8.5 "Decontamination and Treatment of the Radioactively Contaminated Patient," Calvert Memorial Hospital and Calvert Cliffs Nuclear Power Plant.

8.6 Calvert Cliffs Nuclear Power Plant Operating License Unit 1, NO. DPR-53 and Unit 2 NO. DPR- 69, including:

a. Appendix A, Technical Specifications (Safety)

b. Appendix B, Technical Specifications (Environmental)

8.7 Calvert Cliffs Nuclear Power Plant Procedures:

c. Nuclear Program administrative interdepartmental, departmental and section/unit Procedures

d. Radiation Protection Procedures

e. Nuclear Engineering Operating Instructions

f. Operating Procedures (Emergency Operating Procedures, Abnormal Operating Procedures, Operating Instructions)

g. Security Plan Implementation Procedures

h. Security Plan

i. Calvert Cliffs Safety Parameters Display System Alarm Manual

j. Fleet Industrial Safety Manual

k. Off-site Dose Calculation Manual

8.8 Department of Health, Education, and Welfare, Food and Drug Administration, 21 CFR Part 1090, "Accidental Radioactive Contamination of Human Food and Animal Feeds" Proposed Rules, Federal Register, Vol. 43, No. 242, December 15, 1978.

8.9 Department of Health, Education, and Welfare, Food and Drug Administration Notice on "Potassium Iodide as a Thyroid-Blocking Agent in a Radiation Emergency," Federal Register, Vol. 43, No. 242, December 15, 1978.

8.10 Federal Radiation Council Report NO. 7, May 1965, Background Material for the Development of Radiation Protection Standards.

8.11 Final Safety Analysis Report (FSAR), Calvert Cliffs Nuclear Power Plant, Inc., Calvert Cliffs Nuclear Power Plant.

8.12 Markee,/E. H., "On the Relationships of Range to Standard Deviation of the Wind Fluctuations, "Monthly Weather Review, Vol. 91, No. 2 (February 1963).

8.13 National Council on Radiation Protection Report NO. 39, January 15, 1971, "Basic Radiation Protection Criteria."

8.14 National Council on Radiation Protection Report 53 March 1, 1977, "Review of NCRP Radiation Dose Limits for Embryo and Fetus in Occupationally-Exposed Women."

8.15 National Council on Radiation Protection Report NO. 55, August 1, 1977, "Protection of the Thyroid Gland in the Event of Releases of Radioiodine."

8.16 NUREG-75/087, Revision 1, USNRC Standard Review Plan Section 9.5.1, Fire Protection Program, and Section 13.3, Emergency Planning.

8.17 NUREG-0396, EPA 520/1-78-016, November 1978, Planning Basis for the Development of Site and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants.

8.18 NUREG-0578 (extracts), July 1979, TMI-2 Lessons Learned Task Force Status Report and Short-Term Recommendations.

8.19 NUREG-0600 (extracts), Investigation into the March 28, 1979 Three Mile Island Accident by Office of Inspection and Enforcement, dated August 1979.

8.20 NUREG-0610, USNRC Draft Emergency Action Level Guidelines for Nuclear Power Plants, dated September 1979.

8.21 NUREG-0654/FEMA-REP-1, Revision 1, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans for Preparedness in Support of Nuclear Power Plants, November 1980.

8.22 NUREG-0696, Functional Criteria for Emergency Response Facilities, February 1981.

8.23 D. Ramsden, F.H. Passant, C.O. Peabody, and R.G. Speight "Radioiodine Uptake in the Thyroid Studies of the Blocking and Subsequent Recovery of the Gland Following and Administration of Stable Iodine, "Health Physics 13, 633, Pergamon Press, 1967 (RA67).

8.24 Slade, D.H., "Dispersion Estimates from Pollutant Releases of a Few Seconds to 8-hours in Duration," Technical Note 2-ARL-1, ESSA, Washington, DC, (August 1965).

8.25 State of Maryland Radiological Emergency Plan, (July 2007 Revision 10), Annex Q.

8.26 Title 10, Code of Federal Regulations.

l. Part 20, Standards for Protection Against Radiation.

m. Part 50, Licensing of Production and Utilization Facilities.

n. Part 50, Appendix E, Emergency Plans for Production and Utilization Facilities.

o. Part 50, Appendix E, Emergency Planning and Preparedness for Production and Utilization Facilities, Proposed Rule, Published in the Federal Register

on August 29, 1979

p. Part 100, Reactor Site Criteria.

8.27 U.S. NRC, Emergency Planning Review Guideline Number One-Revision One-Emergency Planning Acceptance Criteria For Licensed Nuclear Power Plants, dated September 7, 1979.

8.28 U.S. NRC, SECY-79-450, dated July 23, 1979, Action Plan for Promptly Improving Emergency Preparedness.

8.29 U.S. NRC Regulatory Guide 1.16, Revision 4, dated August 1975, Reporting of Operating Information - Appendix A, Technical Specifications.

8.30 U.S. NRC Regulatory Guide 1.21, Revision 1, Dated June 1974, Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Material in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants.

8.31 U.S. NRC Regulatory Guide 1.23, proposed Revision 1, September 1981, Meteorological Programs in Support of Nuclear Power Plants.

8.32 U.S. NRC Regulatory Guide 1.97, Revision 2, December 1980, Instrumentation for Light-Water- Cooled Nuclear Power Plants to Assess Plant Conditions During and Following an Accident.

8.33 U.S. NRC Regulatory Guide 1.70, Revision 3, Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants, Section 13.3, "Emergency Planning."

8.34 U.S. NRC Regulatory Guide 1.120 (for comment), Revision 1 dated November 1977, Fire Protection Guidelines for Nuclear Power Plants.

8.35 U.S. NRC Regulatory Guide 1.109, Revision 1, Dated October 1977, Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I.

8.36 Report to NRC prepared by Combustion Engineering, Inc., and submitted by Baltimore Gas and Electric as "Environmental Impact of Extended Fuel Cycles in Calvert Cliffs Units 1 and 2." November 1979.

8.37 Calvert Cliffs Fire Fighting Strategies Manual.

8.38 Emergency Plan Implementation Procedures, Calvert Cliffs Nuclear Power Plant.

8.39 "Emergency Resources Manual (RP/EP-1)," Institute of Nuclear Power Operations.

8.40 NUREG/CR-1311, October 1979 "Examination of Off-site Radiological Emergency Protective Measures for Nuclear Power Accidents Involving Core Melt."

8.41 CCNPP Operating Procedures, OP-2 Rev. 5, April 1979, "Measurements of Radionuclides in Milk."

8.42 CCNPP Operating Procedures, OP-4 Rev. 9, March 1980 "Procedures for Collection and Radioanalysis of Aquatic Samples."

8.43 CCNPP Operating Procedures, OP-5 Rev. 7, August 1979, "Collection and Radioanalysis of Terrestrial and Atmospheric Samples."

8.44 CCNPP Operating Procedures, OP-6 Rev. 3, June 1978, "External Radiation Dose

Rate Measurements."

8.45 Commonwealth of Virginia, Radiological Emergency Response Plan (RERP).

8.46 State of Delaware, Radiological Emergency Plan (REP).

8.47 District of Columbia, District Response Plan.

8.48 NUREG-0818, October 1981, "Emergency Action Levels for Light Water Reactors" Draft Report for Comment.

8.49 "Upgraded Public Alert and Notification System Design Report for Calvert Cliffs Nuclear Power Plant,"

8.50 Updated Safety Analysis Report for Independent Spent Fuel Storage Installation.

8.51 Regulatory Guide, 1.101, U.S. NRC, Emergency Planning For Nuclear Power Plant.

8.52 USNRC Safety Guide 23, February 1972, "Onsite Meteorological Programs."

8.53 NUREG -0737, November 1980, "Clarification of TMI Action Plan Requirements."

8.54 NUREG-0737, Supplement 1, January 1983, "Clarification of TMI Action Plan Requirements: Requirements for Emergency Response Capability."

8.55 Updated Final Safety Analysis Report (UFSAR), Calvert Cliffs Nuclear Power Plant, Units 1 and 2, Calvert Cliffs Nuclear Power Plant, Inc.

8.56 Nuclear Crisis Management Protocol, Business Continuity Program.

8.57 Calvert County REP and SOP.

8.58 St. Mary's County REP and SOP.

8.59 Dorchester County REP and SOP.

8.60 EPA manual of PAGs and Protective Actions for Nuclear Incidents, October 1991 (EPA-400-R- 92-001).

8.61 "Public Protection Strategies for Potential Nuclear Accidents," "Sheltering Concepts with Existing Public and Private Structures" (SAND 77-1725), Sandia Laboratory.

8.62 "Examination of Off-Site Radiological Emergency Measures for Nuclear Reactor Accidents involving Core melt" (SAND 78-0454), Sandia Laboratory.

8.63 "Protective Action Evaluation, Part II, Evacuation and Sheltering as Protective Actions Against Nuclear Accidents Involving Gaseous Releases" (EPA 520/1-78-001B).

8.64 "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents" (EPA 400-R-92-001).

8.65 "Criteria for Protective Action Recommendations for Severe Accidents" (NUREG-0654/FEMA-REP-1, Rev. 1, Supp. 3).

8.66 "RTM-96, Response Technical Manual" (NUREG/BR-0150, Vol. 1, Rev. 4.).

8.67 "Accidental Radioactive Contamination of Human Food and Animal Feeds: Recommendations for State and Local Agencies" (Center for Devices and Radiological Health, FDA, August 13, 1998).

# APPENDIX 1
# NUREG-0654 Evaluation Criteria Cross Reference

| NUREG-0654 Reference | Criteria | Plan Reference Section No. |
|---|---|---|
| A1 – Item a | Identification of Response Organizations | 1.2, 1.3, 2.6, 2.7 |
| A1 – Item b | Organization of Concept of Operations | 1.3, 2.1, 2.3- 2.7 |
| A1 – Item c | Organizational Inter-Relationships - Block Diagrams | Fig. 2-3 - Fig. 2-4 |
| A1 – Item d | Designation of Organization Director | 2.2 |
| A1 – Item e | 24 Hour Response/Communication | 2.1, 4.2, Fig. 4-2 |
| A2 – Item a | Organization Authority | N/A (not required in Licensee Plans) |
| A2 – Item b | Legal Basis for Organization Authority | N/A (not required in Licensee Plans) |
| A3 | Formal Intra-government/Organization Agreements | 2.3 - 2.5, App. 2 |
| A4 | Designated Authority for Organization Resource Continuity | 2.1, 2.2 |
| B1 | Provision for Onsite Shift Emergency Organization | 2.1, 2.3, Fig. 2-1, Fig. 2-2, |
| B2 | Designation of Onsite Emergency Director | 2.2.1 |
| B3 | Line of Succession for the Emergency Director | 2.2.1, 2.2.2 |
| B4 | Functional Responsibilities of the Emergency Director | 2.2.1, 2.2.2 |
| B5 | Assignment of On-Site Emergency Personnel | Sect. 2, 4.3, Fig 2-1 |
| B6 | Onsite Emergency Organization Interface | Sect. 2 |
| B7 | Designation of Minimum Staffing Requirements for Plant Emergencies | 2.2, Fig. 2-1 |
| B7 – Item a | Logistics Support for Emergency Personnel | App. 4 |
| B7 – Item c | Management Level Interface with Governmental Authorities | 2.2.2 |
| B7 – Item d | Information/Press Releases | App. 4 |
| B8 | Contractor & Private Organization to provide assistance | 2.3, 2.4 |
| B9 | Designation/Responsibility/Limitations of Local Agency Assistance | 2.3 - 2.5 |
| C1 | Licensee shall make provisions for incorporating the Federal response capability into its operation plan | 2.5.4 |
| C1 – Item a | Authority to Request RAP/IRAP Resources | 2.2.1, 2.2.2 |

## APPENDIX 1
## NUREG-0654 Evaluation Criteria Cross Reference

| | | |
|---|---|---|
| C1 – Item b | Federal Resources Expected and Time of Arrival | 2.5.4 |
| C1 – Item c | Specify Support Available to Federal Response | 2.5.4 |
| C2 – Item a | Organization Representative at Near-Site Emergency Operations Facility | N/A (not required in Licensee Plans, see State & County Plans) |
| C2 – Item b | Licensee Representative at Governmental EOC | App. 4 |
| C3 | Radiological Laboratory Capabilities | 5.1.6 |
| C4 | Nuclear Assistance Sources | 2.3 - 2.5, App. 2 |
| D1 | Facility Emergency Classification System | Sect. 3 |
| D2 | Initiating Conditions | Addendum 3 |
| D3 | State and Local Emergency Classification System | N/A (not required in Licensee Plans, see State & County Plans) |
| D4 | State and Local Procedures | N/A (not required in Licensee Plans, see State & County Plans) |
| E1 | Bases for Notification/Verification | 3.1, 4.2. Fig. 4-1, Fig. 4-2 |
| E2 | Personnel Notification/Alert/Mobilization Procedures | 4.2.1, 4.3.1 |
| E3 | Contents of Initial Plant Emergency Messages | 4.2.3 |
| E4 | Provisions for Content of Plant Follow-up Messages | 4.2.3 |
| E5 | Dissemination of Information from Plant Operators | N/A (not required in Licensee Plans, see State & County Plans) |
| E6 | Means for Population Notification | 4.2.2, 4.2.4, 5.2 Fig. 5-5 |
| E7 | Provision for Written Public Instruction Messages | App. 4, 5.1.5 |
| F1 | 24-Hour Notification/Activation of Emergency Response Network | 5.2 |
| F1 – Item a | 24-hour per day notification and activation | 2.2. 4.2.2, 5.2 Fig. 4-3, 5.2 |
| F1 – Item b | Communications with State/local governments | 5.2 |
| F1 – Item c | Communications with Federal organizations | 5.2 |
| F1 – Item d | Communications between the facility and the EOF, State/local EOCs, and radiological monitoring teams; | 5.2 |
| F1 – Item e | Alerting or activating emergency personnel | 4.2.1, 4.2.2, 5.2 |

## APPENDIX 1
## NUREG-0654 Evaluation Criteria Cross Reference

| | | |
|---|---|---|
| F1 – Item f | Communications with NRC | 5.2 |
| F2 | Communications with Medical Support Facilities | 5.2 |
| F3 | Periodic Communications System Testing | 6.2, 6.4 |
| G1 | Public Emergency Education/Information | 6.1.3 |
| G2 | Public Emergency Education Program | 6.1.3 |
| G3 | Public Information Control Point | 2.4.4, 5.1.5, App. 4 |
| G4 – Item a | Designated Public Information Spokesperson | 5.1.5, App 4 |
| G4 – Item b | Timely Exchange Among Spokespersons | 5.1.5, App 4 |
| G4 – Item c | Arrangements for Rumor Control | 5.1.5, App 4 |
| G5 | News Media Education Program | 6.1.3.2 |
| H1 | NUREG-0696 Technical & On-site Operations Support Centers | 5.1.3, 5.1.4 |
| H2 | Near-Site Emergency Operations Facilities | 5.1.2 |
| H3 | State & Local Emergency Operations Center | N/A (not required in Licensee Plans, see State & County Plans) |
| H4 | Provision for Activation/Staffing of Facilities | 2.2, 4.3 |
| H5 | Onsite Monitoring Systems | Section 5.3 |
| H6 – Item a | Offsite Geophysical Phenomena Monitors | 5.3.1 |
| H6 – Item b | Off-site Radiological Monitors/Dosimetry | 5.3.3, 5.3.6, 5.3.7 |
| H6 – Item c | Laboratory Facilities | 5.1.6 |
| H7 | Off-site Radiological Monitoring Equipment | 5.3.6, 5.3.7, 5.4 |
| H8 | Provision for Meteorological Instrumentation/Procedures | 5.3.1, App. 2 |
| H9 | Provision for On-site Operations Support Center | 5.1.4 |
| H10 | Inspection/Inventory/Calibration of Emergency Equipment/Instruments | 6.4 |
| H11 | Categories of Emergency Equipment | Section 5 |
| H12 | Centralized Point for Receipt and Analysis of All Field Monitoring Data | 5.1.2, Fig. 5-1 |
| I1 | Identification of Plant Condition Parameters and Corresponding Emergency Classes | Addendum 3 |
| I2 | NUREG-0578 Post-Accident Sampling and Monitoring Capabilities | Section 5.3 |

## APPENDIX 1
## NUREG-0654 Evaluation Criteria Cross Reference

| | | |
|---|---|---|
| I3 – Item a | Methods/Techniques for Source Term Determination | Sect. 4.4 |
| I3 – Item b | Methods/Techniques to Determine Release Magnitude | Sect. 4.4 |
| I4 | Onsite/Offsite Exposures and Contamination for Various Meteorological Conditions | Sect. 4.4 |
| I5 | Acquisition of Meteorological Information | 4.2.3, 5.3.1, 5.3.2 |
| I6 | Determination of Release Rate/Projected Doses Given Inoperable Instrumentation | Sect. 4.4 |
| I7 | Capabilities for Field Monitoring within the Plume Exposure EPZ | 5.3.6 |
| I8 | Capability for Assessment of Actual/Potential Magnitude and Location of Radiological Hazards | 2.2, 4.2.1, 4.2.2, 4.3, 4.4, 5.3, App 4 |
| I9 | Capability to Detect Airborne Radioiodine Concentrations as Low as 1E-07 microcurie/cc | 5.3.6 |
| I10 | Estimation of Integrated Doses; Comparison with Protective Action Guides | 4.4, 5.3.2. |
| I11 | Arrangements to Locate and Track the Plume | N/A (not required in Licensee Plans, see State & County Plans) |
| J1 | Capability to Warn Personnel | 4.2.1 |
| J2 | Offsite Sheltering/Evacuation of Onsite Personnel | 4.6.2 |
| J3 | Radiological Monitoring of Personnel Evacuated from Site | 4.8.2 |
| J4 | Onsite Non-Essential Personnel Evacuation/Decontamination at Offsite Facility | 4.6.2, 5.1.7 |
| J5 | Accountability for Onsite Personnel | 4.6.1 |
| J6 | Onsite Personnel Protection | 5.5 - 5.7 |
| J7 | Prompt Notification of Offsite Authorities for Protective Actions | 4.4.2, 4.2.3,4.6.3, Fig. 4-2 |
| J8 | Onsite Plan Contains Plume Exposure EPZ Evacuation Time Estimates | EP-AA-1011, Addendum 2 |
| J9 | Protective Action Guides (Personnel Exposure/Food Stuffs) | N/A (not required in Licensee Plans, see State & County Plans) |
| J10 – Item a | Maps of Evacuation Routes/Sectors Relocation Centers | 5.3.6 |
| J10 – Item b | Population Distribution by Sector/Zone | EP-AA-1011, Addendum 2 |
| J10 – Item c | Means of Notification of Transient/Resident Population | 4.2, Fig. 4-2, |

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| | | 6.1.3 |
|---|---|---|
| J10 – Item d | Protection of Impaired Persons | N/A (not required in Licensee Plans, see State & County Plans) |
| J10 – Item e | Radioprotective Drug Distribution | N/A (not required in Licensee Plans, see State & County Plans) |
| J10 – Item f | Radioprotective Drug Administration | N/A (not required in Licensee Plans, see State & County Plans) |
| J10 – Item g | Means of Relocation | N/A (not required in Licensee Plans, see State & County Plans) |
| J10 – Item h | Relocation Centers 5 to 10 miles Beyond the EPZ | N/A (not required in Licensee Plans, see State & County Plans) |
| J10 – Item i | Evacuation Routes/Traffic Capabilities | N/A (not required in Licensee Plans, see State & County Plans) |
| J10 – Item j | Evacuated Area Access Control | N/A (not required in Licensee Plans, see State & County Plans) |
| J10 – Item k | Evacuation Route Impediments/Contingency Measures | N/A (not required in Licensee Plans, see State & County Plans) |
| J10 – Item l | Evacuation Time Estimates for EPZ | EP-AA-1011, Addendum 2 |
| J10 – Item m | Basis for Protective Actions used in EPZ during Emergency Conditions | 4.6.3 |
| J11 | Protective Measures for the Ingestion Pathway | N/A (not required in Licensee Plans, see State & County Plans) |
| J12 | Registration & Monitoring of Evacuees | N/A (not required in Licensee Plans, see State & County Plans) |
| K1 – Item a | Exposure Guidelines for the Removal of Injured Persons | 4.7.2. |
| K1 – Item b | Exposure Guidelines for the Undertaking of Corrective | 4.7.2. |

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| | | |
|---|---|---|
| | Actions | |
| K1 – Item c | Exposure Guidelines for Performing Assessment Actions | 4.7.2. |
| K1 – Item d | Exposure Guidelines for Providing First Aid | 4.7.2. |
| K1 – Item e | Exposure Guidelines for Providing Personnel Decontamination | 4.7.2. |
| K1 – Item f | Exposure Guidelines for Providing Ambulance Service | 4.7.2. |
| K1 – Item g | Exposure Guidelines for Providing Medical Treatment Services | 4.7.2. |
| K2 | Onsite Radiation Protection Program | 4.7 |
| K3 | 24-Hour Dosimetry Service | 2.1, 4.7.1 |
| K4 | Authorization for Personnel Exposure in Excess of the Protective Action Guides | N/A (not required in Licensee Plans, see State & County Plans) |
| K5 | Determination of Need for Decontamination | 4.7.2, 4.8, 5.1.7 |
| K6 | Onsite Controls | 4.8, 4.4.H |
| K7 | Capability for Decontamination of Relocated Onsite Personnel | 4.8, 5.1.7 |
| L1 | Ability of Medical/Health Services to Evaluate Radiation Exposure/Handle Contaminated Individuals | 2.3, 2.4, 5.1.8.2, 6.1.2, 6.2 |
| L2 | Onsite First Aid Capability | 4.9, 5.1.8, 6.1.2 |
| L3 | Identification of Medical Services Facilities Equipped/Trained to Treat Radiological Accident Victims | N/A (not required in Licensee Plans, see State & County Plans) |
| L4 | Transportation to Medical Facilities | 2.3, 2.4, 5.1.8 |
| M1 | Plans for Recovery/De-escalation of Protective Measures | 2.4, 4.4.H |
| M2 | Designation of Facility Recovery Organization | App. 4, Fig. 2-3. |
| M3 | Notification of Recovery Operation Initiation | 4.4.H |
| M4 | Methodology for Periodic Exposure Estimate | 4.4.G |
| N1 – Item a | Drills to Simulate Offsite Releases | 6.2 |
| N1 – Item b | Drills to Test All Elements, Time, & Weather Conditions | 6.2 |
| N2 – Item a | Communication Drills | 6.2 |
| N2 – Item b | Fire Drills | 6.2 |
| N2 – Item c | Medical Emergency Drills | 6.2 |

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| | | |
|---|---|---|
| N2 – Item d | Radiological Monitoring Drills | 6.2 |
| N2 – Item e | Health Physics Drill | 6.2 |
| N3 | Drill Scenarios | 6.2 |
| N4 | Official Observers/Critique | 6.2 |
| N5 | Improvements/Corrective Actions | 6.2 |
| O1 – Item a | Onsite Emergency Response Training for Offsite Emergency Organizations | 6.1.2.7 |
| O1 – Item b | Offsite Emergency Response Organization Training | N/A (not required in Licensee Plans, see State & County Plans) |
| O2 | Onsite Training/Corrective Actions | 6.1.2, 6.2 |
| O3 | Onsite First Aid Team Training | 6.1.2.6 |
| O4 | Response Personnel Training | 6.1.2.1 thru 10 |
| O5 | Annual Retraining of Personnel | 6.1 |
| P1 | Planning Personnel Training | 6.1.4 |
| P2 | Designation of Planning Authority | 6.3 |
| P3 | Designation of Emergency Planning Coordinator | 6.3 |
| P4 | Annual Review and Update of Response Plan | 6.5.1, 6.5.4 |
| P5 | Provisions for Plan Distribution and Promulgation of Plan Revisions | 6.5.2, App. 1, 6.5.3 |
| P6 | Listing of Supporting Plans | Section 7, References |
| P7 | Procedures for Plan Implementation | Table of Contents, App. 1 |
| P8 | Table of Contents | Table of Contents App. 1 |
| P9 | Independent Audit of Emergency Preparedness Program | 6.5.6, 6.6 |
| P10 | Updating of Telephone Numbers | 6.5.5 |

This appendix cross references the Emergency Plan with NUREG-0654, Revision 1, November 1980. Numbered items in this appendix correspond to NUREG-0654. Missing items are items from NUREG-0654 that do not apply to the licensee.

## Appendix 2

### Letters of Agreement

The following is a listing of letters of agreement and contracts specific to emergency response activities in support of Calvert Cliffs Nuclear Power Plant. Letters of agreement and contracts common to the multiple Exelon Nuclear stations are listed under Appendix 3 to the Exelon Nuclear Standardized Radiological Emergency Plan. Letters of agreement between non-CCNPP and non-Exelon agencies and individuals are maintained on file by the Emergency Preparedness Manager.

**ATTACHMENTS**

- Calvert County Volunteer Fire & Rescue Association
- Memo from Site Vice President assigning Corporate Authority to Emergency Directors
- Calvert Health Medical Center, Inc. Emergency Department Staff Letter of Support
- Delaware Geological Survey, University of Delaware.
- CCNPP Health Physics (Radiation Protection) Guidance and Assistance for Calvert Memorial Hospital
- Maryland Emergency Management Agency
- Maryland State Police
- Office of the Sheriff Calvert County
- MedStar St. Mary's Hospital
- College of Southern Maryland
- Memorandum of Understanding Regarding Communications Between The Dominion Cove Point LNG Plant and the Calvert Cliffs Nuclear Power Plant

## Appendix 3

## Emergency Plan Implementing Procedures

| Procedure Number | Procedure Title | NUREG0654 Reference |
|---|---|---|
| EP-CE-113 | Personnel Protective Actions | II.J.5, II.J.6.c, II.K.1, II.K.2, |
| EP-AA-112-500-F-53 | CCNPP Offsite Monitoring Team Guidance | II.H.6.b, II.H.7, II.I.7, II.J.4, II.J.10, II.K.3.b, II.K.5.b, II.K.6.b, II.K.7, |
| EP-CE-111 | Emergency Classification and Protective Action Recommendations | II.D.1, II.D.2, II.J.7, II.J.10.m, |
| EP-CE-114-100 | Emergency Notifications | II.E.2, II.E.3, II.E.4.a-n, II.F.1.e, II.F.1.f, |
| EP-AA-112-600 | Public Information Organization Activation and Operation | II.B.7.d, II.E.7, II.G.3, II.G.4, II.H.4, |
| EP-AA-112-400 | EOF Activation and Operation | II.B.2, II.B.3, II.B.4, II.B.5, II.B.7.a, II.B.7.c, II.B.8, I.C.2.b, II.E.1, II.E.2, II.E.6, II.F.1.b, II.F.1.e, II.F.1.f, II.H.2, II.H.4, II.H.6, II.H.6.b, II.H.7, II.H.12, II.I.5, II.I.7, II.I.8, II.I.9, II.I.10, II.J.1, II.J.2, II.J.4, II.J.5, II.J.7, II.J.10, II.J.10.m, II.K.5.a, II.K.5.b, II.K.6, II.M.3, II.M.4, |
| EP-AA-112-100 | Control Room Operations | II.B.2, II.B.3, II.B.4, II.B.5, II.E.1, II.E.2, II.E.6, II.F.1.a, II.F.1.b, II.F.1.e, II.F.1.f, II.H.4, II.I.2, II.I.5, II.I.8, II.J.1, II.J.4, II.J.5, II.J.7, II.J.10.m II.K.5.b, II.K.7, II.L.2, II.L.4, II.M.3, II.M.4, |
| EP-AA-112-200 | TSC Activation and Operation | II.B.5, II.B.7.b, II.B.8, II.H.1, II.H.4, II.I.5, II.J.1, II.J.2, II.J.5, II.J.6.c, II.K.3.a, II.K.3.b, II.K.6, II.K.6.c, |
| EP-AA-112-300 | OSC Activation and Operation | II.B.5, II.H.1, II.H.4, II.H.5, II.H.9, II.I.2, II.I.8, II.I.9, II.J.2, II.J.5, II.K.2, II.K.3.a, II.K.6.a, II.K.6.b, II.K.6.c, |
| EP-CE-115 | Termination and Recovery | II.B.7.b, II.M.1, II.M.3, |
| EP-AA-110-200 | Dose Assessment | II.H.5, II.I.3, II.I.4, II.I.5, II.I.8, II.I.9, II.I.10, II.J.10 |

## Appendix 3

## Emergency Plan Implementing Procedures

| Procedure Number | Procedure Title | NUREG0654 Reference |
|---|---|---|
| EP-AA-110-201 | On-Shift Dose Assessment | II.H.5, II.I.3, II.I.4, II.I.5, II.I.8, II.I.9, II.I.10, II.J.10 |
| EP-CE-124-1001 | Facilities Inventories and Equipment Tests | II.H.5.b, II.H.6.b, II.H.7, II.H.9, II.H.10, II.H.11, II.I.8, II.I.9, II.J.6.a, II.J.6.b, II.K.7, |
| ERPIP-800 | Core Damage Assessment (CDA) | II.I.1, |
| ERPIP-801 | CDA Using Containment Radiation Dose Rates | II.I.1, |
| ERPIP-802 | CDA Using Core Exit Thermocouples | II.I.1, |
| ERPIP-803 | CDA Using Hydrogen | II.I.1, |
| ERPIP-804 | CDA Using Radiological Analysis of Samples | II.I.1, |
| ERPIP-810 | Main Steam Radioactivity Release Estimate | II.H.5, II.I.6, |
| ERPIP-821 | Accidental Radioactivity Release Monitoring and Sampling Methods | II.H.5, II.I.6, |
| ERPIP-822 | Initial Dose Assessment Manual Calculation Methods | II.I.2 |
| ERPIP-825 | Meteorological Data Acquisition Methods | II.H.5, II.I.5, |

# Appendix 4
# Emergency Response Organization Responsibilities

Note: The positions and responsibilities described in this Appendix apply to Calvert Cliffs station and supersede the list of ERO positions and respective ERO responsibilities identified in the Exelon Standard Plan.

## 1.0 Staff Positional Responsibilities

A. The Shift Emergency Director tasks are to:

- Assume overall command and control of emergency response.
- Classify and declare emergencies.
- Direct and approve off-site emergency notifications to state and local authorities.
- Determining and Issuing Protective Action Recommendations to off-site authorities.
- Notifying or activating the ERO (as deemed appropriate or as procedurally required).
- Authorization of Emergency Exposures and the use of Potassium Iodide.
- Directing site Personnel Protective Actions, such as Assembly, Accountability and/or Evacuation.
- Direct ENS communications with the NRC.
- Integrate ERO activities with the ICP response activities.
- Authorize and direct extreme measures (SAMGs, EDMGs, §50.54(x) or suspend security controls).
- Terminate the emergency event.
- Establish a recovery plan and organization.
- Participate in Inter-Facility briefing to communicate and obtain event and response information.

B. The Corporate Emergency Director tasks are to:

- Assume overall command and control of emergency response.
- Ensure all emergency response facilities are properly staffed and activated.
- Direct and approve off-site emergency notifications to State/Local authorities and NRC.
- Determine and approve Protective Action Recommendations to off-site authorities.
- Integrate ERO activities with the ICP response activities.
- Authorize and prioritize requests for external assistance (governmental) as necessary.
- Authorize and prioritize requests for external assistance (off-site technical support, manpower, etc.) as necessary.
- Ensure other organizations' management/decision makers (NRC, State,

Exelon Generation, etc.) are kept informed of the emergency situation.
- Ensure flow of information within and between the emergency response facilities.
- Approve technical content of media statements.
- Authorize and direct extreme measures (SAMGs, EDMGs, §50.54(x), or suspend security controls).
- Establish a recovery plan and organization.
- Conduct inter-facility briefings to communicate and obtain event and response information.
- Conduct facility briefs.

Direct reports to the Corporate Emergency Director are the:
- EOF Director
- Station Emergency Director
- JIC Manager

C. Station Emergency Director

The Station Emergency Director reports to the Corporate Emergency Director. This person directs the on-site ERO to provide guidance and technical assistance to the Control Room with the objective of taking the plant to a safe condition with minimal effect on the health and safety of plant personnel and the public.

The Station Emergency Director tasks are to:
- Manage all on-site emergency activities in support of plant operations.
- Establish plant/station response priorities.
- Classify emergencies and direct PA announcements
- Authorization to ingest KI.
- Approve emergency exposures.
- Integrate ERO activities with the Incident Command Post (ICP) response activities.
- Authorize and prioritize requests for external assistance (on-site technical support, manpower) as necessary.
- Provide informational updates and recommendations regarding plant status and activities.
- Authorize emergency response facility relocations.
- Evaluate event assessments and mitigative strategies to determine operational and response actions.
- Authorize and direct extreme measures (SAMGs, EDMGs, §50.54(x) or suspend security controls).
- Ensure appropriate accountability and search and rescue actions for plant personnel.
- Ensure accountability, once established, is maintained in all occupied areas of the station.
- Ensure appropriate evacuation actions for plant personnel.
- Coordinate between CR, OSC and TSC to set OSC team task priorities.

- Conduct facility briefs.
- Participate in the Inter-Facility briefing to communicate and obtain event and response information.
- Assist in the development of recovery plans.
- Terminate the Emergency Event.

Direct reports to the Station Emergency Director are the:

- TSC Director
- Technical Manager
- Operations Manager
- Maintenance Manager
- TSC Radiation Protection Manager
- Security Coordinator

D. TSC Director

The TSC Director oversees activation and operations of the TSC. The TSC Director tasks are to:

- Activate the Facility.
- Establish and maintain facility accountability.
- Manage the operation of the facility.
- Review and ensure facility displays are maintained current.
- Coordinate ERO shift relief rosters for the on-site facilities.
- Develop ERO shift relief rosters for the facility.
- Coordinate integration of the NRC Site Team.
- Arrange for logistics support.
- Ensure flow of information within and between the emergency response facilities.
- Provide input for facility briefs.
- Coordinate TSC relocation.
- Direct ENS Communications with the NRC.

Direct reports to the TSC Director are the:

- TSC Administrative Staff
- RMS Communicator

E. Technical Manager

The Technical Manager has authority and responsibility for providing direct mechanical, and electrical engineering oversight to TSC Engineering personnel. The Technical Manager has authority and responsibility for providing engineering support in connection with the UFSAR, ISFSI, USAR, the license, and modifications, and for overseeing activities of engineers and technicians in response to requests from the on-site ERO. This support includes core protection and analysis. This function is supported by Core / Thermal Hydraulic Engineers, a Mechanical Engineer, and an Electrical Engineer. If necessary,

contractor services may be brought to bear by these Engineering positions. This action does not preclude the Station Emergency Director from soliciting contractor engineering support. The Technical Manager reports to the Station Emergency Director.

The Technical Manager tasks are to:

- Accumulate, tabulate and evaluate data on plant parameters to determine the overall plant condition.
- Manage the activities of the TSC engineering / technical staff.
- Ensure additional personnel and/or equipment is arranged for, as necessary.
- Identify and direct the development of emergency special procedures needed to effect long-term safe shutdown or to mitigate a release.
- Provide engineering support for accident detection and assessment.
- Develop mitigative strategies based on assessment of the event.
- Analyze and develop extreme measures actions (SAMGs, EDMGs, §50.54(x) or suspend security controls).
- Provide input for facility briefs.

Direct reports to the Technical Manager are the:

- Core / Thermal Hydraulic Engineers
- Electrical Engineer
- Mechanical Engineer
- TSC/OSC Computer Specialist

F. Operations Manager

The Operations Manager is the operating supervisor in the TSC. This person provides general assistance to the Shift Manager; overall coordination of maintenance and related activities necessary to support Control Room needs; and liaison with the Station Emergency Director. The Operations Manager reports to the Station Emergency Director.

The Operations Manager tasks are to:

- Manage the activities of the TSC Operations staff.
- Assist with emergency classification.
- Provide technical assistance communication path to the Shift Manager.
- Support the establishment of plant/station response priorities.
- Provide operations support for accident detection and assessment.
- Recommend operations actions to the Shift Manager in support of restoration and accident mitigation.
- Analyze and develop extreme measures actions (SAMGs, EDMGs, §50.54(x) or suspend security controls).
- Coordinate between CR, OSC and TSC to set OSC team task priorities.
- Coordinate operations activities outside of the Control Room between the Shift Manager and OSC.

- Provide input for facility briefs.

Direct reports to the Operations Manager are the:
- Shift Manager
- ENS Communicator
- TSC Ops Communicator
- CR Ops Communicator

G. Maintenance Manager

The Maintenance Manager has authority and responsibility for mechanical, electrical and instrument corrective actions and for providing support for on-site protective actions, plant operations, and reentry and recovery.

The Maintenance Manager tasks are to:

- Direct the total onsite maintenance and equipment restoration effort.
- Request additional equipment in order to expedite recovery and restoration.
- Ensure adequate staffing of the OSC.
- In coordination with the Operations Manager, determines the priority assigned to OSC activities.
- Provide input for facility briefs.

Direct reports to the Maintenance Manager are the:
- OSC Director

H. Operations Support Center Director

The Operations Support Center (OSC) Director reports to the Maintenance Manager, or in this person's absence, the TSC Operations Manager or the Shift Manager.

The OSC Director tasks are to:

- Activate the Facility.
- Manage the operation of the facility.
- Develop ERO shift relief rosters for the facility.
- Ensure flow of information within and between the emergency response facilities.
- Support the establishment of plant / station response priorities.
- Direct accountability and search & rescue activities.
- Establish and maintain facility accountability.
- Coordinate between CR, OSC and TSC to set OSC team task priorities.
- Coordinate OSC team dispatch and control.
- Conduct facility briefs.
- Participate in the Inter-Facility Briefing to communicate and obtain event and response information.

Direct reports to the OSC Director are the:

- Assistant OSC Director
- OSC Team Tracker
- OSC Ops Communicator
- OSC Admin Staff

The Assistant OSC Director coordinates in plant task and team development and team dispatch. Direct reports to the Assistant OSC Director are the:

- Maintenance Group Leads (Electrical, I&C, Mechanical),
- Chemistry Lead
- RP Lead
- Operations Lead

NOTE: OSC Group Leads can be pre-designated or assigned from qualified individuals in the OSC personnel Pool.

The Maintenance Group Leads coordinate their teams' activities for repair and damage control (mechanical, electrical, instrument). The teams are responsible for assessing equipment damage and affecting repairs. Maintenance Group Leads report to the OSC Director.

Technicians reporting to and coordinated by the Maintenance Group Leads include:

- Mechanical Technicians
- Electrical Technicians
- Instrument Technicians

The Operations Lead directs extra operators who comprise the Operations Team for support as requested by the Control Room. The Operations Team supplements on shift operators for operations tasks. The Operations Lead reports to the OSC Director.

I. TSC Radiation Protection Manager

The TSC Radiation Protection Manager (RPM) has authority and responsibility for on-site radiation protection and personnel radiation exposure control. The TSC RPM also coordinates with the EOF Radiation Protection Manager for support. The TSC RPM reports to the Station Emergency Director.

The TSC RPM tasks are to:

- Manage and direct the radiological activities of the RP personnel.
- Ensure additional personnel and/or equipment is arranged for, as necessary.
- Provide radiological support for accident detection and assessment.

- Monitor, evaluate and communicate conditions involving any release of radioactivity.
- Provide support and logistics for site evacuation activities.
- Evaluate the need for and ensure proper use of KI.
- Ensure habitability is established and maintained for occupied on-site areas.
- Ensure proper emergency exposure controls are taken for personnel.
- Provide radiological assistance for planning rescue operations and repair team monitoring.
- Direct personnel decontamination activities.
- Provide radiological assistance for the transfer of injured and/or contaminated personnel.
- Provide input for facility briefs.

The Shift Radiation Protection Technician (staffed 24 hours) assumes this position at emergency onset and retains it until relieved by augmenting personnel.

The TSC RPM coordinates radiation protection and assessment activities with the OSC Radiation Protection Lead. They are responsible for Iodine Sampling, Radiological Job Coverage, Radiological Access Control and Emergency Response Facility monitoring (Control Room, Technical Support Center, Operations Support Center, Nuclear Security Facility, and the South Service Building Cafeteria).

J. Security Coordinator

The Security Coordinator coordinates security activities with the radiological emergency response.

The Security Coordinator tasks are to:

- Integrate ERO activities with the ICP response activities.
- Manage the activities of the site security force.
- Request and coordinate emergency activities with Local Law Enforcement Agencies (LLEAs).
- Provide security related communications with the NRC.
- Direct accountability and search & rescue activities.
- Direct site evacuation activities.
- Direct site access controls activities.
- Coordinate security activities between the SSS and OSC.
- Determine radiation protection measures for security force personnel and law enforcement agency personnel on site.
- Provide input for facility briefs.

The Security Shift Supervisor reports to the Security Coordinator when the TSC is activated. The Security Shift Supervisor has the authority to and is

responsible for implementing the Nuclear Security Plan. The Security Shift Supervisor position also supports personnel accountability activities.

K. Emergency Operations Facility Director

The Emergency Operations Facility (EOF) Director oversees EOF operations. This responsibility includes information flow, interfacing with State and County Representatives and assisting Corporate Emergency Director as directed.

The EOF Director tasks are to:

- Direct and coordinate the activation and response efforts of the EOF staff.
- Prepare State/Local notification forms and obtain Corporate ED approval to support the completion of timely offsite event notifications
- Participate in the Inter-Facility briefing to communicate and obtain event and response information.
- Provide input for facility briefs.

Direct reports to the EOF Director are the:

- State / Local Communicator
- EOF Technical Advisor
- EOF Radiation Protection Manager
- EOF Logistics Manager
- EOC Communicator

L. EOF Radiation Protection Manager

The EOF Radiation Protection Manager (RPM) reports to the EOF Director. This position has authority and responsibility to assess, map, and coordinate calculations of radiological data required to depict on-site and off-site radiation dose and/or exposure rates. This position evaluates radiological conditions and makes recommendations to the Corporate Emergency Director.

The EOF RPM tasks are to:

- Manage and direct the radiological activities of the offsite Radiological Staff.
- Coordinate activities with the external agency field monitoring teams.
- Coordinate the comparison and exchange of dose assessment results with off-site agency personnel.
- Monitor, evaluate and communicate conditions involving any release of radioactivity.
- Oversee the performance and evaluate the results of dose projection activities.
- Perform dose assessment.
- Oversee the performance and evaluate the results of OMT activities.
- Provide support and logistics for site evacuation activities.
- Evaluate conditions and determine recommendations for PARs.
- Provide assistance to state and federal agencies for ingestion pathway radiological activities.
- Provide radiological data that impacts emergency action level (EAL) classifications.
- Provide input for facility briefs.

Direct reports to the EOF RPM are the:

- HPN Communicator
- Dose Assessor(s)
- Environmental Coordinator

M. EOF Logistics Manager

The EOF Logistics Manager reports to the EOF Director. This position has authority and responsibility to provide administrative support to the EOF and logistics support to the entire ERO.

The EOF Logistics Manager tasks are to:

- Oversee staffing of EOF and assist with staffing for other facilities.
- Assist offsite personnel responding to the facility.
- Develop ERO shift relief rosters for the facility.
- Coordinate ERO shift relief rosters for all facilities and the notification of personnel.
- Manage the administrative support staff.
- Review and ensure facility displays are maintained current.
- Manage the procurement and logistical support activities for the on-site

and off-site emergency response personnel and facilities.
- Monitor and maintain access controls for the EOF.
- Communicate with and coordinate support for ERO responders or plant personnel sent off-site to relocation areas.
- Communicate with the NDO to maintain communications with ANI, DOE, and INPO.
- Coordinate integration of the NRC site team.
- Provide input for facility briefs.

Direct reports to the EOF Logistics Manager are the:

- EOF / JIC Computer Specialist
- EOF Admin Staff

N. EOC Communicator

The EOC Communicator reports to the EOF Director. This position has the responsibility to coordinate information flow to the off-site representatives located in the EOF and Calvert Cliff liaisons located at the off-site Emergency Operations Centers.

The EOC Communicator tasks are to:

- Monitor plant conditions and event response activities.
- Provide information updates to and address questions and support requests from the off-site liaisons.
- Communicate actions being considered or taken by Counties and State to the EOF.
- Provide input for facility briefs.

Direct reports to the EOC Communicator are the:

- State Liaison
- County Liaisons

O. EOF Technical Advisor

The EOF Technical Advisor provides technical expertise to the EOF Staff.

The EOF Technical Advisor tasks are to:
- Monitor plant status and Control Room activities.
- Track and trend critical parameters for the identification and trending of current plant status information.
- Provide input for facility briefs.

Direct reports to the EOF Technical Advisor are the:
- EOF Operations Communicator

P. Joint Information Center Manager

The Joint Information Center (JIC) Manager oversees operations of the JIC.

The JIC Manager tasks are to:

- Activate the Facility.
- Manage the operation of the facility.
- Assist off-site agency personnel responding to the facility.
- Coordinate integration of the NRC Site Team.
- Provide liaison to the NRC Site Team.
- Arrange for support for Emergency Alert System (EAS) information.
- Ensure flow of information within and between the emergency response facilities.
- Interface with off-site agency Public Information Officers (PIOs) to coordinate overall information flow to the media and public.
- Coordinate facilitation of the media briefing schedule.
- Ensure news media briefings are held regularly during the course of the emergency.
- Oversee conduct of media briefings.
- Integrate ERO activities with the Incident Command Post (ICP) response activities
- Assist in the development of recovery plans.
- Conduct facility briefs and updates.
- Participate in the Inter-Facility Briefing to communicate and obtain event and response information.

Direct reports to the JIC Manager are the:

- Company Spokesperson
- Media Monitoring / Rumor Control Coordinator
- JIC Logistics Manager

Q. Company Spokesperson

The Company Spokesperson interfaces with Corporate Communications and acts as spokesperson to the media at the JIC.

- Establish ongoing contact with the communications personnel in the corporate office.
- Interface with offsite agency Public Information Officers (PIOs) to coordinate overall information flow to the media and public.
- Provide interviews to the media.
- Serve as Company Spokesperson during press conferences at the JIC.
- Participate in the Inter-Facility Briefing to communicate and obtain event

and response information.
- Provide input for facility briefs and updates.

R. Media Monitoring / Rumor Control Coordinator

The Media Monitoring / Rumor Control Coordinator oversees the media monitoring and rumor control staffs. The Media Monitoring / Rumor Control Coordinator tasks are:

- Supervise media monitoring and Inquiry Phone Team personnel.
- Review Media Monitoring team information for trends, misinformation and rumors.
- Review Phone Team information for trends, misinformation and rumors.
- Ensure adequate staff is available to perform media monitoring and phone team functions.
- Provide input for facility briefs and updates.

Direct reports to the Media Monitoring / Rumor Control Coordinator are the:

- Inquiry Phone Team
- Media Monitoring Team

S. JIC Logistics Manager

The JIC Logistics Manager oversees development of media statements and administrative support of the JIC. The JIC Logistics Manager tasks are:

- Manage the administrative support staff.
- Develop ERO shift relief rosters for the facility.
- Arrange for logistics support.
- Oversee set-up and testing of JIC equipment.
- Maintain access control to the JIC.
- Provide input for facility briefs and updates.
- Oversee collection of technical data and station activities for drafting Media Statements and answering JIC questions.
- Coordinate preparation, review and distribution of Media Statements.
- Obtain Corporate ED approval for the technical content of Media Statements.

Direct reports to the JIC EOF Logistics Manager are:

- JIC Administrative Staff
- Media Liaison
- JIC Security
- News Writer
- JIC Technical Advisor

T. Communicators

Communicators report to the director of their respective emergency center.

Communicators have responsibility for communications according to Emergency Plan Implementation Procedures. Communication responsibilities include initial and follow-up communications with Calvert Cliffs Nuclear Power Plant, State, local and Federal personnel; communications with regulatory agencies through the Emergency Notifications System; and communication of plant parameter status data, environmental status data, Radiological Monitoring System status data; and communications between emergency response facilities.

# APPENDIX 5
# Liquefied Natural Gas Contingency

## I. DEFINITIONS

A. Liquefied Natural Gas

Liquefied natural gas is mainly methane gas cooled to about -260°F so it changes from a gas to a liquid.

B. Methane

Methane is a colorless, odorless gas that is flammable in concentrations of 5% and greater. It is positively buoyant with respect to air above about 60°F.

## II. POTENTIAL THREAT

The relative proximity of the Cove Point Liquefied Natural Gas Terminal to Calvert Cliffs Nuclear Power Plant creates the possibility that abnormal occurrences at the Liquefied Natural Gas Terminal, such as a spill of Liquefied Natural Gas, could pose a potential threat to the safety to equipment and/or personnel at Calvert Cliffs Nuclear Power Plant.

The worse case occurrence at Cove Point with respect to Calvert Cliffs Nuclear Power Plant would be a large scale 25,000 $m^3$ spill of Liquefied Natural Gas from an Liquefied Natural Gas tanker directly onto the surface of the Chesapeake Bay in the vicinity of the unloading pier. Such a spill is postulated to occur if a Liquefied Natural Gas-laden tanker is involved in a collision with another vessel whereby one or more of the Liquefied Natural Gas tanks aboard the tanker is ruptured. Releases of a smaller size or release from an onshore storage tank have been analyzed and shown to pose no significant threat at Calvert Cliffs Nuclear Power Plant (Liquefied Natural Gas References A, B, and C).

A significant Liquefied Natural Gas spill to the Chesapeake Bay from a ruptured tank of an Liquefied Natural Gas tanker in the vicinity of the Calvert Cliffs Nuclear Power Plant poses two potential hazards to the personnel and/or operations of the plant. With appropriate atmospheric and bay conditions, a methane vapor cloud emanating from a spill could extend from the spill area to the plant vicinity, engulf portions of the plant, and then ignite.

The resultant heat energy released could be hazardous to personnel and could damage equipment. Additionally, should a flammable concentration of methane vapor fill a confined space or room, an explosion could occur if it ignited. A specific hazard created by methane vapor is the possibility of asphyxiation if the concentration is great enough to reduce oxygen to below minimum life-support levels (approximately 17%).

The development and subsequent dispersion of a methane vapor cloud could occur as follows:

Liquefied Natural Gas (a very cold liquid) is lighter than water and insoluble in water and will form a pool on the surface of water if spilled. As it pools, it absorbs heat from the water.

Heating Liquefied Natural Gas causes it to vaporize into methane gas. As the Liquefied Natural Gas pool spreads, the rate of vapor generation increases because there is more surface area for heat absorption. The diameter of the resulting vapor cloud normally will be much greater than its height, since vertical mixing will be inherent due to local temperature inversion by the still cold methane gas cloud. Although methane vapor is colorless, the cloud will appear white due to condensation and/or freezing of water vapor condensed from atmosphere onto the cloud surface.

The initial bulk temperature of newly vaporized methane is approximately -250°F. At this temperature and at atmospheric pressure, methane vapor is approximately 50% more dense than ambient air. Consequently, there is no tendency for the cloud to rise. Experimental data indicates that the vapor cloud continues to spread radically, and there is very little vertical dispersion. Entrainment of air increases the cloud temperature, but generally, the density of the mixture remains above that of the diluting air. In instances where the heat input from the surface of the water, and/or heat input from the condensing and freezing of atmospheric water vapor is significant, the vapor cloud may become positively buoyant, thus terminating the threat to Calvert Cliffs Nuclear Power Plant since the methane will rapidly mix vertically and disperse.

Once a methane cloud begins to form, atmospheric and wind conditions may be such that the cloud could propagate toward Calvert Cliffs Nuclear Power Plant. Wind speeds of 5-15 mph with stable atmospheric conditions and wind direction from the spill to the plant are necessary to transport the cloud to Calvert Cliffs Nuclear Power Plant. As the cloud moves downwind, it is further diluted and dispersed by turbulent mixing with surrounding air. In the absence of ignition, this process would continue until the concentration of methane in the cloud reduced to the Lower Flammability Limit, about 5% methane, and the methane is totally dispersed into the atmosphere (on the order of 20 minutes).

If at any point in the vapor cloud the methane concentration is between 5% and 15% (Lower Flammability Limit and Upper Flammability Limit, respectively) and an ignition source is present, the vapor cloud will ignite. It will then slowly burn back to the source of the spill at a rate dependent upon the wind conditions. The cloud continues to burn until the concentration of methane is reduced below 5%.

A land-based spill at Cove Point will present no hazard to the plant or to plant personnel. This is principally due to the limited heat source provided by land versus water for Liquefied Natural Gas vaporization and intervening terrain between Cove Point and Calvert Cliffs Nuclear Power Plant.

An accident will threaten the safety of the plant and personnel only if it is a major Liquefied Natural Gas spill from a tanker and the meteorological and bay conditions are such that the resulting vapor cloud can travel the 3 to 4 miles to

Calvert Cliffs Nuclear Power Plant. If there is no vapor ignition, the major concern is protection of the plant personnel in an oxygen deficient atmosphere.

If the plume ignites away from the plant structure additional concern is to heat flux generated by the burning cloud that could harm exposed personnel. By taking appropriate actions, hazards to plant personnel could be avoided, and threats to safety of the plant can be minimized.

## III. CONCERNS AND ACTIONS IN A LIQUEFIED NATURAL GAS EMERGENCY

The exclusion of methane from the Control Room is vital to plant safety and should be of utmost concern. Control Room ventilation system alignment must be considered as soon as a Liquefied Natural Gas threat is identified.

Plant operational needs will have to be considered and adjustments made if warranted. Ventilation systems including the battery ventilation systems may have to be secured or isolated from outside intakes. Electrical lineups may have to be changed to preserve the ability of the plant to supply vital loads.

Doors and other outside openings to plant structures may have to be secured.

Methane ignition could result in a large scale fire in the vicinity of plant structures. Such a fire could place a significant heat load on equipment or could result in serious personnel injury.

Methane incursion into confined spaces with subsequent ignition could result in an explosion.

Methane concentrations may vary from area to area. Careful monitoring for methane concentrations in specific locations of interest, (i.e., inside a pump motor casing or inside of an electrical panel, etc.) should be performed prior to starting up equipment.

Methane can asphyxiate and can result in dizziness, unconsciousness or even death if inhaled in sufficient concentrations. Personnel must take appropriate precautions such as the use of self- contained or airline respiratory devices.

Access to the site could be affected by the presence of methane or a methane fire. Alternate means of routing assistance on-site and of removing personnel (e.g., for medical purposes) will be considered.

The free movement of personnel outside of plant structures may be impossible, and thus early, prompt actions and decisions may be required.

## IV. COMMUNICATIONS

Emergency Plan Implementation Procedures describe communication networks between Calvert Cliffs Nuclear Power Plant and the Cove Point Liquefied Natural Gas Plant.

## V. LIQUEFIED NATURAL GAS REFERENCES

A. Liquefied Natural Gas (LNP) Hazards for Calvert Cliffs Nuclear Power Plant Final Report, May 28, 1993.

B. Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2, Liquefied Natural Gas Hazards Study, "Safety Evaluation by the Office of Nuclear Reactor Regulations (USNRC) Regarding the Proximity of the Cove Point Facility," March 13, 1978.

C. Calvert Cliffs Nuclear Power Plant, Units 1 and 2, "Liquefied Natural Gas Hazards Update," March 9, 1978.

D. Risk Assessment Study for the Cove Point, Maryland Liquefied Natural Gas Facility, Science Applications, Inc. La Folla, CA, SIA-789-626-LJ, March 23, 1978.

E. Cove Point LNG Project Docket No. CPo1-76-000. July 2001

F. NRC Letter to Calvert Cliffs Nuclear Power Plant, "Liquefied Natural Gas Hazard Analysis – Calvert Cliffs Nuclear Power Plant, Unit No. 1 (TAC No. M86704) and Unit No. 2 (TAC NO. M86705)." August 31, 1995.

G. Maryland Power Plant Research Program, "Cove Point LNG Terminal Expansion Project risk Study." June 28, 2006. DNR 12-7312006-147, PPRP-CPT-01.

H. Constellation Energy Nuclear Generation Group Letter to the U.S. Nuclear Regulatory Commission. "Calvert Cliffs Nuclear Power Plant; Unit Nos. 1&2; Docket Nos. 50-317
& 50-318, Independent Spent Fuel Storage Installation; Docket No. 72-8, revision to Hazards Analysis Related to Liquefied Natural Gas Plant operations at Cove Point." February 20, 2008.

I. NUREG-1407, "Protocol and Submittal Guidance for the Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities." Final Report Published June 1991.

## Appendix 6

## Calvert Cliffs Communication Equipment

1. **Plant Page**

   A. Description:

   CCNPP is divided into six paging zones with an All Call and Priority Paging option.

2. **Administrative Telephone System** – Commercial phones system located at each of the ERFs that provide communications between facilities and outside agencies.

3. **Dedicated Offsite Agency Telephone**

   A. Description:

   1. Provides communications between CCNPP locations and offsite emergency facilities.
   2. Provides offsite agencies with the capability to independently dial other outside agencies and CCNPP or Emergency Operations Facility locations.
   3. Utilizes dedicated, leased telephone lines via CCNPP telephone system network.
   4. Battery-backed power supply provides for full system operability in the event of loss of AC power.
   5. Dedicated Offsite Agency phone located onsite is equipped with one or more standard outside telephone lines for access to Administrative Telephone System features (for example, plant page) and routine outside system dialing.

   B. The dedicated Offsite Agency Telephones are located in the Control Room, EOF, Safe Shutdown Panels .

4. **Microwave Telephones ("Hot Lines")**

   The Microwave telephones provide direct, point-to-point communications via company owned microwave system. The Microwave Telephones are located at the following locations:

   - **From** Emergency Operations Facility (Dose Assessment Room) to the Electric Operations Building
   - **From the** Emergency Operations Facility (Dose Assessment Room/ State Room) to the Maryland Department of Environment
   - **From the** Emergency Operations Facility to the Information Technology, Operations and Technical Support Dept (Owings Mills Facility)
   - **From the** Emergency Operations Facility (Security Room) to the Corporate Security (Owings Mills Facility)

5. **FTS-2001 Telephone System**

The FTS 2001 Telephone System provides CCNPP and onsite NRC personnel direct communications with NRC Operations Center using dedicated telephone systems. FTS-2001 provides separate phones for:

- Emergency Notification System (ENS) - Initial Notification by CCNPP to NRC Operations Center (identified by the red label). (MCR, EOF, TSC)
- Health Physics Network (HPN) - Initial Notification by CCNPP to NRC Operations Center (identified by the red label). (EOF, TSC, TSC Annex)
- Reactor Safety Counterpart Link (RSCPL) - For discussions between onsite and offsite NRC representatives on plant and equipment conditions. (TSC, EOF)
- Protective Measures Counterpart Link (PMCPL) - For internal NRC discussions on radiological releases, meteorological conditions, and the need for protective actions. (TSC, EOF)
- Management Counterpart Link (MCL) - For internal discussions between NRC Executive Team Director and NRC Director of Site Operations. (TSC, EOF)

6. **Plain Old Telephone System (POTS)**

Plain Old Telephone System (POTS) phones provide backup communications for the Emergency Response Organization to utilize when needing to communicate information between CCNPP Emergency Response Facilities and to Offsite Agencies.

The POTS phones are located in the following locations:

1. Control Room
2. TSC
3. OSC
4. SAS

7. **Emergency Response Radio Network**

Description – **The Calvert Cliffs Radio system consists of a** CCNPP-owned 800 MHz radio system which provides communications between emergency centers. The system consists of Communication Control Units, Desk Set Control Units, Mobile Radios and Hand Held Units.

The Radio system provides backup communications between CCNPP and otfsite agencies, as well as communication between CCNPP radiological monitoring teams and emergency centers, Security, NPO/First Aid/Fire Brigade and Control Room.

Radio Units are located in the following locations:

- Central Alarm Station
- Secondary Alarm Station
- Control Room (CRS desk)
- Operational Support Center

- Technical Support Center
- Technical Support Center Annex
- Emergency Operations Facility - Dose Assessment Room
- Emergency Operations Facility - Security Room
- Emergency Operations Facility - Communicator
- Farm Demo Building
- Nuclear Office Facility
- Secondary Fire Brigade Locker (B.5.b Equipment)
- Mobile radios are maintained in several vehicles assigned to CCNPP.

8. **LNG (Cove Point) Automatic Ringdown Telephone**

A. Description:

1. Cove Point owned/operated commercial dedicated phone line.
2. A dedicated line between the Cove Point LNG Monitoring Station and the CCNPP Control Room. This line is to be used by Cove Point personnel to notify CCNPP of expected tanker arrivals and emergency situations concerning the LNG operations.

B. Location:

1. CCNPP Control Room
2. Cove Point LNG Monitoring Station

9. **LNG (Cove Point) Emergency Radio**

A. Description:

Provides back-up communications for the dedicated phone between CCNPP Control Room and Cove Point LNG Plant Monitoring Station via the Control Room console and LNG Plant hand-held radio.

B. Location:

1. Cove Point LNG Plant Monitoring Station (hand-held radio)
2. CCNPP Control Room (communications console programmed with dedicated talk-group LNG Plant hand-held radio)

**Attachment 6**

**EP-AA-1013, Revision 6, *"Exelon Nuclear Radiological Emergency Plan Annex for Nine Mile Point Station"***

**Emergency Plan Annex Revision**

Exelon Generation®

EP-AA-1013
Revision 6

# EXELON NUCLEAR

# RADIOLOGICAL EMERGENCY PLAN ANNEX FOR NINE MILE POINT STATION

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## Section 1: Introduction

As required in the conditions set forth by the Nuclear Regulatory Commission (NRC) for the operating licenses for the Exelon Nuclear Stations, the management of Exelon recognizes its responsibility and authority to operate and maintain the nuclear power stations in such a manner as to provide for the safety of the general public.

The Exelon Emergency Preparedness Program consists of the Exelon Nuclear Standardized Emergency Plan (E-Plan), Station Annexes, emergency plan implementing procedures, and associated program administrative documents. The Exelon E-Plan outlines the basis for response actions that would be implemented in an emergency. Planning efforts common to all Exelon Nuclear stations are encompassed within the E-Plan.

This document serves as the Nine Mile Point Nuclear Station (NMPNS) Emergency Plan Annex and contains information and guidance that is unique to the station. This includes facility geography location for a full understanding and representation of the station's emergency response capabilities. The Station Annex is subject to the same review and audit requirements as the Exelon Nuclear Standardized Emergency Plan.

### 1.1 Purpose

This Station Annex describes the total preparedness program established, implemented and coordinated by NMPNS to assure the capability and readiness of coping with and mitigating both onsite and offsite consequences of radiological emergencies.

The Station Annex covers the spectrum of emergencies from minor localized incidents to major emergencies involving protective measures by offsite response organizations. Included are guidelines for immediate response, assessment of emergency situations, defined action criteria and delineation of support functions. Emergency Plan Implementing Procedures provide detailed information for individuals who may be involved with specific emergency response functions.

This Station Annex provides for a graded scale of response to distinct classifications for emergency conditions, action within those classifications, and criteria for escalation to a more severe classification. This classification system is compatible with that used by the State of New York and the Oswego County Emergency Management Office. The plans have four emergency categories: Unusual Event, Alert, Site Area Emergency, and General Emergency. In addition to notifying the offsite agencies of the existing emergency classification, provisions are made in the implementing procedures for the Station to advise the State and County of appropriate protective actions.

### 1.2 Emergency Organization

The organization for control of emergencies begins with the shift organization of the affected unit(s) and contains provisions for augmentation and extension to include other Division personnel, and outside emergency response organizations. As an incident increases in severity or potential severity, the emergency response and corresponding response organization must necessarily increase in size. Staffing levels have been established to provide appropriate response and are discussed in detail in Section 2.0 of this Station Annex.

## 1.3 Interrelationship Between Emergency Plan and Other Procedures

Interrelationship of this Station Annex with other procedures, plans and emergency arrangements is necessary to ensure an effective response organization. These interrelated documents include:

a. Nine Mile Point Nuclear Station Emergency Plan Implementing Procedures are designed to detail specific actions required by Station personnel in response to radiological and non-radiological emergency conditions. A listing of these procedures is contained in Appendix C.

b. Operating Procedures (OP), Emergency Operating Procedures (EOP) Special Operating Procedures (SOP), and Severe Accident Procedures (SAP) detail immediate and subsequent operator actions in response to various system transients. These operating procedures are coordinated with the Station Annex and its implementing procedures to ensure appropriate actions are taken on a timely basis.

c. Station Chemistry Department and Radiation Protection Department Procedures define health physics requirements for the control and handling of radioactive materials, personnel decontamination, and respiratory protection, sampling techniques, radiation survey techniques and radiation exposure guidelines. Selected procedures, which are applicable to both normal and emergency conditions, are used in conjunction with the Station Annex and its implementing procedures.

d. Station Physical Security and Fire Protection Plans and their implementing procedures, provide overall guidance and specific instructions to Nuclear Security and Station personnel for emergencies involving security or fire. These plans and procedures are coordinated with the Station Annex and its implementing procedures to ensure compatibility, and with Offsite Plans to ensure prompt access for Offsite Response Organization Responders when necessary.

e. The Oswego County Radiological Emergency Preparedness Plan and the New York State Radiological Emergency Preparedness Plan, in conjunction with this Station Annex and its implementing procedures, provide for early and redundant notification schemes, continued assessment and update of radiological conditions, and the coordination of onsite and offsite protective actions.

The concept of operations, and its relationship to the Federal, State, local and private organizations that are part of the overall emergency response organizations, is described in Section 2.0 and 4.0. A block diagram, which illustrates these interrelationships, is included in Station Annex, Figures 4.1-4.3, Emergency Organizations Interfaces. Illustrations of how the interfaces between various segments of response organizations change during various phases of emergency and recovery operations are shown in Station Annex, Section 4.

## Section 2: Organizational Control of Emergencies

This section describes the Exelon Emergency Response Organization (ERO) at Nine Mile Point, its key positions and associated responsibilities. It outlines the staffing requirements which provide initial emergency response actions and provisions for timely augmentation of on-shift personnel when required. It also describes interfaces among emergency response personnel and specifies the offsite support available to respond to the nuclear generating stations.

### 2.1 Typical Nuclear Division/Station Organization

Personnel in certain categories, principally Operations, Chemistry and Radiation Protection work in shifts so that coverage is provided 24 hours per day. For certain station conditions, such as outages, testing, etc., personnel who do not normally work on shift may work other than normal hours to provide extended coverage.

The minimum staffing at each Unit during normal operation is contained in the NMP On-Shift Staffing Analysis Report, EP-AA-1013, Addendum 1. A detailed analysis of initial on-shift responsibilities and response to an emergency condition is contained in the NMP On-Shift Staffing Analysis Report, EP-AA-1013, Addendum 1.

#### 2.1.1 Station Responsibility During Normal Working Hours

During normal working hours, the Vice President Nine Mile Point has overall responsibility for the site. The Plant Manager has overall responsibility for Unit 1 and Unit 2 operations. The Shift Manager (SM) on duty has responsibility for ensuring that the Unit is operated safely and within the respective license and Technical Specification requirements. The SM has the authority and responsibility to order shutdown of the reactor and/or declare an emergency if required. Also, any licensed reactor operator on duty in a Control Room can shutdown (scram) the reactor if it is in an unsafe condition.

#### 2.1.2 Station Responsibility During Off-Normal Working Hours

During off-normal working hours, the SM's have overall responsibility for the site and safe operation of their respective units. Selected management personnel are on call and may be reached through the use of an approved notification system if a SM needs to notify them of an event that requires technical consultation or requires additional personnel. However, it is the on-duty SM who has the responsibility and authority to declare an emergency. Upon declaring an emergency, the SM immediately becomes the Shift Emergency Director.

In the event of an emergency declaration due to an initiating condition affecting both Unit 1 and Unit 2, both Units' SMs will confer and determine:

- The Shift Manager of the Unit with the higher emergency classification will become the Shift Emergency Director.

- If emergency classification levels are equal, the SM first notified will become the Shift Emergency Director.
- If there is any question as to who should initiate the Station Annex, the Unit 1 SM shall assume the Shift Emergency Director duties.

## 2.2 On-Shift Emergency Response Organization Assignments

The initial phases of an emergency situation at a nuclear station will most likely involve a relatively small number of individuals. These individuals must be capable of (1) determining that an emergency exists; (2) providing initial classification and assessment; and (3) promptly notifying other groups and individuals in the emergency organization. The subsequent phases of the emergency situation may require an increasing augmentation of the emergency organization.

All emergency facilities will have minimum staffing within 60 minutes. Minimum staff positions are defined in Table 2.1.

All Exelon Nuclear stations have the capability at all times to perform detection, mitigation, classification, and notification functions required in the early phases of an emergency.

## 2.3 Authority Over The Emergency Response Organization

The Emergency Director in Command and Control is the designated Exelon individual who has overall authority and responsibility, management ability, and technical knowledge for coordinating all emergency response activities at the nuclear power station. The Emergency Director will immediately and unilaterally initiate any emergency actions, including providing protective action recommendations to authorities responsible for implementing offsite emergency measures.

The Shift Manager is available at all times to assume the responsibilities of Emergency Director. Qualified individuals are on-call to respond to the EOF and TSC relieve the Shift Manager of Emergency Director duties.

## 2.4 Criteria for Assuming Command and Control (Succession)

The responsibility for initial assessment of and response to an emergency rests with the Shift Manager. Emergency personnel assume responsibility for their positions upon receiving notification to activate when an event has been declared.

The Emergency Director responsibilities are initially assumed by the Shift Manager. If the event is classified at an Alert or Higher level, or the Shift Manager deems it appropriate, the Shift ERO will be augmented by the on-call ERO.

The on-call Corporate Emergency Director will report to the EOF and assume overall Command and Control. In accordance with the Nine Mile Point Emergency Plan, the Station Emergency Director reports to the TSC and assumes the responsibilities to classify and declare emergencies and emergency exposure controls.

The Shift Manager is relieved of Command and Control as soon as possible after the declaration of an Alert or higher classification. Command and Control does not transfer until the following criteria have been met:

- Adequate staff levels are present in support of the non-delegable responsibilities.
- The staff has been fully briefed as to the status of the event and the currently proposed plan of action.
- A formal turnover between the Emergency Director relinquishing Command and Control and the Emergency Director assuming Command and Control has been made.

## 2.5 Non-Delegable Responsibilities

Functional responsibilities of an Emergency Director that may not be delegated are:

- Classify and declare emergencies.
- Direct and approve offsite emergency notifications to state and local authorities.
- Make Protective Action Recommendations to offsite authorities.
- Approve and direct emergency exposure controls.

The Station Emergency Director (TSC) will relieve the Shift Emergency Director and assume authority and responsibility for performing the non-delegable duties of classification and emergency exposure controls, the Corporate Emergency Director (EOF) will relieve the Shift Emergency Director of overall Command and Control and assume the non-delegable responsibilities for PAR determination and notifications to offsite authorities.

## 2.6 Emergency Response Organization Positional Responsibilities

Table 2.1 outlines ERO positions required to meet minimum staffing and full augmentation of the on-shift complement at an Alert or higher classification, and the major tasks assigned to each position. The full augmentation staffing levels are used as a planning basis to cover a wide range of possible events. For extended events (one which lasts for more than 24 hours), actual staffing will be established by the Emergency Director based on the event and personnel availability. However, additional staffing or reduced staffing will only occur after discussion concerning the impact on plant operations and emergency response.

The station's ERO consist of three major sub groups reporting to the Emergency Director:

- Onsite ERO, consisting of Control Room, TSC, OSC and Security staffs. The primary functions of the Onsite ERO is perform mitigative actions and ensure appropriate onsite protective actions are taken.
- Offsite ERO, consisting of EOF staff. The primary functions of the Offsite ERO are to interface with offsite authorities and perform offsite radiological assessment.
- Public Information ERO, consisting of JIC staff. The primary function of the Public information ERO is to provide accurate information to the public through News Media.

## 2.7 Emergency Response Organization Block Diagram

Figures 2.2 through 2.6 show the reporting chains and interfaces of the ERO.

## 2.8 Corporate Emergency Response Organization

In the event of a declared emergency at one of Exelon's Nuclear Stations, a Corporate Duty Officer is notified. The Duty Officer will notify senior company management personnel of the event. The Emergency Director will keep senior management informed of events and any need for assistance.

Specific departments of the company may be called on to assist as necessary to provide support for logistics, public information, finance, technical issues, etc. Senior management may assist with interfacing government authorities and other outside organizations.

## 2.9 Industry/Private Support Organizations

Exelon retains contractors to provide supporting services to the company's nuclear generating stations. For station specific support, copies of current contracts and letters of agreement with these groups are maintained by the Emergency Preparedness Department.

Current contracts and letters of agreement are maintained in the Emergency Preparedness Department's files.

## 2.10 Coordination with Participating Government Agencies

### 2.10.1 Federal Agencies

The principal Federal government agencies having emergency responsibilities relative to the NMPNS, and a summary of those responsibilities, are:

a. U.S. Department of Energy (DOE)

The DOE, Brookhaven Area Office, will respond to requests from NMPNS for assistance. This assistance is limited to advice and emergency action(s) essential for the control of the immediate hazards to public health and safety.

The primary method of notification to DOE is by commercial telephone. Notification may also be made through NRC. Assistance can be requested by the NMPNS ED/RM, the Oswego County Emergency Management Director or the Commissioner of the New York State Department of Health. Medical Assistance provided by DOE could also include medical assistance by the Radiation Emergency Assistance Center/Training Site (REAC/TS) Support from Oak Ridge.

When notified of an emergency the Federal Radiological Monitoring and Assessment Plan (FRMAP) team would request a Coast Guard helicopter pick up a six-person team at Brookhaven and fly them to the Nine Mile Point area with their equipment. Approximate arrival time of five (5) hours from notification is expected. This team would provide initial radiation surveys, obtain airborne samples and analyze these samples with the equipment available. The team would also act as an advance party to establish an initial base of operations for follow-on personnel. A possible location for the FRMAP team to set up operations is the Oswego County Airport, which is about ten (10) miles from the NMPNS and in close proximity to the Emergency Response Facilities yet still outside of the 10-mile EPZ. Use of this airport facility would also allow for equipment to be flown in on fixed wing aircraft close to the facilities that would be used for staging and dispatch.

b. Federal Energy Regulatory Commission (FERC)

Two (2) licensed hydroelectric developments are situated within a ten (10) mile radius of the Nine Mile Point Nuclear Station and the James A. Fitzpatrick Nuclear Power Plant. The Minetto and Varick Hydroelectric Stations are part of Project Number 2474 licensed with the Federal Energy Regulatory Commission. A plan has been developed to implement a response plan to safely shutdown and evacuate these hydroelectric facilities. This would be done in the event of a radiological emergency at either nuclear station. In addition, this plan addresses the means to minimize the impact to the public as a result of this emergency shutdown of the hydroelectric stations.

2.10.2 State and Local Agencies

This section identifies the principal State and local government agencies having action responsibilities in the event of a radiological emergency, including a Hostile Action Based event, in the vicinity of the NMPNS. The radiological emergency response plans of these agencies: describe their respective responsibilities, authorities, capabilities and emergency functions; contain provisions for preparedness and response to radiological emergencies by each organization; and contain the primary and alternate methods of emergency notifications.

a. Oswego County Emergency Management Office (OCEMO)

The OCEMO is the lead government agency for coordination and response at the local level. The Oswego County Radiological Emergency Preparedness Plan contains provisions for:

- Planning and coordination with local, State and Federal authorities
- Initial response to notification by NMPNS
- Alert and warning of local political subdivision
- Notification of other emergency response personnel
- Public information concerning the incident
- Evacuation and other protective measures for local populations

Normally the OCEMO is notified by NMPNS via the County Warning Point. It may, however, be notified by the New York State Office of Emergency Management (NYSOEM). A secondary method of notification is via radio from the NMPNS to the County EOC or County Warning Point.

# Figure 2.1: Minimum Staffing Requirements for the ERO

| Functional Area | Major Tasks | Emergency Positions | Minimum Staff (1) | Full Augmentation |
|---|---|---|---|---|
| 1. Plant Ops and Assessment | Control Room Staff | Shift Manager (Shift)<br>Senior Reactor Operator (SRO) (Shift)<br>Reactor Operator (RO) (Shift)<br>Equipment Operator (EO) (Shift)<br>RP Technician (Shift)<br>Chemistry Technician (Shift) | 1*<br>1*<br>2*<br>2*<br>1*<br>1* | |
| 2. Emergency Direction and Control | Command and Control | Shift Manager (Shift)<br>Corporate Emergency Director (EOF)<br>Station Emergency Director (TSC) | See above<br>1<br>1 | |
| | Facility Control | TSC Director (TSC)<br>EOF Director (EOF) | 1<br>1 | |
| 3. Notification & Comm. | Emergency Communications | Shift Communicator (Shift)<br>State/Local Communicator (EOF)<br>ENS Communicator (TSC)<br>HPN Communicator (EOF) | 1*<br>1<br>1<br>1 | |
| | Plant Status & Technical Activities | All ERFs: Operations Communicators (one for TSC, EOF, OSC and each CR) | | 5 |
| | In-Plant Team Control | Team Tracker (OSC) | | 1 |
| | Governmental | EOC Communicator (EOF)<br>State Liaison (EOF)<br>County Liaison (EOF)<br>Incident Command Post Liaison | | 1<br>1<br>1<br>(Note 8) |

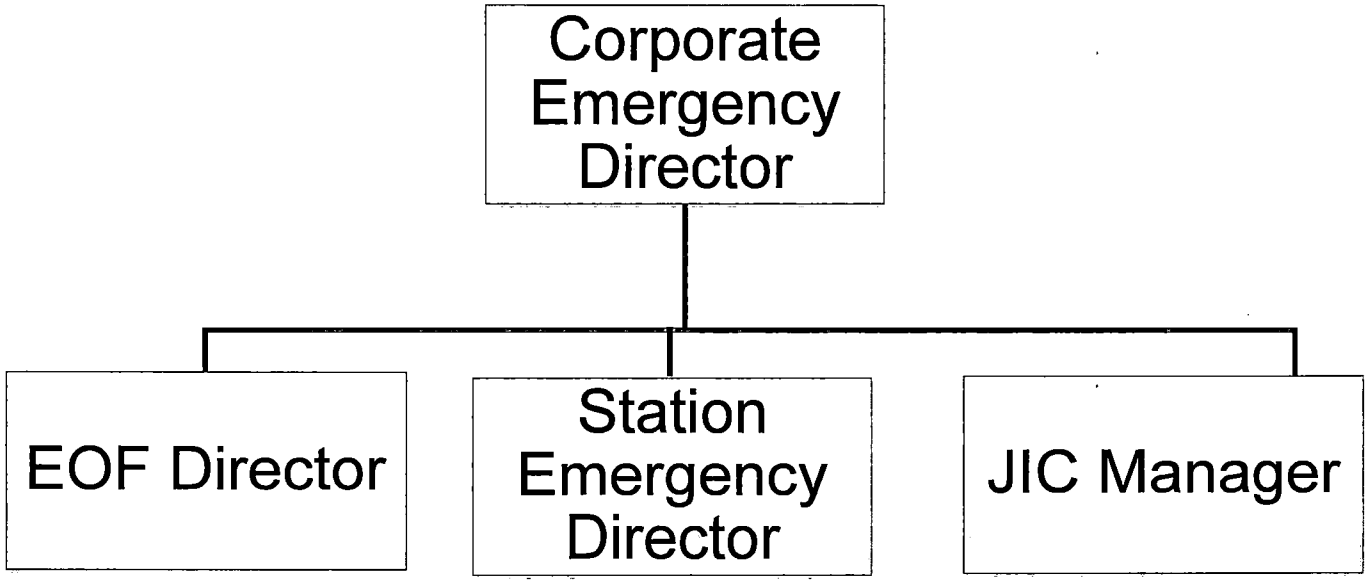
| Functional Area | Major Tasks | Emergency Positions | Minimum Staff (1) | Full Augmentation |
|---|---|---|---|---|
| 4. Radiological Assessment | Offsite Dose Assessment | Dose Assessor (EOF) | 1 | 1 |
| | Offsite Surveys | Environmental Coordinator (EOF) | | 1 |
| | | Offsite Monitoring Team (EOF) | 4 | |
| | Onsite Surveys | RP Technician (OSC) | 2 | |
| | In-plant Surveys | RP Technician (OSC) | 2 | |
| | Chemistry | Chemistry Technician (OSC) | 1 | 1 |
| | RP Supervisory | TSC Radiation Protection Manager (TSC) | 1 | |
| | | EOF Radiation Protection Manager (EOF) | 1 | |
| 5. Plant System Engineering, Repair, and Corrective Actions | Technical Support / Accident Analysis | Shift Technical Advisor (Shift) | 1* | |
| | | Technical Manager (TSC) | | 1 |
| | | Electrical Engineer (TSC) | 1 | |
| | | Mechanical Engineer (TSC) | 1 | |
| | | Core Thermal Hydraulic Engineer (TSC) | 1 | |
| | | Operations Manager (TSC) | 1 | |
| | | Technical Advisor (EOF) | 1 | |
| | | TSC Technical Staff | | Note 3 |
| | Repair and Corrective Actions | Maintenance Manager (TSC) | | 1 |
| | | OSC Director (OSC) | 1 | |
| | | Assistant OSC Director (OSC) | 1 | |
| | | Electrical Technicians (OSC) | 2 | Note 3 |
| | | Mechanical Technicians (OSC) | 2 | Note 3 |
| | | I&C Technicians (OSC) | 2 | Note 3 |
| | | Operations Personnel (OSC) | | Note 3 |
| | | Leads (Ops, Elec, Main, I&C, & RP) | | 5 (Note 4) |
| 6. In-Plant Protective Actions | Radiation Protection | RP Technician (OSC) | 4 | |
| 7. Fire Fighting | -- | Fire Brigade (Shift) | Note 5 | |

| Functional Area | Major Tasks | Emergency Positions | Minimum Staff (1) | Full Augmentation |
|---|---|---|---|---|
| 8. First Aid / Rescue | -- | First Aid provided by trained Shift Personnel<br>Rescue support provided by shift personnel or OSC personnel. | | |
| 9. Site Access Control | Security & Accountability | Security Shift Supervisor (Shift)<br>Security Personnel<br>Security Coordinator (TSC) | Note 6 | <br><br>1 |
| 10. Resource Allocation and Admin Support | Logistics | EOF Logistics Manager (EOF)<br>JIC Logistics Manager (JIC) | <br>1 | 1 |
| | Administration | Administrative Staff (TSC)<br>Administrative Staff (OSC)<br>Administrative Staff (EOF)<br>Administrative Staff (JIC) | | 2<br>1<br>2 (Note 7)<br>2 (Note 7) |
| | Facility Operations | Computer Specialist (TSC / OSC)<br>Computer Specialist (EOF / JIC) | | 1<br>1 |
| 11. Public Information | Media Interface | Company Spokesperson (JIC)<br>Media Liaison (JIC) | 1 | <br>1 |
| | Information Development | News Writer (JIC)<br>Technical Advisor (JIC) | <br>1 | 1 |
| | Media Monitoring and Rumor Control | MM/RC Coordinator (JIC)<br>Inquiry Phone Team (JIC)<br>Media Monitoring Team (JIC) | 1 | <br>2 (Note 3)<br>2 (Note 3) |
| | Facility Operation and Control | JIC Manager (JIC)<br>JIC Security (JIC) | 1 | <br>1 |
| | | **TOTALS:** | **Shift staff: 10<br>Augmented Min Staff: 41** | **37** |

Notes:

(1) Provided by On-Shift personnel, denoted by an asterisk.
(2) (Deleted).
(3) Personnel numbers depend on the type and extent of the emergency.
(4) Craft Lead positions can be filled by senior technicians or craft supervisors.
(5) Fire Brigade per FSAR/Technical Specifications, as applicable. May be a collateral duty.
(6) Per Station Security Plan.
(7) EOF/JIC or TSC/OSC may share Administrative Staffs
(8) Up to 3 Incident Command Post (ICP) Liaisons may be called based on event when a near site ICP is established.

## Figure 2.2: ERO Management Structure




**Offsite ERO**

Interface with Offsite Response Organizations (Federal, State and Local) to coordinate Protective Actions for the public

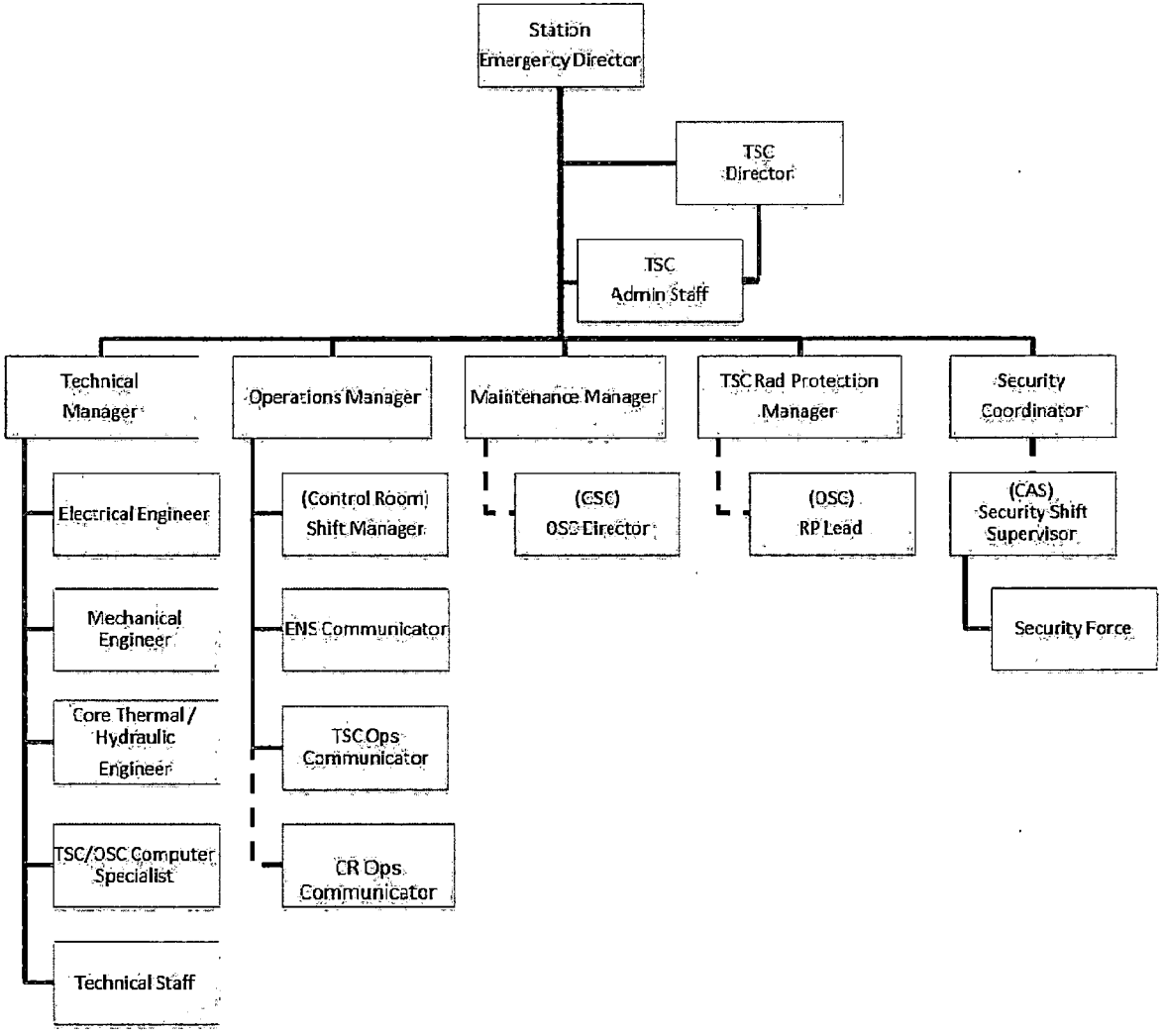
**Onsite ERO**

Onsite (OCA) Protective Response and Mitigative Actions.

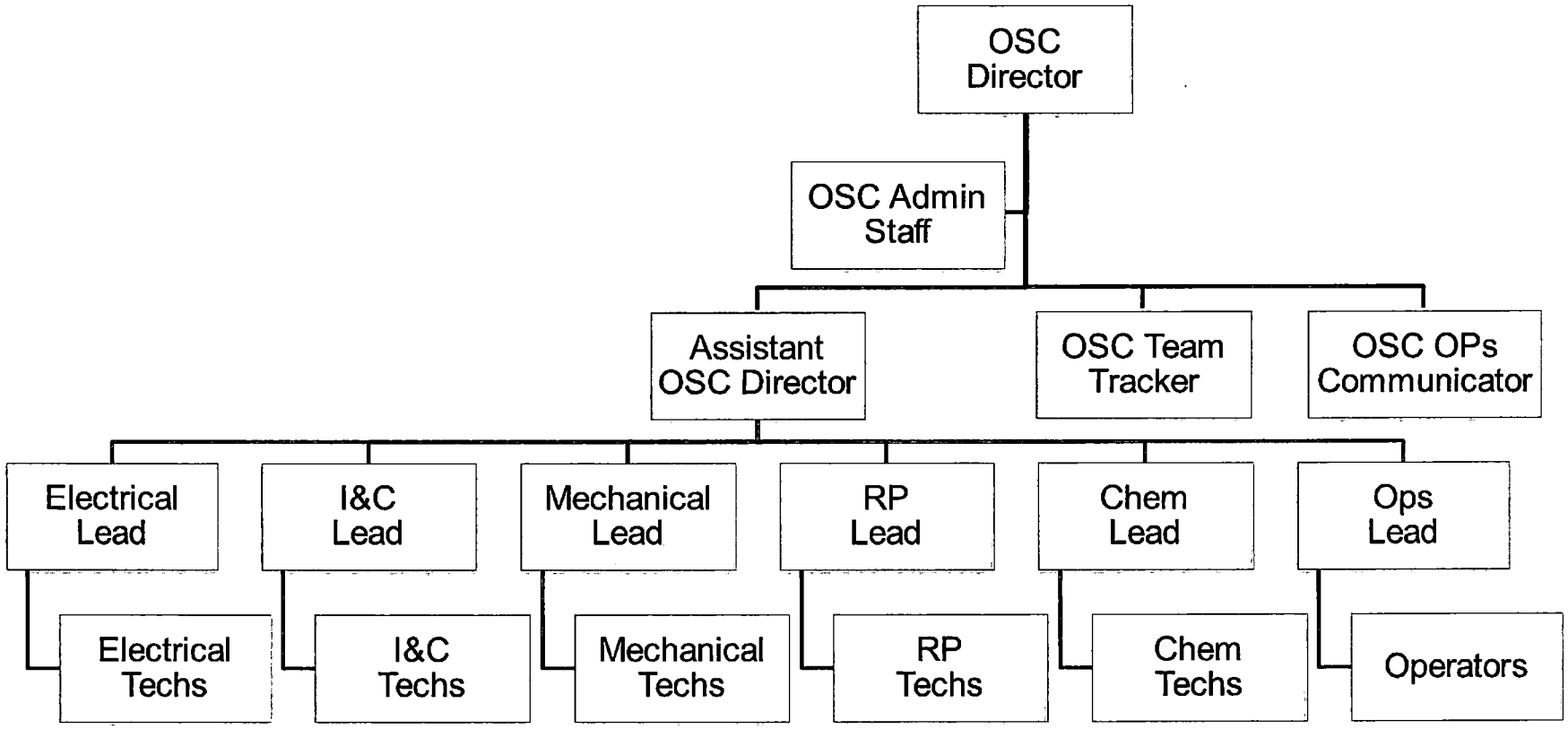
**Public Information ERO**

Provides information to the Public through the News Media, addresses phone inquiries, conducts Rumor Control operations.

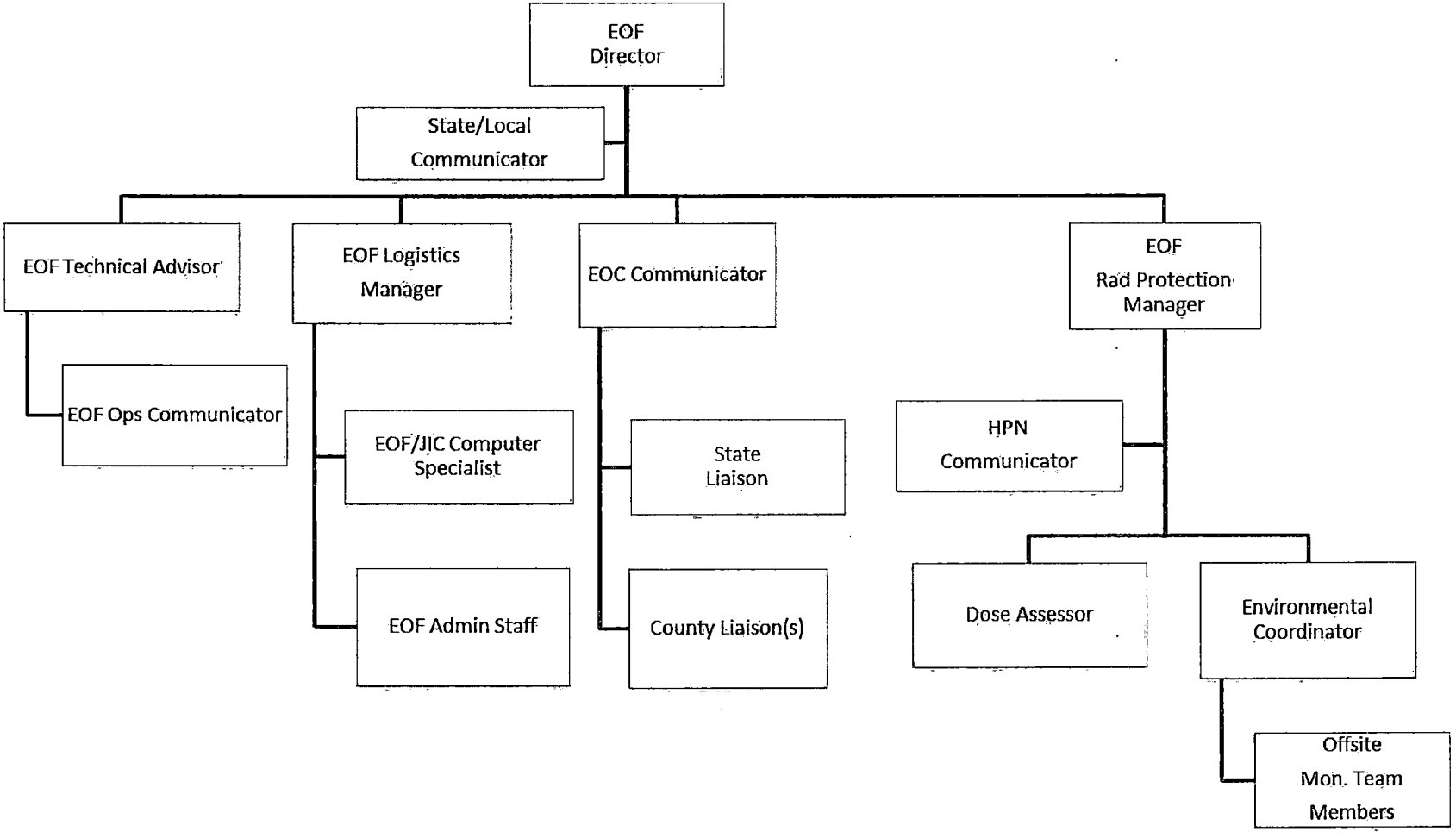
## Figure 2.3: TSC Staffing



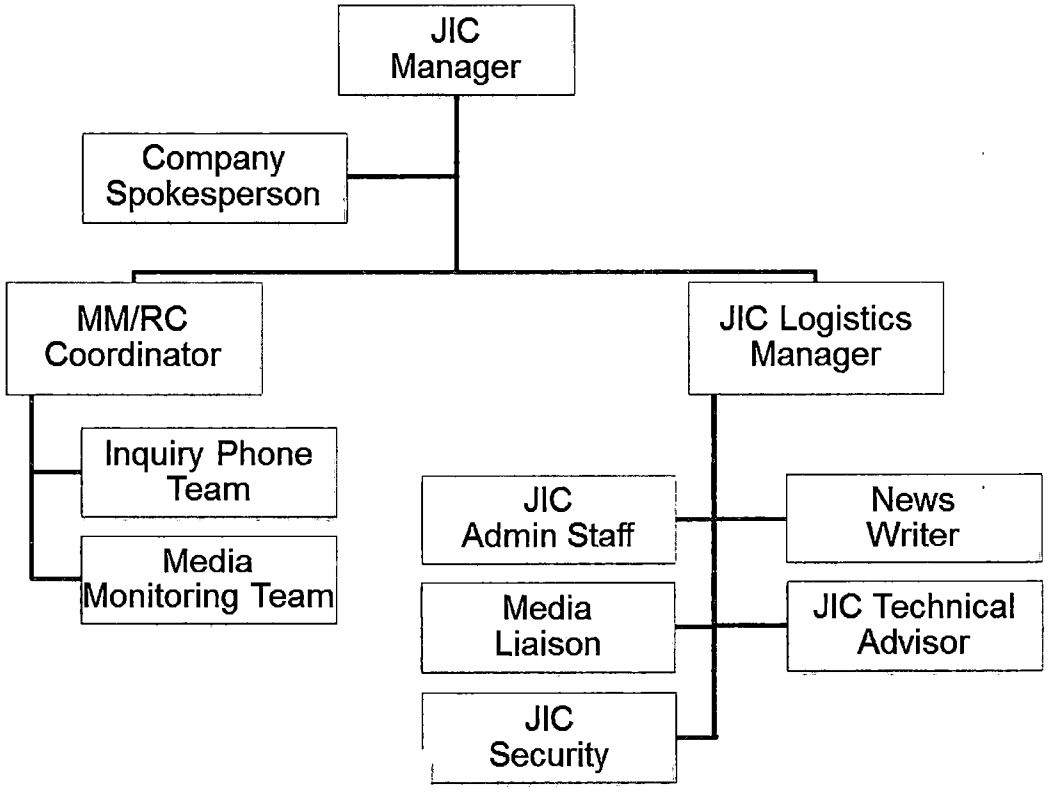
## Figure 2.4: OSC Staffing



## Figure 2.5 EOF Staffing



## Figure 2.6 JIC Staffing



## Section 3: Emergency Conditions

### 3.1 Classification System

The spectrum of probable and postulated emergency conditions have been categorized into four emergency classes. Emergency Action Level (EAL) criteria have been specified for recognizing, categorizing and declaring emergency classes based, to the extent feasible, on readily available information such as Control Room instrumentation. In many cases the emergency classification is immediately apparent from in-plant instrumentation and is consistent with requirements of USNRC Regulatory Guide 1.101. In other cases more extensive assessment is necessary to determine the applicable emergency classification. In any case, continuing assessment ensures that the emergency classification is commensurate with the severity of the emergency condition.

The information is presented by recognition Category with the associated Unit system/ equipment or instrument parameters clearly defined:

- Reactor Fuel
- RPV
- Primary Containment
- Secondary Containment
- Radioactivity Release
- Electrical Failures
- Equipment Failures
- Hazards
- Other

Each EAL Initiating Condition is structured in the following way:

- Recognition Category- as described above
- Emergency Class- Unusual Event, Alert, Site Area Emergency and General Emergency
- Initiating Condition- Symptom- or Event- Based, Identification and Title
- Operating Mode applicability- Power Operation, Hot Standby, Hot Shutdown, Cold Shutdown, Refueling, Defueled or All.

NMPNS maintains the capability to assess, classify and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an Emergency Action Level (EAL) has been exceeded.

The 15 minute criterion does not prevent implementation of response actions to protect the public health and safety provided that any delay in declaration does not deny the State and Local authorities the opportunity to implement emergency response actions.

The 15 minute criterion commences when plant instrumentation, plant alarms, computer displays or incoming verbal reports that correspond to an EAL first

become available to any plant operator and encompasses all assessment, classification, verification and declaration actions.

As used here, "plant operator" means any member of the plant staff who, by virtue of training and experience, is qualified to assess the indications or reports for validity and to compare the same to the EALs. A "plant operator" does not encompass plant personnel such as chemists, radiation protection technicians, craft personnel, security personnel, and others whose positions require they report, rather than assess, abnormal conditions to the control room.

In the case where EALs are related to an analysis, e.g. dose assessment or sampling, the 15 minute declaration period starts with the availability of analysis results, to any plant operator, that show the conditions of the EAL to be exceeded.

Procedure EP-CE-111, Emergency Classification and Protective Action Recommendations, provides specific implementation guidance on this classification system. Figure 3.1 provides action and participation by response organizations for the various emergency classifications. EP-AA-1013, Addendums 3 and 4 provide the basis by which each of the emergency action levels was determined.

3.1.1 Unusual Event

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. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs. Although the emergency situation can be corrected and/or controlled, notification of NMPNS Management may be performed. In addition, appropriate offsite agencies are notified of the nature and extent of the incident, even though no action may be required of them.

3.1.2 Alert

Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life-threatening risk to site personnel or damage to site equipment because of intentional malicious dedicated efforts of a hostile act. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

3.1.3 Site Area Emergency

Events are in process or have occurred which involve an actual or likely major failures of plant functions needed for protection of the public or security events that result in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) prevents effective access to equipment needed for the protection of the public. Any releases are not

expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary.

3.1.4 General Emergency

Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or security events that result 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.

## 3.2 Spectrum of Postulated Accidents

Postulated accidents are described in Chapter XV of the Unit 1 FSAR and Chapter 15 of the Unit 2 USAR.

Postulated accidents for dry fuel storage (ISFSI related) are described in the Transnuclear Inc. Updated Final Safety Analysis Report (NUHOMS® UFSAR) for the Standardized NUHOMS® Horizontal Modular Storage System for Irradiated Nuclear Fuel. Postulated accidents utilizing the Standardized NUHOMS® -61BT dry shielded canisters are described in Section K.11.2 of the NUHOMS® UFSAR and Section T. 11.2 of the UFSAR describes the postulated accident utilizing the Standardized NUHOMS® -61BTH dry shielded canisters.

## FIGURE 3.1
## REQUIRED ACTIONS AND PARTICIPATION BY RESPONSE ORGANIZATIONS FOR VARIOUS EMERGENCY CLASSES

| Emergency Class | Participation By NMPNS | | | | Participation By Off-Site Agencies |
|---|---|---|---|---|---|
| | Necessity for Protective Action | | Necessity for Corrective Action | Plant Staff | |
| | On-Site | Off-Site | | | |
| Unusual Event | Possible | Not Required | Possible [1] | Action Required | No Action Required |
| Alert | Possible | Not Required | Possible [2] | Action Required | EOC's On Alert |
| Site Area Emergency | Probable | Not Required | Probable [3] | Action Required | EOC Action Required |
| General Emergency | Probable | Required | Probable [3] | Action Required | EOC Action Required |

1) May involve normal organizational response such as ambulance, rescue personnel and use of medical facilities as would occur for any industrial accident.

2) May require police, firemen, ambulance, and/or medical facilities to be on alert or to respond.

3) May involve police and Coast Guard, firefighters, ambulance and/or use of medical facilities. May involve radiological monitoring teams from NMPNS, local, State and Federal agencies.

## 4.0 Emergency Measures

Emergency Measures are actions taken to ensure that an emergency situation is assessed and that proper corrective and/or protective actions are taken. These actions include activation of the appropriate components of the emergency organizations, both on-site and off-site; assessment of plant systems status and radiological conditions; mitigative actions to mitigate or terminate an emergency situation; protective actions to minimize the consequences of the emergency to Station personnel and to the general public in the Station environs; decontamination and medical treatment for Station personnel; and other supporting actions such as timely and accurate emergency news releases to the public media.

This section describes the emergency measures which may be performed and applicable criteria, guidelines and methodology for performing those measures.

## 4.1 Initiation of Emergency Actions

Emergency actions are initiated primarily in response to alarmed instrumentation, but may be initiated through notification to the Control Rooms by individual(s) at the Nine Mile Point Nuclear Station who become aware of an apparent emergency situation or by persons outside of the plant in the case of severe weather warnings or hostile actions. The affected unit Control Room Operator (CRO) performs the necessary immediate actions to contend with the off-normal situation in accordance with instrument alarm response procedures (which are contained in the Operating Procedures), Special Operating Procedures, Emergency Operating Procedures and/or other appropriate procedures. The CRO promptly notifies the affected unit SM of the potential emergency situation. This SM assesses the situation and, if necessary, declares the emergency.

As delineated in Section 4.1 of this Emergency Plan, NMPNS maintains the capability to assess, classify and declare an emergency within 15 minutes after the availability of indications to plant operators that an Emergency Action Level (EAL) has been exceeded.

The affected unit SM assumes the role of NMPNS Shift Emergency Director until relieved by the Station Emergency Director (TSC) and the Corporate Emergency Director (EOF). The Station Emergency Director will relieve the Shift Emergency Director and assume authority and responsibility for performing the non-delegable duties of classification and emergency exposure controls, the Corporate Emergency Director (EOF) will relieve the Shift Emergency Director of overall Command and Control and assume the non-delegable responsibilities for PAR determination and notifications to offsite authorities. In the event of an emergency declaration due to an initiating condition affecting both Unit 1 and Unit 2, both Units' SMs will confer and determine:

- The Unit with the higher emergency classification will become the Shift Emergency Director.

- If emergency classification levels are equal, the SM first notified will become the Shift Emergency Director.
- If there is any question as to who should initiate the Station Annex, the Unit 1 SM shall assume the Shift Emergency Director duties.

The Shift Emergency Director continues to assess and classify the condition and initiates the appropriate corrective and protective actions and ensures activation of the necessary segments of the total emergency organization.

The Operating Procedures contain appropriate action statements which refer the operator to the Emergency Plan Implementing Procedures when specified plant parameter values are exceeded or equipment status warrants such response. Severe Accident Procedure (SAP) entry conditions are defined in the station Emergency Operating Procedures. The Shift Emergency Director, in consultation with the Station Emergency Director, determines when SAP entry is required.

## 4.2 Activation of Emergency Organization

This section describes the provisions for notifying and/or activating groups and organizations within the emergency organization in response to potential or actual emergency events at the station. Procedures for notifying, alerting and mobilizing emergency response organizations, including message authentication, are contained in procedure EP-CE-114-100, Emergency Notifications (CNG). Figure 4.1 summarizes the notification/activation of both the onsite and the offsite emergency organization and designates potential action requirements for each emergency classification. A diagram identifying the major emergency facilities and their interfaces during various stages is shown in Figures 4.2 and 4.3.

### 4.2.1 Offsite Notification and Follow-up Messages

The contents of initial emergency notification messages which would be sent from the affected unit to New York State and Oswego County are contained in the emergency notification procedure. Notification Fact Sheets were developed in conjunction with New York State and Oswego County, and serve as the means of initial emergency notification. The contents of the Notification Fact Sheets are consistent with the guidance outlined in Section II.E of NUREG-0654. As a minimum, the following information is provided:

- o Facility name, communicator name and call back telephone number
- o Date/time of incident
- o Class of emergency
- o Brief description of event
- o Radioactive material release information

- o Protective action recommendations
- o Event prognosis
- o Meteorological information

Follow-up notifications are made at regular intervals as detailed in the emergency notification procedure and contain information consistent with the guidance detailed in Section II.E of NUREG-0654. As a minimum the follow-up information contains the above information and the following:

- ° Actual or projected dose rates and projected integrated dose rates at site boundary
- ° Projected dose rates and integrated dose at projected peak and at 2, 5 and 10 miles
- ° Surface contamination estimates

A mutual agreement has been reached between New York State Licensees and New York State excluding event prognosis information from initial notification messages.

4.2.2 Offsite Emergency Organization

a. Offsite Authorities

The Corporate Emergency Director ensures that offsite authorities are notified and apprised of potential or actual emergency events at the NMPNS. Notifications are made to the Oswego County and New York State Warning Points using methods described in the emergency notification procedure. Notification to these authorities of an Unusual Event, an Alert, a Site Area Emergency or a General Emergency commences within 15 minutes following the declaration of an emergency classification. A representative from NMPNS may be sent to the State Emergency Operations Center (SEOC) and to the Oswego County Emergency Operations Center (OCEOC) for a Site Area or General Emergency when the SEOC and the OCEOC, respectively, is fully activated. These representatives aid and assist the New York State Disaster Preparedness Commissioner and the Chairman of the Oswego County Legislature, or their representatives, in defining the extent of the emergency and mitigating measures being taken.

Backup radiological emergency assistance may be provided by the U.S. Department of Energy in Brookhaven, N.Y. Notifications for assistance may be made by the NMPNS Corporate Emergency Director, by the Oswego County Emergency Management Director or by the New York State Commissioner of Health.

4.2.3 On-Site Notification and Organization

a. Notification of NMPNS personnel takes place through the following methods:

1) PA System (GAItronics). This system is capable of sending voice messages and signals indicating a fire, station alarm, or evacuation alarm to all areas within the protected area. It is used to alert personnel onsite of emergency conditions.

2) Telephone. The telephone can be used to contact any needed personnel during emergency conditions.

EP-CE-114-100 contains the implementing procedures for making appropriate notifications.

b. Upon being informed of a potential or actual emergency condition, the affected unit SM immediately assesses the condition. The SM ensures that appropriate actions have been initiated to maintain the safe and proper operation of the plant. This SM then classifies the condition as an Unusual Event, Alert, Site Area Emergency or General Emergency. If the event is classified as an emergency (as defined in EP-CE-111) that requires implementation of this Plan, the SM assumes the role of Shift Emergency Director and takes the following actions:

1) Implement immediate actions in accordance with this Plan and the applicable Emergency Plan Implementing Procedures.

2) Ensure that on-site emergency response individuals and groups are notified (and off-site groups, if conditions require), using the PA system and/or direct communications.

3) Notify on-site individuals to implement a Local Area/Building, Protected Area or Exclusion Area Evacuation, if appropriate, which may include accountability. These notifications are made by sounding the appropriate alarm followed by an announcement of supplementary information over the PA system. Notification is also made to the JAFNPP Control Room (who then activates their notification system).

4) May notify the Plant Manager or their designated alternate to apprise them of the situation. Because of the probable short duration and/or low severity of the condition, the Shift Emergency Director responsibilities are likely to remain with the SM through termination of Unusual Event classifications.

5) Ensure that off-duty station personnel are notified to provide assistance with emergency activities as necessary. This notification process is described in the emergency notification procedure. Off-duty personnel are called in as required.

6) Notify appropriate TSC, OSC and EOF personnel if the condition is classified as an Alert or higher.

## 4.3 Assessment Actions

Provisions are made for assessment and continuing re-assessment throughout the course of an emergency to ensure the effective coordination, direction and upgrading of emergency activities in a timely manner. The assessment actions are described in detail in the Emergency Plan Implementing Procedures.

4.3.1 Unusual Event

The purpose of the Unusual Event classification is to provide early warning of minor events which could lead to more serious consequences. The Unusual Event conditions represent potential degradation of the level of safety of the plant or indicate a security threat to facility protection. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs. Declaring an Unusual Event assures that the first step for any response later found to be needed, has been carried out by bringing onsite staff and offsite organizations to a state of readiness, thus providing a system for handling information and decision making.

The NRC, State, and Oswego County authorities will be promptly notified to assure that the first step of any necessary response can quickly be initiated. Offsite organizations will standby for further information or termination. On-shift resources can be augmented to assess and respond as needed.

4.3.2 Alert

Events of the Alert classification involve actual or potential 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 a hostile act. Any radioactivity released would result in exposures of only a small fraction of the guidelines for required offsite action. By assuring that emergency personnel are available, protective actions, such as performing confirmatory radiation monitoring and providing offsite authorities with current status information, will be ensured.

For events which fall into the Alert classification, the Emergency Response Organization will promptly notify the NRC, State and County authorities of the Alert Classification and the reasons for the classification. The TSC and EOF will be staffed to assist in the assessment of the incident and determination of proper responses. Periodic plant status updates will be given to offsite authorities who will also be advised of any change in the classification of the event.

Non-essential personnel will normally be evacuated from the protected area (provided it is safe) to designated locations outside of the protected area at this level. All ERO personnel will assemble at their designated emergency facilities, and accountability may also be initiated. This ensures that:

- Appropriate staff is available to mitigate the event,
- The potential to over-expose non-essential personnel is minimized,

- Non-essential personnel are prepared for possible exclusion area evacuation by pre-staging these personnel outside of the protected area.

The JIC will be staffed in order to coordinate public information activities warranted by the emergency. Offsite agencies may activate their resources and facilities and may alert other emergency personnel, such as monitoring teams, communication centers, the Emergency Alert System (EAS), and law enforcement. They will be ready to escalate to a more severe classification, if appropriate.

4.3.3 Site Area Emergency

A Site Area Emergency (SAE) is declared when events are in progress or have occurred which involve actual or likely major failures of plant functions needed for the protection of the public or security events that result in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) prevents effective access to equipment needed for the protection of the public. Any releases are not expected to exceed EPA Protective Action Guideline exposure levels except near the site boundary.

In the event that a SAE is declared, the actions to be taken by various plant groups are detailed in the implementing procedures for the plant. The Emergency Response Organization will make the initial notification to the County authorities, State, and NRC.

The purpose of declaring a SAE is to assure that non-essential personnel are protected in the event of a release of radioactive materials. Should a release be anticipated or in progress, non-essential personnel will normally be directed to evacuate to the either the Offsite Assembly Area (provided it is safe) for monitoring and if necessary decontamination, or home if there was no release of contamination from the station. If no release is anticipated or in progress, non-essential personnel will normally remain at designated locations within the exclusion area, to permit more rapid return of personnel to normal duties. Accountability of personnel remaining within the protected area, as a minimum will commence at this level, and continues until event termination or de-escalation. Also, offsite agency authorities will be available at primary response centers for consultation and updates on the situation, and to provide information to the public.

For events which fall into the SAE classification, the County, State, and NRC will be promptly notified of the SAE classification, and the reasons for the SAE classification. The TSC and EOF will be staffed to assist in the assessment of the incident and determination of proper responses. Periodic plant status updates will be given to offsite authorities who will also be advised of any change in the classification of the event.

The JIC will be staffed in order to coordinate public information activities warranted by the emergency.

Offsite agencies may activate their resources and facilities and may alert other emergency personnel, such as monitoring teams, communication centers, EAS, and law enforcement. They will be ready to escalate to a more severe classification, if appropriate.

4.3.4 General Emergency

A General Emergency (GE) is declared when events are in progress or have occurred which involve actual or imminent substantial core damage or melting with potential loss of containment integrity or security events that result in an actual loss of physical control of the facility. Releases of radioactive material can be expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.

In the event that a GE is declared, the actions to be taken by the various plant groups are detailed in the implementing procedures for the plant. The Emergency Response Organization will make the initial notification to the County authorities, State, and NRC. Initial notification of a GE shall contain initial Protective Action Recommendations. The purposes for declaring the GE are:

- To initiate protective actions for the public and site personnel as predetermined by projected, or by actual releases.
- To provide continuous assessment of information from the affected unit.
- To provide for consultation with offsite authorities.
- To keep the public informed through the JIC.
- To evacuate non-essential personnel from the exclusion area (provided it is safe) to either the Offsite Assembly Area (OAA) for monitoring and if necessary decontamination, or home if there has been no release of contamination from the station.

The TSC and EOF will be staffed to assist in the assessment of the incident and proper determination of responses. Periodic plant status updates will be given to offsite authorities who will also be advised of any change in the classification of the incident. The JIC will be staffed in order to coordinate public information activities warranted by the emergency. Offsite agencies will activate all needed resources and facilities.

## 4.4 Assessment Capabilities

4.4.1 Field Radiological Assessment

Field radiological data is collected by onsite and offsite survey teams. The teams may be deployed for any emergency classification involving projected or actual releases of radioactive materials. The survey teams use emergency/company vehicles (or personal vehicles, if needed) for transportation and maintain contact with the EOF or TSC.

Downwind Survey equipment is maintained for emergency use by onsite and offsite survey teams. This equipment includes portable instrumentation for performing direct radiation surveys, performing contamination surveys and collecting and analyzing airborne samples for gross and iodine radioactivity.

Rapid assessment of any radiological hazards resulting from the gaseous effluents are made in the field using the environmental samples taken. Radiation Protection Procedures will be used to implement the required radiological surveys/samples and analyze of the results of these surveys/samples taken from within the NMPNS. Procedure EP-AA-112-500-F-55, NMP Offsite Monitoring Team Guidance, will be used to analyze the offsite survey and sample results to provide an initial estimate of the offsite radiological consequences.

Rapid field assessment of liquid samples is not considered essential because the nearest drinking water supply is far enough away to provide ample time for warning the appropriate State and local authorities in the event protective measures are required. When field liquid samples are required, they will be taken and transported back to the appropriate facility for assessment.

4.4.2 Field Airborne Radioiodine Assessment

Monitoring for radioiodine is accomplished by the use of portable sampling pumps equipped with a particulate filter and silver zeolite cartridges. The particulate filter and silver zeolite cartridges can be field counted in a low background area for immediate determination of total radioiodine concentration. Cartridges and filters can be further analyzed using gamma spectrometry in either the NMPNS counting laboratory, the environmental laboratory or the adjacent JAFNPP counting laboratory. The lower limit of detection for radioiodine is less than 1.0E-7 μCi/cc under all weather conditions.

4.4.3 Field Contamination Assessment

A second type of radiological data which the onsite and offsite survey teams collect is surface contamination levels for the radionuclides listed in NUREG-0654, Table 3 (Radionuclides with Significant Contribution to Dominant Exposure Modes). The data obtained from these sample measurements assist in protective action decisions affecting the general public during the emergency and post-emergency recovery/re-entry phase. This data can be used to determine 10CFR140 applicability.

Surface contamination may be estimated using procedure EP-AA-112-500-F-55 during the emergency and actual values are determined by sampling snow, grass, soil, leafy vegetation, surface water as deemed appropriate during emergency recovery activities. EP-AA-112-500-F-55 describes in detail the emergency radiological environmental sampling program.

## 4.5 Dose Assessment Methods and Techniques

The NMPNS has established a method for relating various measured environmental media activity levels to dose rates for key isotopes and gross radioactivity measurements. NMPNS has formulated provisions for estimating integrated dose from the projected and actual dose rates (refer to dose assessment procedures). The results of these calculations can then be tabulated and compared with applicable protective action guides.

The information most important in determining offsite consequences is source term, dose assessment, environmental measurements and dose projections. The following paragraphs describe these dose assessment terms and techniques.

### 4.5.1 Source Term Determination

a. Projected Source Term Determination

The release rate and/or source term from NMPNS during a nuclear emergency can be projected as described in dose assessment procedures, and are listed as follows:

1) Containment High Range Monitors (CHRM) (relate CHRM to a radioactivity concentration in the drywell, then assume a flowrate from the drywell to the atmosphere).
2) Grab samples.
3) Back calculation from downwind gamma dose rate measurements.
4) UFSAR/USAR postulated accident release rates.

b. Actual Source Term Determination

The method for determining actual release rate for source term determination from NMPNS during a nuclear emergency are described in dose assessment procedures, and are listed as follows:

1) Effluent monitors
2) Stack teletector (Unit 1 only)
3) Grab samples

### 4.5.2 Offsite Radiological Dose Assessment Process

Dose assessment or projection represents the calculation of an accumulated dose at some time in the future if current or projected conditions continue. During an accident, the Plant Parameter Display System and personal computers will provide the ERO with the timely information required to make decisions. Radiological and meteorological instrumentation readings are used to project dose rates at predetermined distances from the station, and to determine the integrated dose received. Dose assessment methods used by Exelon personnel to project offsite doses include:

a. Monitored Release Points - This method utilizes the plant's effluent radiation monitors and system flow rates. Effluent release points are used to directly calculate a release rate. The point of the release determines the way the source term is affected and is adjusted by the dose assessment process.

b. Containment Leakage/Failure - This method uses a variety of containment failures or leak rates in conjunction with available source term estimations to develop a release rate to the environment. A direct vent of containment can be modeled as a failure to isolate.

c. Release Point Samples - This method uses a sample at the release point and an estimated flow rate to develop a release rate at the point of release.

d. Field Monitoring Team Data - This method uses a field survey or sample and the atmospheric model to back calculate a release rate and ratio concentrations of radioactive material at various points up and downwind of plume centerline.

The computer applications used to provide dose calculations are evaluated against the EPA-400 plume exposure Protective Action Guides (PAGs) applicable for the early phase of an accident. These evaluations place an emphasis on determining the necessity for offsite protective action recommendations. Dose assessment actions will be performed in the following sequence:

a. First, onset of a release to 1 hour post-accident:

   1) Shift personnel will rely on a simplified computerized dose model to assist them in developing offsite dose projections using real time data from effluent monitors and site meteorology.

b. Second, 1 hour post-accident to event termination:

   1) Estimates of off-site doses based on more sophisticated techniques are provided. Dedicated ERO personnel will analyze the offsite consequences of a release using more complex computerized dose modeling. These additional methods are able to analyze more offsite conditions than the simplified quick method, as well account for more specific source term considerations

4.5.3 Onsite Dose Assessment and Protective Actions

Health Physics procedures provides procedures for assessing the radiological conditions onsite, and protective actions needed in response to those actual or projected conditions. EP-CE-113, Personnel Protective Actions provides for control of emergency exposures.

4.5.4 Environmental Measurements

The second method available to assess dose is based on measured activity in environmental media. Dose can also be determined on the basis of plant and

environmental measurements collected per EP-AA-112-500-F-55 and the post-accident sampling procedures.

Environmental samples collected by the downwind survey teams and environmental survey teams are returned for laboratory analysis. Environmental media such as milk, human food products and water are analyzed in a laboratory environment to determine the concentrations of key isotopes which would then be converted (either by hand calculation or computer using appropriate formulas) to dose.

4.5.5 Dose Projection

a. Preliminary estimates of total population exposure are made using the method in dose assessment procedures and the offsite monitoring team guidance document. These preliminary estimates are based on projected or actual field measurements made during the course of the emergency. During the recovery phase of the emergency, these estimates are refined based upon actual emergency and environmental Optically Stimulated Luminescent Dosimeters (OSLD) results, information obtained from the Oswego County Emergency Management Office on evacuated and sheltered population, and evacuation time estimates for various Emergency Response Planning Areas (ERPA's).

## 4.6 Mitigative Actions

Detailed Emergency Operating Procedures, Special Operating Procedures, and Severe Accident Procedures as appropriate are used by the station operating personnel to assist them in recognizing potential or actual emergency events and responding to emergency and severe accident conditions. These procedures describe the mitigative actions necessary to place the plant in a safe condition. Additionally, Emergency Plan Implementing Procedures, as listed in this Station Annex, Appendix 3, describe subsequent and/or supplemental mitigative actions for the scope of potential situations within each of the emergency classifications. These Emergency Plan Implementing Procedures are designed to guide the actions of personnel to correct or mitigate a condition as early and as near to the source of the problem as feasible.

## 4.7 Protective Actions

Protective actions are measures which are implemented to prevent or mitigate consequences to individuals during or after a radiological incident. Protective actions within the NMPNS site boundary are the responsibility of the NMPNS Emergency Director, but may include assistance by off-site organizations. Protective actions outside the NMPNS site boundary are primarily the responsibility of State and local emergency organizations, but may include

coordination of activities, dissemination of appropriate data and recommendations by the NMPNS Emergency Director.

4.7.1 Onsite Protective Actions

Onsite protective actions are directed by the Shift Emergency Director until relieved by the Station Emergency Director and are reviewed to consider the possible impact on the activities of offsite response personnel.

The primary protective measure for onsite personnel in an emergency is prompt evacuation from areas which may be affected by significant radiation, contamination or airborne radioactivity. For personnel who must stay onsite as part of the on-site emergency response team other protective measures may be used as discussed in the following sections.

In addition, a range of protective actions to protect onsite personnel during hostile action events has been developed. This range of protective actions ensures the continued ability to safely shut down the reactors and perform emergency response functions. The response functions include:

- Evacuation of personnel from target buildings
- Site evacuation by opening gates, while continuing to defend them
- Dispersal of Licensed Operators
- Sheltering personnel away from potential site targets
- Accounting for personnel after the attack

The following are the primary onsite protective actions:

a. Local Area/Building Evacuation

A local area/building evacuation is confined to local areas or buildings within the protected area. This evacuation requires all personnel within the designated area or building to rapidly exit the area/building and remain clear of the area/building until further notice. The decision to implement a local area/building evacuation is the responsibility of the Shift Emergency Director or Station Emergency Director. This decision is based largely on evaluation and judgment of the magnitude and severity of the situation on a case by case basis. Factors to be considered may include:

- the safety of personnel within the area/building
- smoke/heat or other hazards
- actual or estimated levels of radiation and/or airborne radioactivity involved, as well as the potential exposure to personnel that would result from both evacuating and not evacuating specific station areas/buildings.

The warning of personnel in the station can be accomplished in less than 15 minutes. (This includes visitors, contractor and construction personnel).

Notification is made by sounding the evacuation alarm, followed by an announcement over the plant PA system. (Refer to EP-CE-113, Personnel Protective Actions)

b. Protected Area Evacuation

A Protected Area Evacuation is confined to areas within the protected area. This evacuation requires that ERO members assemble at their designated ERF, and non-essential personnel leave the protected area and assemble at designated locations outside of the protected area. (refer to EP-CE-113).

The decision to implement a protected area evacuation is the responsibility of the Shift Emergency Director or Station Emergency Director (as appropriate). A protected area evacuation is automatically implemented at an Alert or Site Area Emergency provided it is safe to perform. The warning of personnel in the protected area can be accomplished in less than 15 minutes. (This includes visitors, contractor and construction personnel)

Notification of a protected area evacuation is made by sounding the evacuation alarm, followed by an announcement over the plant PA system.

c. Owner Controlled Area (OCA) Evacuation

EP-CE-113 describes the evacuation of non-essential personnel from the NMPNS protected area via the Security Buildings to the Offsite Assembly Area. It also includes, as appropriate, the evacuation of individuals from the NMPNS OCA, including the Nuclear Learning Center, Energy Center, Sewage Treatment Facility and all other NMPNS site locations to their homes or Offsite Assembly Area

The Off-site Assembly Area is normally the Oswego County Airport, Hanger K, in Volney (Fulton). The Emergency Director may specify alternate routes or alternate locations, if appropriate. Personnel will use privately owned vehicles to evacuate. Security personnel help ensure that personnel proceed to the Offsite Assembly Area. JAFNPP is advised of the NMPNS OCA evacuation and the projected dose rates which could affect their personnel. The decision to implement an OCA evacuation is the responsibility of the Shift Emergency Director or Station Emergency Director. The decision is based on the declaration of a Site Area Emergency in which a radioactive release is anticipated or in progress, the declaration of a General Emergency, or upon declaration of a site evacuation by JAFNPP.

Notification of an OCA evacuation is made by sounding the evacuation alarm, followed by an announcement over the station PA system.

Other persons who may be in public access areas, passing through the site, or within a NMPNS controlled location, will be notified by methods outlined in EP-CE-113. The warning of personnel in the OCA can be accomplished in less than 15 minutes. (This includes visitors, contractors and construction personnel)

d. Personnel Accountability

To ensure that station personnel present in affected areas have been accounted for and to determine the whereabouts of personnel who have not been accounted for within the protected area, measures have been established to provide for personnel accountability. Accountability for personnel remaining within the protected area following an accountability order is performed in accordance with EP-CE-113.

Initial accountability results in the generation of a list of missing persons within 30 minutes of an announcement to evacuate non-essential personnel or an announcement to perform accountability and/or identifying any individuals not accounted for.

**NOTE:** The personnel accountability process is considered initiated when the announcement has been completed.

The accountability system works as follows: Personnel enter the protected area through security access points. Upon entering the area personnel position their security identification proximity card (Owner Controlled Area Card) near the entrance Proximity Card Readers. Their access is tracked by the security department computer. In the event of an emergency, personnel within the protected area report to onsite assembly areas, or exit the protected area activating a Proximity Card Reader at the accountability area or at the protected area exit. After a number of personnel have completed this process (about 20 minutes after the announcement), a report is produced. The information on the report yields the names of individuals who are present in the protected area, but who have not activated a Proximity Card Reader (activations are subtracted from the overall database). The personnel accountability process continues throughout the event. Search and rescue efforts begin at the completion of the initial accountability process, and are performed in accordance with EP-AA-113, Personnel Protective Actions.

e. Contamination Control

The NMPNS Radiation Protection Procedures contain provisions governing the control of contamination including access control, use of protective clothing, contamination monitoring, and the release of potentially contaminated items from Restricted Areas.

The requirements and guidelines of these procedures apply to contamination control during emergency conditions.

Specific onsite contamination control measures for food supplies is not necessary since no agricultural products for consumption are grown within the NMPNS exclusion area. Also, no drinking water supplies originate onsite. Drinking water is obtained from City of Oswego water supplies or bottled water suppliers.

f. Exposure Control

The radiation exposure of station personnel during emergency operations is maintained As Low As Reasonably Achievable (ALARA), and should be maintained less than the administrative guides established in the NMPNS Radiation Protection Procedures and/or less than the Federal radiation exposure standards established in 10CFR20. In order to accomplish this objective, administrative means used during normal operations to minimize personnel exposure, such as Radiation Work Permits, Authorization to Exceed Radiation Exposure Guides, and ALARA measures should remain in force to the extent consistent with timely implementation of emergency measures.

If necessary actions require personnel exposures to exceed normal limits, or if normal access control and radiological work practices results in unacceptable delays, the established exposure control criteria and methods may be waived or modified at the discretion of the Shift Emergency Director or Station Emergency Director (as appropriate). In the event of a declared emergency, the emergency dose limits outlined in EPA-400 have been proceduralized in EP-CE-113, Personnel Protective Actions, and may be used. EP-CE-113 also provides procedures for expeditious decision making, a reasonable consideration of relative risks, and the capacity for just-in-time authorization or emergency exposures.

Emergency dose limits are as follows:

| TEDE Limit (rem) | Activity |
|---|---|
| 5 | All activities during the emergency |
| 10 | Protecting valuable property |
| 25 | Lifesaving or protection of large populations |
| >25 | Lifesaving or protection of large populations, only if individuals receiving exposure is a volunteer, and fully aware of risks involved. |

Dosimetry equipment is provided at the station as part of the normal Radiation Protection Program, and such dosimetry continues to be used during emergency situations. Dosimetry consists of OSLDs (or

equivalent) and Self-Reading Dosimeters (SRD) (or equivalent, e.g. electronic dosimeters), also known as Pocket Direct-Reading Dosimeters. A limited number of such dosimetry are also available in emergency supplies. Personnel are available 24 hours a day during an emergency to issue and/or process dosimetry devices.

The NMPNS Radiation Protection Procedures contain provisions for administration of the Facility Bioassay Program. EP-CE-113 provides guidance for accelerated or additional bioassays in the event there are individuals who are suspected of being exposed to elevated levels of airborne activity as a result of the emergency. Radiation Protection Procedures provide for issuing, using, and reading/processing dosimetry devices and provisions for exposure record keeping. During an emergency, the processing frequency is based upon the exposure rates and/or the exposure received by emergency personnel.

g. Respiratory Protection

The NMPNS Radiation Protection Procedures contain provisions governing the use of respiratory protection equipment and administration of the NMPNS Respiratory Protection Program. Site specific ERO Respirator qualification requirements contained in the ERO Training and Qualification procedure take precedence over requirements contained in the Exelon Standardized Radiological Emergency Plan for Nine Mile Point Station.

Exceptions to normal respiratory protection practices may be instituted by the Shift Emergency Director or Station Emergency Director (as appropriate), with the advice of the RP Manager.

h. Potassium Iodide (KI)

Potassium iodide (KI) is available for use by NMPNS employees in the event of an emergency. Indications and when KI should be used are contained with EP-CE-113.

4.7.2 Offsite Protective Actions

a. Protective Actions Within Oswego County

The responsibility for actions to protect offsite individuals rests with the County of Oswego, New York State Office of Emergency Management and New York State Department of Health as described in the New York State Radiological Emergency Preparedness Plan.

The NYS Department of Health is responsible for evaluating information obtained from the NMPNS and/or other sources and recommending appropriate offsite protective actions to the OEM/OCEMO.

The principal offsite local coordinating agency for providing response to radiological emergencies in the vicinity of the NMPNS is the OCEMO.

The entire 10-mile Emergency Planning Zone is contained within Oswego County.

A detailed study has been conducted of the status and capacities of roads, traffic patterns and demography within the 10-mile radius Emergency Planning Zone. This study includes the estimated times to evacuate all or specific segments of the population, identifies potential problem areas and provides contingencies for dealing with adverse conditions. The time estimates for various scenarios were performed: 1) Nighttime, normal weather; 2) Nighttime, adverse weather; 3) School in session, normal weather; 4) School in session, adverse weather. This study, "Evacuation Travel Estimates (ETE) for the James A. Fitzpatrick/Nine Mile Point Emergency Planning Zone" is contained in EP-AA-1013, Addendum 2 and was used in the development of detailed evacuation plans by the OCEMO. The ETE meets the criteria established in NUREG-0654.

b. Oswego County Prompt Notification System

The physical and administrative means for alerting and warning the population of an incident at the Nine Mile Point Nuclear Station is described in detail in EP-CE-111 and the Oswego County Radiological Emergency Response Plan.

The responsibility for activation of the Prompt Notification System (PNS) rests with the Chairman of the Oswego County Legislature or designee. The Oswego County Emergency Management Office administratively activates the warning system and supplies appropriate emergency messages to the Emergency Alert System (EAS) station serving the jurisdiction in accordance with the provisions of their emergency response plans. Siren activation equipment is located at the OCEMO and the Oswego County 911 Center.

The PNS consists of:

- Outdoor sirens.
- Reverse calling system (as back-up to the above).
- Emergency Alert System.

This system meets NUREG-0654 and FEMA-REP-10 design and testing criteria. System design and testing requirements are detailed in the approved FEMA Design Report.

c. Protective Action Guides and Recommendation of Protective Action Recommendations

Protective Action Guides (PAG's) identify protective actions to be taken prior to or following a significant release of radioactive material. They are based on NUREG-0654/FEMA-REP-1, Rev 1, Supplement 3, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans

and Preparedness in Support of Nuclear Power Plants" and Frequently Asked Questions (FAQ) documented in "EPFAQ 2013-004 Final Response". PAGs for the "plume phase" have been established by the US Environmental Protection Agency.

The numerical guides for TEDE and $CDE_{Thyroid}$ (child) dose to the general public are listed below. The procedure used by NMPNS personnel in determining the appropriate protective action recommendation (PAR) is detailed in EP-CE-111. PARs are reviewed prior to issuance to assess their potential impact on offsite response organization activities.

| Protective Action Guidelines<br>Early or Plume Phase | | |
|---|---|---|
| | TEDE (rem) | $CDE_T$ (rem) |
| Evacuate | >1 | >5 |

The following principles guide the formulation of PARs for the NMPNS:

- Evacuation is the preferred method of protecting the public in the event of a significant radiological release. EPA 400 Protective Action Guidelines are used.
- NMPNS does consider sheltering due to Controlled Containment Venting with release durations of < 1 hour and dose assessments do not exceed the EPA PAGs.
- If determined to be appropriate by New York State or Oswego County Officials, thyroid prophylaxis may be provided to the general public. NMPNS recommendations include implementation of the KI Plan in order to be consistent with offsite plans.

## 4.8 Aid to Affected Personnel

Procedures are established which provide for control of radiation exposure, including emergency exposure, personnel contamination, assistance to injured persons, and situations involving complications due to the presence of radiation or radioactive contamination.

4.8.1 Decontamination

Personnel contamination in emergency situations is controlled to the extent feasible by the normal methods of using protective clothing and surveying for contamination following the removal of such clothing. Designated personnel decontamination areas consisting of showers and sinks which drain to the radwaste system, are available for either routine or emergency use at the NMPNS. Similar facilities are available at the JAFNPP. Station radiation protection personnel are instructed in the proper methods of removing minor contamination from skin surfaces. Efforts involving significant amounts of contamination, particularly in the vicinity of facial openings, will normally be performed under the direction of Radiation Protection personnel. Detailed methods for personnel decontamination are described in Radiation Protection Procedures. Decontamination limits are detailed in station Radiation Protection Procedures.

4.8.2 First Aid

Individuals are onsite who can administer first-aid. First aid to injured personnel is normally performed in conjunction with any necessary decontamination methods. However, if immediate treatment of the injury is vital, that treatment shall take precedence over decontamination. This philosophy also extends to offsite emergency assistance involving radioactive contamination. For that purpose, measures are established to ensure timely offsite medical treatment and limiting the spread of contamination, as described in Station Annex Sections 4.8.3 and 4.8.4.

4.8.3 Medical Transportation

Arrangements have been made with the Oswego County 911 Center to transport from the NMPNS to a medical treatment facility any injured personnel, including radioactively contaminated personnel and those involved in radiation exposure incidents, or a Hostile Action Based event.

Copies of the agreements from facilities/organizations which provide emergency services are contained in Station Annex Appendix 2. Ambulance emergency supplies are available for use and are stored at designated points of access to the NMPNS.

4.8.4 Medical Treatment

Arrangements have been made with the Oswego Hospital (Oswego, N.Y.) for the medical treatment of patients from the NMPNS who may have a radiation exposure injury or injuries complicated by radioactive contamination, or been involved in a Hostile Action Based event. The Oswego Hospital has developed a detailed procedure for handling radioactively contaminated patients or those involved in radiation exposure incidents at the NMPNS. Similar arrangements have been made with the Upstate University Hospital (Syracuse, N.Y.) for medical treatment of contaminated injuries and significant overexposures to radiation or been involved in a Hostile Action Based event. Upstate University

Hospital has developed detailed procedures for handling radioactively contaminated or those patients involved in radiation exposure incidents at the NMPNS.

Medical treatment facilities and on-site personnel may also contact a radiation management expert who is contracted to provide radiological treatment advice upon request. Radiation Protection Procedures describe actions necessary for decontamination of emergency worker wounds, and waste disposal. The Emergency Equipment Inventory procedure lists decontamination equipment available at Oswego Hospital. This service is available 24 hours per day year-round as specified in the Letter of Agreement in Appendix 2.

## 4.9 Emergency Public Information and Rumor Control

A telephone inquiry response program and a rumor control program has been established by NMPNS. NMPNS in conjunction with state and county governments cooperate on responses to inquiries which may occur as a result of an emergency situation at the NMPNS. Implementing procedures are contained in EP-AA-112-600, Public Information Organization.

## FIGURE 4-1
## ACTIVATION OF EMERGENCY ORGANIZATION
## SUMMARY OF NOTIFICATION AND RESPONSE

| Class | Criteria | Notifications | | Response | |
|---|---|---|---|---|---|
| | | Onsite | Offsite | Onsite Personnel | Offsite Personnel |
| UNUSUAL EVENT | Off-normal events which could indicate a potential degradation in the level of plant safety | 1) The following notifications are made on an as-needed basis:<br>• Nine Mile Point Fire Brigade<br>• Damage Control Teams<br>• Control Room Advisory Staff<br>• Security Force<br>• Survey Teams<br>• Other Personnel | 1) The following shall be notified:<br>• Oswego County<br>• State of New York<br>• NRC Hdqtrs<br>2) The following notifications are made on an as-needed basis:<br>• Fire units<br>• Rescue units<br>• Ambulance service<br>• Hospital<br>• Local Area/Building Evacuation | 1) Make prompt offsite notifications<br>2) Perform continuing assessment<br>3) The following actions are performed on an as-needed basis:<br>• Emergency Repairs<br>• Administer First Aid, and<br>• Other medical treatment<br>• Accountability | 1) The following are performed on an as-needed basis:<br>• Provide firefighting assistance<br>• Assist in rescue operations<br>• Provide medical transportation<br>• Provide medical treatment<br>• Assist in damage control<br>• Perform onsite monitoring<br>• Institute security measures |

## FIGURE 4.1 (Cont.)
## ACTIVATION OF EMERGENCY ORGANIZATION
## SUMMARY OF NOTIFICATION AND RESPONSE

| Class | Criteria | Notifications | | Response | |
|---|---|---|---|---|---|
| | | Onsite | Offsite | Onsite Personnel | Offsite Personnel |
| ALERT | Events which indicate an actual degradation in the level of plant safety | 1) The following notifications are made on an as-needed basis:<br>• Nine Mile Point Fire Brigade<br>• Damage Control Teams<br>• Control Room Advisory Staff<br>• Security Force<br>• Survey Teams<br>• Dose Projection Personnel<br>• Other Personnel<br>• (as necessary)<br>• Notify TSC, OSC, and EOF personnel | 1) The following shall be notified:<br>• Oswego County<br>• State of New York<br>• NRC Hdqtrs<br><br>2) The following notifications are made on an as-needed basis:<br>• Fire units<br>• Ambulance service<br>• Hospital | 1) Make prompt offsite notifications<br>2) Perform continuing assessment<br>3) Staff TSC, OSC, EOF<br>4) The following actions are performed on an as-needed basis:<br>• Administer first aid<br>• Conduct rescue operations<br>• Perform onsite and offsite monitoring<br>• Perform offsite dose projections<br>• Institute security measures<br>• Fight fire<br>• Perform emergency repairs<br>• Protected Area Evacuation<br>• Accountability | 1) The following are performed on an as-needed basis:<br>• Provide firefighting assistance<br>• Assist in rescue operations<br>• Provide medical transportation<br>• Provide medical treatment<br>• Assist in damage control<br>• Provide onsite assistance as required<br>• Activate primary response centers<br>• Alert key personnel<br>• Conduct confirmatory dose projections<br>• Maintain emergency communications |

## FIGURE 4.1 (Cont.)
## ACTIVATION OF EMERGENCY ORGANIZATION
## SUMMARY OF NOTIFICATION AND RESPONSE

| Class | Criteria | Notifications | | Response | |
|---|---|---|---|---|---|
| | | Onsite | Offsite | Onsite Personnel | Offsite Personnel |
| SITE AREA EMERGENCY | Events which involve actual or likely major failures of plant functions needed for protection of the public | 1) The following notifications are made on an as-needed basis:<br>• Nine Mile Point Fire Brigade<br>• Damage Control Teams<br>• Control Room Advisory Staff<br>• Security Force<br>• Survey Teams<br>• Dose Projection Personnel<br>• Other Personnel (as necessary)<br>• Notify TSC, OSC, and EOF personnel | 1) The following shall be notified:<br>• Oswego County<br>• State of New York<br>• NRC Hdqtrs<br><br>2) The following notifications are made on an as-needed basis:<br>• Fire units<br>• Rescue units<br>• Ambulance service<br>• Hospital | 1) Make prompt offsite notifications<br>2) Perform continuing assessment<br>3) Staff TSC, OSC, and EOF<br>4) Accountability<br>5) The following actions are performed on an as-needed basis:<br>• Administer first aid<br>• Conduct rescue operations<br>• Perform onsite and offsite monitoring<br>• Perform offsite dose projections<br>• Institute security measures<br>• Firefighting<br>• Emergency Repairs<br>• Recommend offsite protective actions<br>• Augment resources<br>• Protected Area Evacuation<br>• Implement Exclusion Area Evacuation | 1) The following are performed on an as-needed basis:<br>• Provide firefighting assistance<br>• Assist in rescue operations<br>• Provide medical transportation<br>• Provide medical treatment<br>• Assist in damage control<br>• Provide onsite assistance as required<br>• Activate primary response centers<br>• Alert key personnel to standby<br>• Conduct confirmatory dose projections<br>• Maintain emergency communications<br>• Place public notification system in standby status<br>• Implement appropriate near site protective measures |

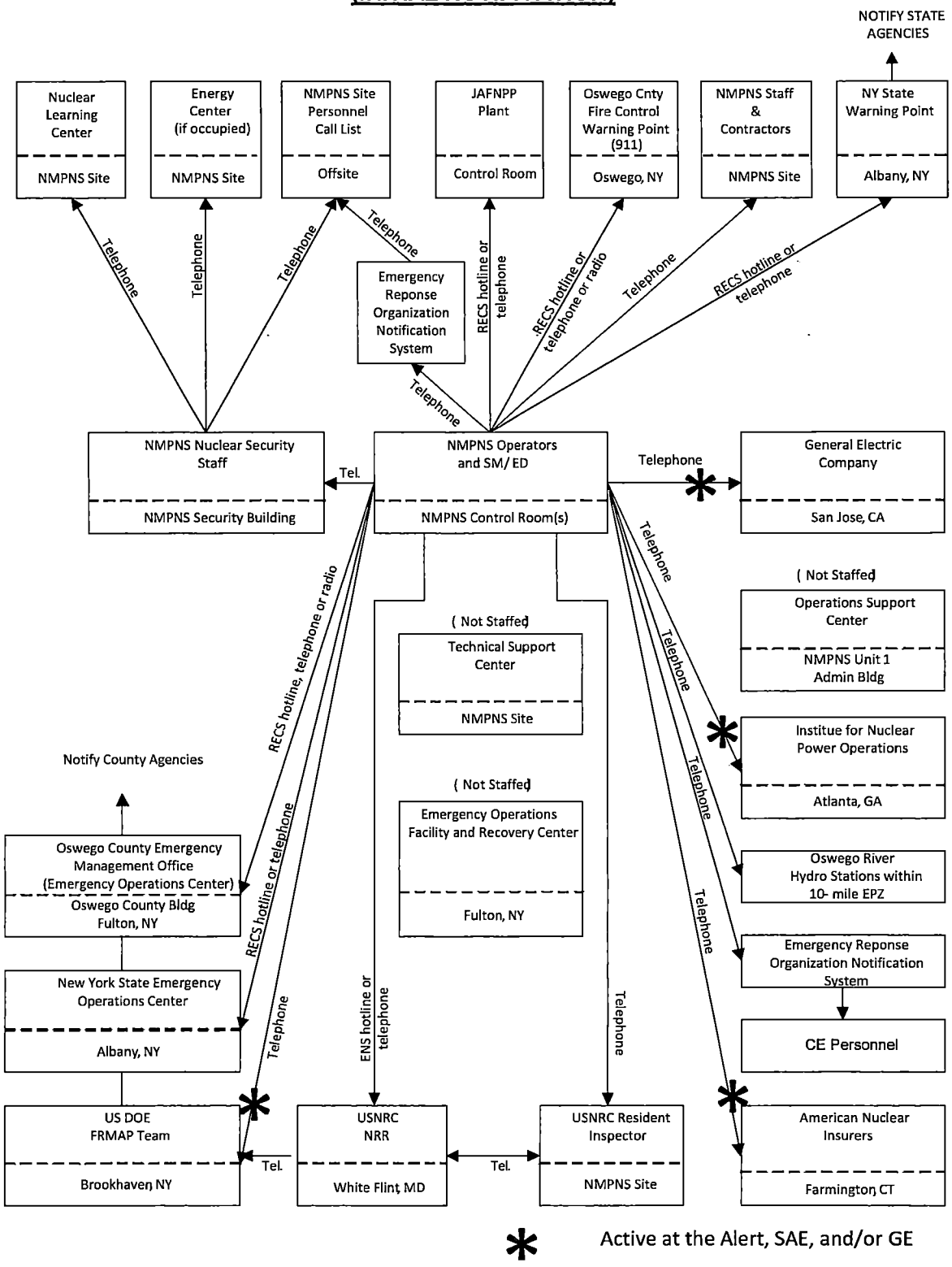
**FIGURE4.1 (Cont.)**

**ACTIVATION OF EMERGENCY ORGANIZATION**

**SUMMARY OF NOTIFICATION AND RESPONSE**

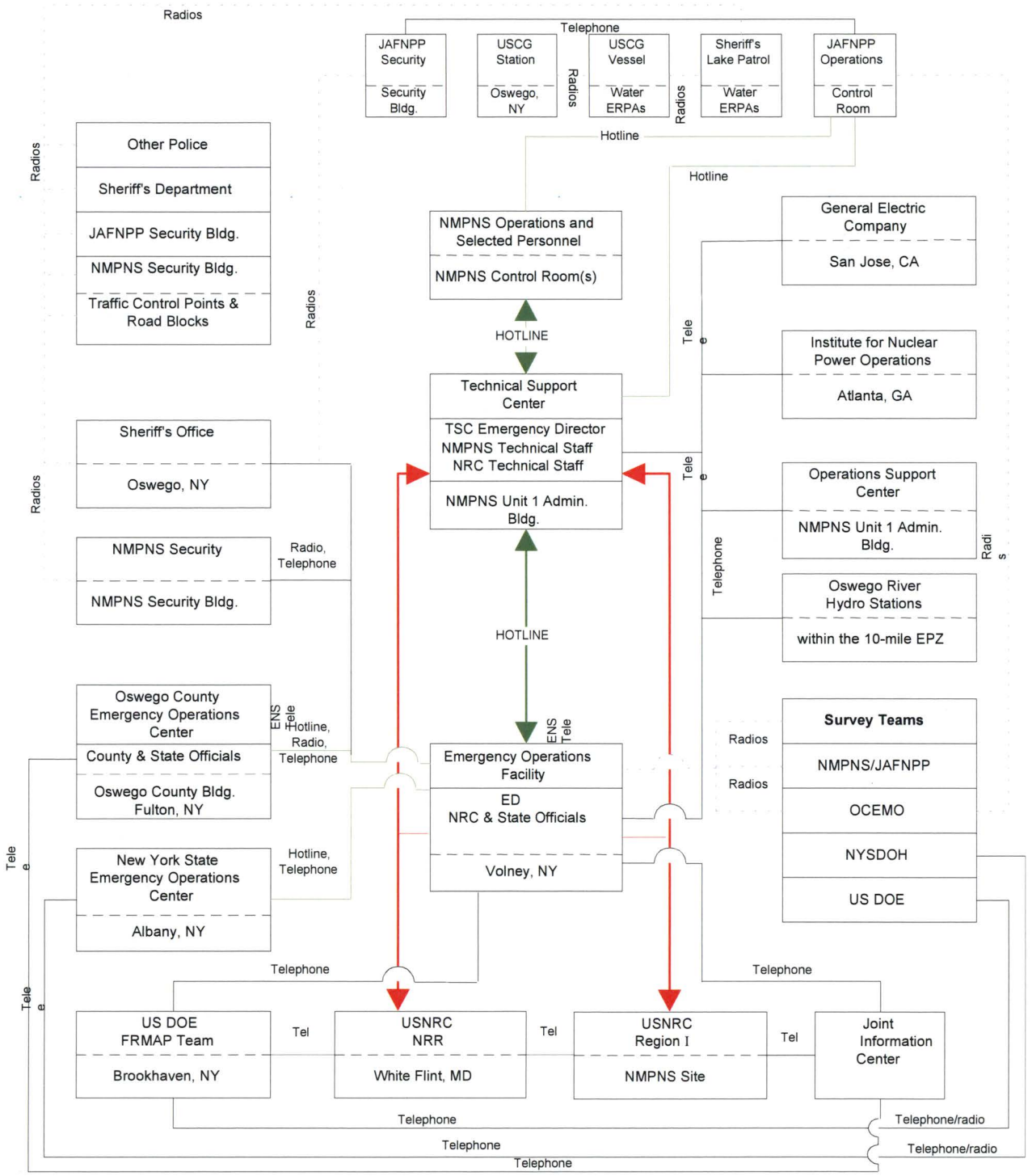
| Class | Criteria | Notifications | | Response | |
|---|---|---|---|---|---|
| | | Onsite | Offsite | Onsite Personnel | Offsite Personnel |
| GENERAL EMERGENCY | Events which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity | 1) The following notifications are made on an as-needed basis:<br>• Nine Mile Point Fire Brigade<br>• Damage Control Teams<br>• Control Room Advisory Staff<br>• Security Force<br>• Survey Teams<br>• Dose Projection Personnel<br>• Other Personnel (as necessary)<br>• Notify TSC, OSC and EOF personnel | 1) The following shall be notified:<br>• Oswego County<br>• State of New York<br>• NRC Hdqtrs<br><br>2) The following notifications are made on an as-needed basis:<br>• Fire units<br>• Rescue units<br>• Ambulance service<br>• Hospital | 1) Make prompt offsite notifications<br>2) Perform continuing assessment<br>3) Staff TSC, OSC, and EOF<br>4) Exclusion Area Evacuation<br>5) Accountability<br>6) Recommend offsite protective actions<br>7) The following actions are performed on an as-needed basis:<br>• Administer first aid<br>• Conduct rescue operations<br>• Perform onsite and offsite monitoring<br>• Perform offsite dose projections<br>• Institute security measures<br>• Firefighting<br>• Emergency Repairs<br>• Augment resources | 1)The following are performed on an as-needed basis:<br>• Provide firefighting assistance<br>• Assist in rescue operations<br>• Provide medical transportation<br>• Provide medical treatment<br>• Assist in damage control<br>• Provide onsite assistance as required<br>• Activate primary response centers<br>• Alert key personnel to standby<br>• Conduct confirmatory dose projections<br>• Maintain emergency communications<br>• Implement appropriate protective measures<br>• Mobilize emergency response personnel<br>• Continuously evaluate dose projections<br>• Place public notification system in standby status |

## FIGURE 4.2 - EMERGENCY ORGANIZATION INTERFACES (INITIAL NOTIFICATION)



# FIGURE 4.3
# EMERGENCY ORGANIZATION INTERFACES
# (AFTER EMERGENCY FACILITIES STAFFED)

(Supersedes Standard Plan EP-AA-1000, Figures F-1 & F-2)



## Section 5: Emergency Facilities and Equipment

Emergency facilities, equipment and communications are provided to ensure the capabilities for the prompt, efficient assessment and control of situations exists.

### 5.1 Emergency Response Facilities

5.1.1 Control Room(s)

The Unit 1 and Unit 2 Control Rooms are equipped with indications and controls for major plant systems. A portion of the indications for each Unit is the Safety Parameter Display System (SPDS). The purpose of SPDS is to display plant parameters in the Control Room(s) and TSC. The type and number of indications may be changed if future requirements change. Indications and assessment aids interrelated with meteorological and radiological dose calculation data are also provided, as well as access to emergency communications systems. The Control Rooms are designed for continuous occupancy following the most limiting accident.

5.1.2 Technical Support Center (TSC)

The NMPNS TSC is a facility located in the Unit 1 Administration Building at floor elevation 248. This is where station management and technical personnel can access technical data and displays necessary to assist Control Room personnel during emergency conditions. As part of their assistance, TSC personnel monitor station parameters to ensure prompt corrective and mitigating actions are taken.

The TSC is in close proximity to the Unit 1 and Unit 2 Control Rooms and has similar radiological habitability as the Control Rooms under accident conditions. The TSC provides access to site document control computer files which can provide any permanent plant record, as described in ANSI N45.2.9-1974, including as-built drawings. In addition, the TSC document control facility has copies of the NMPNS Emergency Plan and Implementing Procedures, Final Safety Analysis Reports, Technical Specifications, Administrative Procedures, Operating Procedures and other documents which may be used during an emergency. Space has been provided for five (5) NRC personnel.

5.1.3 Operations Support Center (OSC)

The OSC is an on-site assembly area at NMPNS to which designated station personnel report for accountability and special assignment. It is located in the Unit 1 Administration Building and includes the 261' Maintenance and Electrical Shops, Locker Rooms, Storeroom, and 248' Radiation Protection offices, and the Contractor staging area. The OSC Core Area is located adjacent to the TSC Core Area and within the TSC envelope on elevation 248'. The OSC has sufficient space to assemble station ERO personnel and maintain them immediately available for assignment. After activation, the ERO personnel may

be instructed to resume duties or may be assigned new duties in support of emergency operations.

The OSC has installed and readily available communications equipment with which to control OSC related activities. Emergency cabinets with supplies and equipment for various teams (e.g., survey equipment, protective clothing, respiratory protection equipment, radios etc.) are located near the OSC. The First Aid Room and a personnel decontamination room are located nearby with appropriate supplies. In addition, the Maintenance Shops can be used to obtain necessary equipment and tools for damage control teams. A listing of OSC emergency equipment is included in the Emergency Equipment Inventory procedure and is representative of equipment specified in NUREG 0654 to support OSC operations.

5.1.4 Emergency Operations Facility (EOF)

The EOF is a Co-located Licensee (NMP and JAF) controlled and operated emergency response facility located approximately 12 miles from the reactor site on County Route 176, just outside Fulton, NY, adjacent to the Oswego County Airport. The purpose of the EOF is to provide continuous coordination with local, State and Federal agencies and to provide evaluation of NMPNS activities during an emergency. Space is provided so that Federal, State and local response agencies can monitor and coordinate with the utility response activities from this location. Utility recovery operations are also handled at this facility. It is expected that manufacturer and vendor representatives may require twenty-four (24) hours to arrive following notification. Federal, State and County Officials could arrive at any time following notification.

The EOF has facilities and capabilities for the following:

- Management of the overall NMP emergency response
- Coordination of radiological and environmental assessment
- Determination of Protective Action Recommendations (PAR)
- Notification of offsite agencies
- Coordination of event, plant and response information provided to public information staff for dissemination to the media and public
- Staffing within 60 minutes and activating the facility within the same time requirement or as soon as possible thereafter
- Coordination of emergency response activities with Federal, State and local agencies
- Obtaining and displaying key plant data and radiological information for NMP Units 1 and 2

- Analyzing plant technical information and providing technical briefings on event conditions and prognosis to staff and offsite agency responders for NMP Units 1 and 2
- Effectively responding to and coordinating response efforts for events occurring simultaneously at more than one site for Co-located licensees

5.1.5 Security Tactical Operations Center (STOC)

The STOC is a security command center that may be activated during a safeguards contingency or site emergency to ensure effective nuclear security program direction under unusual conditions. The STOC is located on the second floor of the west security annex building.

5.1.6 Joint Information Center (JIC)

The JIC is located near the Oswego County Airport, on County Route 176 in the Town of Volney, New York approximately 12 miles from the site. The function of this facility is to provide a single point of contact for disseminating information to the public. This dedicated facility has a large open area, used for briefings, and numerous small offices with telephones which can be used by news media personnel. A listing of equipment necessary to perform this function is in the Emergency Equipment Inventory procedure. The JIC is activated for an Alert, Site Area, or General Emergency.

5.1.7 Alternative Facility

The Alternative Facility maintains the capability for staging the TSC/OSC emergency response organization personnel in the event of a hostile action. This alternative facility has the capability for communications with the emergency operations facility, control room, and plant security and the capability for engineering assessment activities, including damage control team planning and preparation. Consistent with NRC EPFAQ No. 2013-005, the EOF will satisfy the offsite notification responsibilities for the Alternative Facility. The Alternative Facility is located at the Nine Mile/Fitzpatrick EOF on County Route 176, just outside Fulton, NY, adjacent to the Oswego County Airport.

5.1.8 Oswego County Emergency Operations Center (OCEOC)

The OCEOC is located in the Emergency Management Office, County Branch Building, Fulton, N.Y. The County Warning Point is located at Oswego County 911 Center. Communications are available 24 hours per day at this warning point. Upon activation by the Oswego County Emergency Management Office, communications, planning, and coordination personnel become available at the OCEOC. A representative from NMPNS may be dispatched to this facility to act as liaison between the County and the site for a Site Area Emergency or General Emergency.

5.1.9 State Emergency Operations Center (SEOC)

The SEOC is located in the substructure of the Public Security Building, State Office Building Campus, Albany, New York. The State Warning Point communication systems and the State Emergency Management Office are also located in this center. Communication systems operate on an around the clock basis. State direction and control of emergency operations is conducted from the SEOC. Field operations are implemented through the State Emergency Management Office, Lake District Office, in Newark, N.Y. Upon activation, planning and coordination personnel become available at the SEOC. A representative from NMPNS may be dispatched to this facility to act as liaison between the State and the site for a Site Area Emergency or General Emergency.

## 5.2 Communication Systems

The Nine Mile Point communication capabilities include multiple systems and redundancies which ensure the performance of vital functions in transmitting and receiving information throughout the course of an emergency. Multiple modes and paths are available for necessary emergency communications. Typical communications capabilities and the interfaces between expected supporting agencies are provided in Figure 4.2 and Figure 4.3. Systems available at the various emergency facility locations or available for use by response organizations are:

5.2.1 Telephone Systems

The telephone system at NMPNS consists of an in plant dial system with connections to the local telephone system. The main emergency response facilities or organizations which have telephones are listed below:

- Control Rooms
- Technical Support Center
- Operations Support Center
- Emergency Operations Facility
- Security Tactical Operations Center
- Joint Information Center
- Oswego County Emergency Operations Center
- Oswego County Warning Point (Oswego County 911 Center)
- Oswego Hospital
- Upstate University Hospital
- New York State Warning Point

- New York State Emergency Operations Center
- NRC
- Other Emergency Response Organizations

5.2.2 NRC Emergency Notification System (ENS) Hotline

The ENS is a separate and completely independent telephone system which is part of the Federal Telephone System from the local telephone system. It is used to provide initial notification of an emergency and continuing emergency information. NMPNS facilities at which these telephones are located include:

- Control Rooms
- Technical Support Center
- Emergency Operations Facility

5.2.3 Radiological Emergency Communications System (RECS)

The RECS is a separate and completely independent system from the local telephone system and is similar to the ENS. This system is used to provide initial notification of an emergency and continuing emergency information to New York State and Oswego County Authorities. Facilities at which these telephones are located include:

- Control Rooms
- Technical Support Center
- Emergency Operations Facility
- JAFNPP Control Room, TSC
- Oswego County Warning Point (Oswego County 911 Center)
- Oswego County Emergency Operations Center
- NYS Warning Point
- NYS Alternate Warning Point (State Police Communications Center)
- NYS Emergency Operations Center
- NYS Department of Health (Headquarters in Albany)

5.2.4 NRC Health Physics Network (HPN)

The HPN telephone system is also a part of the Federal Telephone System. It is primarily used to transmit health physics (radiological) data to the NRC during an emergency. NMPNS facilities at which these HPN telephones are located include:

- Technical Support Center
- Emergency Operations Facility

5.2.5 Other Dedicated Telephone Line Systems

Dedicated telephone systems provide direct communication between the points shown. As appropriate these points are linked by one or more dedicated lines. They can be used in any situation but are primarily for emergency use. These systems include:

- Control Rooms to Technical Support Center
- Technical Support Center to Operations Support Center
- Emergency Operations Facility to Technical Support Center

5.2.6 Public Address and Page System

This system (commonly referred to as the GAltronics) is located in the various NMPNS facilities and includes outdoor speakers. It is a communications system which can be used by all station personnel.

Public Address Systems (other than GAltronics) are also located in the TSC, JIC, OSC and EOF. The system in the TSC allows announcements to be heard throughout the TSC and the OSC Core Area. The EOF and JIC systems allow announcements to be heard throughout the EOF or JIC. The OSC PA System permits announcements to be made throughout the OSC.

5.2.7 Radio Systems

NMPNS has various radio frequencies assigned for use. These frequencies include off-site and in-plant repeater channels, NMPNS channels and Oswego County public safety frequencies. All radio systems used for emergencies have significant redundancies (that is, separate power sources, antennas, feed lines, and consoles) that preclude loss of radio capability during emergencies. All NMPNS emergency facilities are equipped with consoles that allow use of all frequencies that may be used for emergencies. Thus, all emergency facilities (including the Control Rooms) are capable of contacting radio-equipped personnel within the plant and the 10-mile EPZ, and with Oswego County 911 Center and County emergency facilities. Additionally, all ambulances that service NMPNS have direct communication with Oswego and Upstate University Hospitals. NMPNS utilizes a telephone activated notification system to notify ERO personnel.

5.2.8 Emergency Response Data System (ERDS)

A computer system that collects a variety of information regarding plant operating parameters, meteorological data, effluent information and other data, and transmits it to the NRC.

## 5.3 Assessment Facilities and Systems

### 5.3.1 Onsite Assessment Facilities

a. Initially following an emergency, the primary on-site emergency assessment facility is the affected unit Control Room. This assessment function is transferred to the TSC after that on-site facility has been activated. These facilities are described in the Station Annex Section 5.1.1.

b. If background radiation levels permit, post-accident radiological samples may be analyzed on-site in the NMPNS Chemistry laboratory located at Unit 1 or the Unit 2 Chemistry Counting Room located at Unit 2. These in-plant laboratories have full computer/gamma isotopic, gross beta and gross alpha analysis capabilities. These facilities are available 24 hours per day seven days per week as needed.

### 5.3.2 Offsite Assessment Facility

a. The offsite emergency assessment facility is the EOF. This facility is described in Station Annex, Section 5.1.4.

b. NMPNS maintains an agreement with JAFNPP to have environmental samples evaluated by a vendor maintained by JAFNPP. Post-accident radiological samples can be sent off-site to the JAFNPP vendor in the event that the NMPNS in-plant laboratory is unavailable for any reason. If the JAFNPP vendor cannot perform the analyses or cannot handle the number of analyses required, samples can be sent to the Calvert Cliffs Nuclear Plant laboratory, located in Lusby Maryland. This laboratory also has similar capabilities to the NMPNS Health Physics laboratory. These facilities are available 24 hours per day seven days per week as needed.

### 5.3.3 Assessment Systems

a. Plant Process Computer (PPC) and Safety Parameter Display System (SPDS)

The PPC and SPDS provide historical and real time plant data via displays and hard-copy devices that are located in the Control Rooms, TSC, and EOF.

Both systems are designed to assist emergency response staff and Control Room operators in the decision making process during normal and abnormal plant conditions. These systems are described in greater detail in the Unit 1 UFSAR and Unit 2 USAR.

b. Radiological Monitoring

1) Plant Radiation Monitoring Systems

These systems, consisting of process and area radiation monitors, provide accident assessment by measuring and recording radiation levels and radioactivity concentrations at strategically selected

locations throughout the plant. Local alarm functions associated with the monitors provide for plant personnel protection. A listing of these monitors is contained in Volume 3 Section XII Unit 1 UFSAR and Unit 2 USAR Chapter 12.3.

2) Onsite Radiological Monitoring System

There are 6 environmental radiological monitoring stations which surround the site or are located within the site boundary. Onsite monitoring stations surround the plant as specified in the Offsite Dose Calculation Manual (ODCM) and are designed to continuously collect particulate and iodine air samples. The capability to collect precipitation samples is also available.

Environmental Thermoluminecent Dosimeters (TLD), are located at approximately 70 stations, both onsite and offsite. The TLDs are collected and evaluated quarterly. The TLD stations (on-site and off-site) exceed the NRC Radiological Assessment Branch Technical Position in total number and quality of monitors. In addition to the environmental TLD monitoring, a group of Optically Stimulated Luminescent Dosimeters (OSLD) called Emergency Preparedness OSLD's and 10CFR20 OSLD's have been placed in various locations around the site and the county. These OSLD's are evaluated during or after an emergency situation has occurred and as part of the facilities 10CFR20 program. The emergency OSLD's and 10CFR20 OSLD's are also renewed quarterly.

3) Containment High-Range Radiation Monitor

Unit 1 is equipped with two, containment high-range radiation monitors with a gamma detection range of $10^0$ to $10^8$ R/hr. Unit 2 is equipped with four high range gamma detectors capable of monitoring radiation in the range of $10^0$ to $10^7$ R/hr. The purpose of these monitors is to detect gross fuel failure.

4) Offsite Radiological Monitoring Systems

There are approximately nine offsite radiological monitoring stations. These stations surround the plant and are described in the ODCM. Each of these monitoring stations is designed to continuously collect particulate and iodine air samples, and each has the capability for collecting precipitation samples, if required. Four (4) of the monitoring stations are along the site boundary and have radiation monitors. The radiation monitors are used to measure dose rates resulting from possible plume releases of radioactive material from the plant.

Environmental Thermoluminecent Dosimeters (TLD) and Optically Stimulated Luminescent Dosimeters (OSLD) are as described in Section b.2 above.

5) Emergency Radiological Survey Teams

In addition to the monitoring capabilities provided by the fixed assessment systems, survey teams may be dispatched on-site and off-site to take direct radiation readings and collect samples for field or laboratory evaluation in the field. Survey team members are notified through normal station communications systems, the standard call-out procedure by telephone or radio activated beepers. Survey teams can be deployed within approximately 60 minutes of notification.

Direction of the survey teams may be initiated by the affected control room, but is normally transferred to the TSC when it is activated. Following activation of the EOF, direction of the teams, including receipt and analysis of data is transferred to this facility. Monitoring information from the State and/or County may also be available and would be used.

c. Containment Monitors

Containment monitor data may be used to determine the extent of core damage. EPIP-EPP-09 provides the required implementation steps to determine the extent of core damage, using information obtained from these monitors.

1) Containment High-Range Radiation Monitor

See Station Annex, Section 5.3.3.b.3.

2) Containment Pressure Monitor

Continuous indication and recording of containment pressure from - 5 psig to 250 psig is provided in the Unit 1 Control Room for each pressure transmitter.

The Unit 2 drywell pressure monitors provide continuous indication and recording of containment pressure from -5 psig to 150 psig in the Unit 2 Control Room.

3) Containment Water Level Monitor

Continuous indication and recording of the torus pool water level from 15 inches above the bottom of the torus to 3 feet, 8.5 inches above the normal water level of the torus pool is provided in the Unit 1 Control Room for each transmitter.

The Unit 2 suppression pool water level from the 192' level to the 217' level is continuously indicated and recorded in the Unit 2 Control Room.

4) Containment Hydrogen Monitor

Redundant continuous indication of hydrogen concentration in the containment is provided in the control room over the range from 0

to 20% for Unit 1 and over the range from 0 to 30% for Unit 2 by the $H_2$-$0_2$ Sampling System.

d. Sampling Systems

Data obtained from sampling systems may be used to determine the extent of core damage. EPIP-EPP-09 provides the required implementation steps to determine the extent of core damage, using information obtained from these systems.

1) Plant Effluent Monitoring System

The Unit 1 OffGas Effluent Stack Monitoring Systems (OGESMS) performs a continuous analysis of stack gross radioactivity via an isokinetic probe. Particulate and iodine samples are collected by standard cartridges which are manually inserted into the main sample lines, allowed to collect samples for a specified period of time, removed from the lines and analyzed.

The Unit 2 Wide Range Gaseous Monitoring Systems (WRGMS) performs a continuous analysis of stack and vent gross radioactivity via isokinetic probes. Particulate and iodine samples are collected by standard cartridges which are manually inserted into the stack and vent main sample lines, allowed to collect samples for a specified period of time, removed from the lines and analyzed.

2) In-Plant Iodine Instrumentation

Portable instrumentation is used for the sampling of in-plant iodine levels. Samples are taken on silver zeolite or TEDA impregnated charcoal sampling cartridges. The charcoal sample cartridges are then taken to the Station Laboratory where they are purged to remove entrapped noble gases and then analyzed. The silver zeolite cartridges have an iodine retention efficiency in excess of 99% while retaining only trace amounts of noble gases and thus do not have to be purged prior to analysis.

3) Grab Samples

A grab sample can be taken for determination of liquid or gaseous activity.

e. Fire Protection Systems

Fire protection at each Unit is provided by a complete network of fire detection, suppression and extinguishing systems. These systems are activated by a variety of thermal and products of combustion fire detection devices located throughout the station. At present the fire zones cover the turbine generator unit, vital areas and general station areas. Station Operating Procedures identify fire detectors and their locations.

f. Geophysical Phenomena Monitoring System

Monitors are provided to detect and record natural phenomena events which could result in plant damage due to ground motion or structural vibration and stress. Backup information can be obtained from: the other NMPNS Unit, the JAFNPP which also has seismic detectors; a contracted weather service; a local National Weather Service station, etc.

Hydrologic conditions (e.g., floods, low water, hurricanes) would be observed by the shift operating crew and/or information would be provided by the U.S. Coast Guard, a contracted weather service or a local National Weather Service station.

g. Meteorological Measuring System

Wind speed, wind direction and temperature sensors are installed on a suitably isolated tower at elevations of approximately 30, 100 and 200 feet above plant grade. The data collected by these sensors are telemetered to the NMPNS Unit 1 and Unit 2 Control Rooms and are designed to be continuously recorded on strip charts in the Control Rooms and the TSC (wind speed/direction only). In addition to this primary tower, a single level, 90-feet tall, backup tower and a single level, 30-feet tall inland tower are maintained as alternate sources of meteorological data. This data is also available in the TSC and the EOF. Meteorological data can also be supplied by local weather stations. Regional National Weather Service offices may provide access to their meteorological data, as required. Other sources include several supplemental towers located in the general area outside the 10-mile EPZ. Wind Roses may be obtained from Unit 1 UFSAR or Unit 2 USAR.

## 5.4 Protective Facilities

Onsite facilities and designated assembly locations are provided which ensure adequate radiological protection for personnel assigned to emergency duties in the plant, and for the accommodation of other personnel evacuated from areas that may be affected by radiation and/or airborne radioactivity.

### 5.4.1 Control Rooms

In addition to serving as the first line control for emergency situations, each Unit Control Room has the following features which provide protection for personnel who have control room duties throughout the course of any emergency:

a. Adequate shielding by concrete walls to permit continuous occupancy under severe accident conditions.

b. An independent emergency air supply system, equipped with absolute and activated charcoal filters.

c. Continuous monitoring of radiation levels in the Control Room and throughout the plant by the Area Radiation Monitors (ARM) system, with readout in the Control Rooms.

d. Emergency lighting and power, supplied by a 125 V dc System.

e. Communications systems, as described in Station Annex Section 5.2.

Additional details regarding the design and inherent protective capabilities of each Unit's Control Room are discussed in the respective Nine Mile Point Nuclear Station UFSAR/USAR as appropriate.

5.4.2 Technical Support Center (TSC)

The TSC serves as the long range emergency control facility for the station. To allow for long-term human occupancy during an emergency situation, the following personnel protective features have been incorporated into the design:

a. Adequate shielding to permit continuous long term occupancy under severe accident conditions.

b. An independent emergency air supply system, equipped with absolute and activated charcoal filters.

c. Emergency lighting and reliable power supplies.

d. Communications systems as described in Station Annex Section 5.2.

e. Continuous monitoring of radiation and airborne activity levels in the TSC.

5.4.3 Onsite Assembly Areas/ Evacuation Assembly Areas

Specific locations at the station are designated for assembly of personnel in the event of the need to account for all personnel within the protected area. These areas provide space to accommodate personnel who may be at the station. They are located on the basis of logical access routes and physical separation from likely areas of radiation and/or airborne radioactivity. Other areas outside of the protected area but within the exclusion area are designated locations (evacuation assembly areas) to which non-essential personnel are required to report during a Protected Area Evacuation. The purpose of these locations is to provide a location close to the protected area to allow for rapid return of personnel following termination of the emergency, yet outside of the protected area and away from any potential unnecessary exposure.

Upon announcement of a Protected Area Evacuation, personnel in the protected area, including office personnel and visitors, evacuate immediately to the designated Evacuation Assembly Areas. As they exit through the security access, they card out. The Control Room Operators remain in the Control Rooms and other operators on-site (on-shift, relief or operators in training) report to the OSC. TSC and OSC staff card in and remain in their respective emergency facilities, which are designated as assembly areas. Designated security personnel assemble at the Main Security Building, and the Alternate Access Point.

Adequate shelter from inclement weather is provided. Onsite Assembly Areas are described in procedure EP-CE-113. The responsibility to ensure that a visitor evacuates to the proper area rests with the individual accompanying the visitor at the time evacuation occurs.

5.4.4 Off-site Assembly Area

The purpose of the Off-site Assembly Area (OAA) is to provide a location for the assembly, monitoring, and, if necessary, decontamination of the personnel who leave the site following an Exclusion Area Evacuation.

The Oswego County Airport, Hanger K; in Volney, New York, is designated as the Off-site Assembly Area. This facility is located approximately 12 miles from the site.

Personnel may be monitored for contamination upon arrival at the OAA. Decontamination will be done in accordance with normal station procedures. Supplies are available at the OAA such as: protective clothing and decontamination supplies. Detailed personnel and equipment decontamination methods, and techniques for removal of radioiodine and other particulates are contained in station Radiation Protection procedures.

## 5.5 On-Site First Aid and Medical Facilities

A first aid treatment facility, equipped with industrial first aid supplies, is located near the Locker Rooms in the Unit 1 Administration Building. The Site Medical Facility is also equipped with industrial first aid supplies and is located in the P Building at Unit 2. A listing of first aid equipment that is located within the Protected Area is contained in Operations procedures.

Additional medical equipment is provided at designated locations throughout the station.

## 5.6 Decontamination Facilities for Emergency Personnel

Personnel decontamination rooms are located in the Unit 1 Administration Building and the Unit 2 Control Building. These are the primary facilities for decontaminating emergency personnel. If these facilities are unavailable for any reason, emergency personnel may be decontaminated at the JAFNPP facility.

The liquid waste from each of these decontamination facilities is disposed of via the respective plants liquid radwaste system. Solid waste is disposed of in containers provided for this purpose located at each decontamination facility. If additional decontamination facilities are necessary, the station locker room shower facilities can be used on an interim basis for performing decontamination, even though they do not drain to radwaste.

## 5.7 Damage Control Equipment

Damage control equipment consists of normal and special purpose tools and devices used for emergency maintenance functions throughout the station. Personnel assigned to damage control teams are cognizant of the locations of specific equipment which may be required in an emergency. The Rescue Cabinet inventory, Damage Control Tool Box inventory and shoring materials, including scaffolding (stored in the Unit 1 Turbine Building), and various shapes of angle iron, plate and bar stock are available through the warehouse. Heavy duty and specialized equipment, and trained equipment operators, can be provided if necessary.

## 5.8 Emergency Vehicles

NMPNS has access to helicopters and fixed wing aircraft. Their use can be requested to assist in an emergency response effort through the Emergency Operations Facility (EOF). The EOF also coordinates the use of helicopters operated by the New York State Police, Oswego County and Onondaga County. Also, keys for selected site vehicles are maintained in Control Rooms, and the OSC.

## 5.8 CATEGORIES OF EMERGENCY EQUIPMENT

5.8.1 Equipment available for use during emergencies is described in the Emergency Equipment Inventory procedure. Equipment/Facilities important to maintaining Emergency Preparedness is detailed in EP-CE-121-1004, Nine Mile Point Equipment Matrix.

5.8.2 Equipment for use in coping with a radiation emergency which would necessitate site evacuation is stored in a number of strategic locations: the Technical Support Center, the Control Room, the Operational Support Center, and the EOF. Sufficient variety and quantities of equipment are stored in each location. Dedicated equipment is inventoried to insure it is available, using the equipment list in the Emergency Equipment Inventory procedure. Equipment includes radiation monitors, protective breathing equipment, communications and data retrieval capability, dosimetry and protective clothing.

5.8.3 The Operations Support Center contains equipment for general use, as well as equipment for specific survey team use. The general use equipment includes communications equipment, reference material, survey instruments, dosimeters, counting equipment, sampling equipment, protective clothing, and decontamination equipment.

## Section 6: Maintaining Emergency Preparedness

A concept of in-depth preparedness is employed regarding the Nine Mile Point Nuclear Station Emergency Preparedness Program. This concept is accomplished through training, emergency drills and exercises. Personnel are trained to provide an in-depth response capability for required actions in an emergency situation. Similarly, members of the population within the emergency planning zone are informed as to their expected response to an emergency at the Nine Mile Point Nuclear Station. This section of the Station Annex includes the means to achieve and maintain emergency preparedness and to ensure maintenance of an effective emergency program.

### 6.1 Organizational Preparedness

#### 6.1.1 Training

The Site Training Director is responsible for the Emergency Preparedness Training and Qualification Program provided to ERO personnel in accredited programs (Operations, Maintenance, Radiation Protection, Engineering and Chemistry).

The Emergency Preparedness Manager is responsible for maintenance of all non-accredited ERO personnel position specific qualifications. Training requirements for ERO personnel are detailed in the ERO Training and Qualification procedure.

The NMP Senior Nuclear Site Communications Specialist coordinates with the Oswego County Emergency Management Office to schedule public news organization training, administer the training and provide records of the activities to the Emergency Preparedness Department for record retention. The Director, Oswego County Emergency Management Office is responsible for planning and conducting emergency preparedness training for emergency response personnel in Oswego County.

Emergency training includes, as appropriate:

a. Unescorted personnel entering or working within the Nine Mile Point Nuclear Station Protected Area receive, as a minimum, orientation regarding individual employee responsibilities, response to station alarms, the use of applicable station communications systems and requirements associated with personnel accountability and evacuations.

b. Temporary work force personnel onsite are informed of their emergency response in accordance with applicable procedures for evacuations, and accountability.

c. Personnel assigned to the NMPNS ERO with specific emergency preparedness duties and responsibilities receive specialized training for

their respective assignments. Station Annex Figure 6.2 delineates which personnel receive specialized training, the type of training and the required frequency of such training.

d. The New York State Office of Emergency Management develops, conducts, and coordinates a training program for State personnel and may assist the County in developing training policy for disaster operational readiness. The Oswego County Emergency Management Director is responsible for planning and conducting emergency preparedness training of county emergency response personnel. The New York State Division of Military and Naval Affairs, has the responsibility for a statewide warning and communication system and may be requested to assist State and local agencies in specific disasters.

e. The key personnel from the emergency/disaster services organizations listed below are invited, on an annual basis, to participate in a training program. The program, as appropriate, identifies interfaces between the NMPNS emergency organizations and the offsite (i.e., State, County and Federal) emergency organizations.

The program shall include a review of appropriate sections of the NMPNS Station Annex and appropriate Emergency Plan Implementing Procedures including: classification of emergencies; emergency action levels; reporting requirements; assessment, protective and mitigative actions; and communications networks. The organizations invited include but are not limited to:

1) New York State Office of Emergency Management

2) New York State Department of Health

3) Oswego County Emergency Management Office

f. NMPNS provides for training to local offsite support organizations as specified in respective letters of agreement and as required to ensure a high state of emergency preparedness and response capability of these organizations. The local organizations that may provide onsite emergency assistance are encouraged to become familiar with the Nine Mile Point Nuclear Station (including the physical plant layout, site access arrangements and procedures, and key station personnel), and are invited to attend emergency preparedness training conducted by NMPNS. Such training is provided annually to the appropriate organizations and individuals:

1) The local fire, local law enforcement and ambulance companies are invited to participate in a training program that may include but is not limited to:

i. Interface with the NMPNS Security Force during emergencies

ii. Basic health physics training

iii. Nine Mile Point Nuclear Station facility layout including arrangements and procedures for site access for Offsite Response Organization Responders

iv. Onsite fire protection system equipment (permanent and portable)

v. Differences between onsite firefighting equipment and fire company supplied equipment

vi. Communications system

vii. Review of appropriate sections of the NMPNS Emergency Plan and Emergency Implementing Procedures

viii. The onsite emergency organization including the interface with the Nine Mile Point Nuclear Station Fire Brigade

2) The local medical support organizations and individuals are invited to participate in a training program that may include but is not limited to:

i. Communications systems

ii. The onsite emergency organization including the interface between NMPNS Radiation Protection personnel, the local medical support personnel, and the radiation medicine consultants (Oswego Hospital, Upstate University Hospital or others)

iii. Radiological aspects of emergency medical treatment

iv. Nine Mile Point Nuclear Station Emergency Plan Implementing Procedures and Radiation Protection Procedures for decontamination

v. Review of appropriate sections of the radiation emergency plans and/or procedures of the Oswego Hospital and Upstate University Hospital

g. Annually, a program to acquaint the news media (that is, major public news organizations serving the NMPNS area, such as local radio/TV stations, newspapers, local wire service offices and local correspondents to national new media) with the NMPNS emergency plan, information concerning radiation, the emergency classification scheme and points of contact for release of public information during an emergency, will be conducted.

h. Personnel responsible for the Nine Mile Point emergency preparedness effort receive appropriate training to maintain their level of competency. The Site Emergency Preparedness Manager and staff attend relevant seminars and meetings on emergency preparedness issues, such as

those held by the NRC/FEMA and Nuclear Energy Institute. In addition, appropriate technical literature (such as any information received from NEI, FEMA, NRC, etc.) is reviewed to assist in maintaining this competency. Training requirements for NMP personnel responsible for the emergency planning effort are contained in EP-AA-120, Emergency Plan Administration.

6.1.2 Exercises and Drills

Exercises are realistic, pre-planned simulations of accidents, designed and conducted so that the response of the emergency organization closely approximates their response to an actual incident. Drills are pre-planned simulations in which the participants are "walked" or "talked" through one or more procedures, or aspects of the Station Annex. The primary purpose of drills is to provide individuals with hands-on training in a controlled situation. During practical drills on-the-spot correction of erroneous performance may be made and a demonstration of the proper performance offered by the instructor/controller. Drills are evaluated by drill controllers and observers. The response of Division personnel to an actual emergency condition may be allowed to satisfy a particular drill requirement, provided that a critique is performed and documented in the manner specified for a drill. In addition, selected training sessions can satisfy drill requirements as allowed by procedure.

Biennial exercises and annual drills are conducted in order to test the state of emergency preparedness of participating individuals, organizations, and agencies. An exercise or drill may be conducted that simulates an emergency that results in offsite radiological releases requiring response by offsite authorities to: 1) ensure that the participants are familiar with their respective duties and responsibilities; 2) verify the adequacy of both the NMPNS Emergency Plan and the methods used in the appropriate Implementing Procedures; 3) test communications networks and systems; 4) check the availability of emergency supplies and equipment; 5) verify the operability of emergency equipment; and 6) verify adequate interrelationships with offsite agency plans. Exercise scenarios provide the ERO with the opportunity to demonstrate proficiency in the key skills necessary to implement the principal functional areas of emergency response. Principal functional areas include: Management and coordination of the emergency response, Accident assessment, Event Classification, Notification of Offsite authorities, Assessment of the Onsite/offsite impact of radiological releases, Protective Action Recommendation development, Protective Action decision making, Plant system repair and mitigative action implementation, Public Notification /Information processes. Biennial Exercise scenarios are submitted to the NRC for review and approval. Biennial Exercises are evaluated and graded by the NRC and FEMA to determine that there is "reasonable assurance" that adequate protective measures will be taken in the event of an emergency. The NRC may require a

remedial exercise if they cannot find reasonable assurance or determine that the ERO has maintained the key skills specific to emergency response. All Drills and exercises that provide performance opportunities to develop, maintain or demonstrate key skills, provide for a formal critique with controllers and players following the completion of the drill. The critiques are to identify weak or deficient areas that need correction. During the critique, comments are gathered which are used to improve the emergency preparedness program, and a final assessment of the drill or exercise is made. Weaknesses or deficiencies identified in critiques are corrected and tracked through the Corrective Action Program.

The Site Emergency Preparedness Manager is responsible for planning, scheduling, and coordinating emergency planning related exercises and drills. The Fire Marshal, in conjunction with the Manager Operations and the Manager Training, is responsible for planning, scheduling, and coordinating Fire Brigade related drills. Drills are subject to management review. The Site Emergency Preparedness Manager is responsible for reviewing pre-exercise information to ensure only appropriate information is provided to the participants. In addition, participants are not permitted to review or otherwise view exercise scenarios.

Exercises and drills are conducted to simulate actual emergency conditions as closely as possible and may be scheduled such that more than one drill or exercise can be conducted simultaneously. Scenarios are prepared that emphasize coordination among onsite and offsite organizations as appropriate and may involve participation by the Nine Mile Point Fire Brigade; monitoring teams; varying degrees of participation of county, state, and Federal agencies and organizations and local offsite support personnel and organizations.

Scenarios are varied and include a wide spectrum of radiological releases and events. These events include hostile actions, no or minimal radiological release, initial or rapid Site Area or General Emergency declarations, Severe Accident Management and Large Area Loss (10CFR50.54(hh)(2)), integration of offsite resource and events that simultaneously involve both NMP and JAF.

Emergency Preparedness Drills and Exercises may include: communications drills, fire drills, medical emergency drills, radiological monitoring drills, and health physics drills. EOF activation drills are periodically conducted to maintain the proficiency of the EOF staff. Drills/Exercises are planned, scheduled and evaluated in accordance with EP-AA-122, Exercise and Drills.

6.1.3 Site Emergency Preparedness Manager

The Site Emergency Preparedness Manager is the individual with overall responsibility and authority for radiological emergency response preparedness for the NMPNS. See Figure 6.1 for Emergency Preparedness organization.

The primary duties of the Site Emergency Preparedness Manager include, but are not limited to:

a. Ensuring the coordination of the NMPNS Emergency Plans with:
   1) Federal Plans
   2) State Plans
   3) County Plans
   4) NMPNS Physical Security Plan
   5) NMPNS Fire Protection Plan

b. Ensuring that the information, in the Emergency Plan Implementing Procedures are consistent with the NMPNS Station Annex.

c. Ensuring that the Emergency Plan Implementing Procedures interface properly with the Administrative Procedures, Security Procedures, Chemistry Procedures, Radiation Protection Procedures, Special Operating Procedures, Emergency Operating Procedures, Severe Accident Management Guidelines, and Training Procedures.

d. Assisting the Manager Training in coordinating emergency planning related specialty training.

e. Coordinating emergency preparedness related drills and exercises.

f. Coordinating the review and update of the NMPNS Emergency Plan and Emergency Plan Implementing Procedures.

g. Ensuring the maintenance and inventory of emergency equipment and supplies by scheduling inventory surveillances.

h. Keeping abreast of changes in Federal regulations and guidance that may affect emergency planning.

i. Ensuring qualified review of exercise materials and scenarios.

## 6.2 Reviewing and Updating of Plans and Procedures

### 6.2.1 Responsibility for Reviewing and Updating

Reviewing and updating of the NMPNS Emergency Plan and Emergency Plan Implementing Procedures are the responsibilities of the Site Emergency Preparedness Manager. Reviews of the plan and procedures are performed annually by the Site Emergency Preparedness Manager and/or the Emergency Preparedness staff. Recommended changes are reviewed and approved in accordance with NMPNS Administrative Procedures. An independent review of the emergency preparedness program and implementing procedures shall be conducted, in accordance with 10CFR50.54(t), at least every 24 months or as necessary based on an assessment by the licensee against performance

indicators, and as soon as reasonably practicable after a change occurs in personnel, procedures, equipment, or facilities that potentially could adversely affect emergency preparedness, but no longer than 12 months after the change. This review will be conducted by Nuclear Oversight as part of the Nuclear Oversight Audit program, under the cognizance of the Nuclear Safety Review Board (NSRB).

6.2.2 Changes to the Plans or Procedures

Any recommendation for corrective actions or revisions to the NMPNS Emergency Plans and the Emergency Plan Implementing Procedures shall be forwarded to the Site Emergency Preparedness Manager. These recommendations may result from audits, exercises, drills, changes in operating procedures or conditions, or changes in organization, equipment, personnel, phone numbers or methods of communication or operation. The Site Emergency Preparedness Manager shall implement approved recommendations for changes in accordance with station procedures. Review and approval of these recommended changes shall be conducted in accordance with Technical Specifications and Administrative Procedures. The letters of agreement will be reviewed and certified current annually. Verification of the telephone numbers found in the Station Annex and Implementing Procedures occurs quarterly in accordance with the Emergency Equipment Inventory procedure.

6.2.3 Recertification of Plans and Procedures

The Emergency Plan and procedures are reviewed annually in accordance with site administrative procedures. The Emergency Plan is recertified annually in accordance with EP-AA-120, Emergency Plan Administration. Emergency plans and procedures are written to comply with the guidance in the Procedure Writers Manual. Changes will be submitted for approval in accordance with Technical Specifications and Administrative procedures and distributed to official copy holders.

6.2.4 Distribution

Holders of official copies of the Nine Mile Point Nuclear Station Annex receive approved changes to the annex so that they can maintain their copies current.

## 6.3 Maintenance and Inventory of Emergency Equipment and Supplies

6.3.1 Responsibility for Maintenance and Inventory

The Site Emergency Preparedness Manager is responsible for ensuring the maintenance and inventory of emergency equipment and supplies. The authority for planning, scheduling, and performing the quarterly inventory and inspection of designated emergency equipment and supplies has been delegated as outlined in the Emergency Equipment Inventory procedure.

6.3.2 Maintenance and Inventory

Emergency supplies are inspected and inventoried as specified in the Emergency Equipment Inventory procedure. Instruments will be inspected for operability and calibration status in accordance with station calibration procedures. Instruments with expired calibrations or instruments with calibrations which will expire prior to the next inspection/inventory will be removed and calibrated or replaced with calibrated equipment prior to their expiration date. Sufficient instruments are available to replace those removed from service for calibration or repair. Procedures for instrument calibration are contained in the station procedures. Calibration intervals meet or exceed any written recommendations of the manufacturers of the equipment. In addition, emergency communications systems involving dedicated telephone lines, base station, portable and console radios are tested periodically in accordance with the Emergency Equipment Inventory procedure.

6.3.3 Discrepancies

Any discrepancies found during inventory and inspection will be corrected as detailed in the Emergency Equipment Inventory procedure

## 6.4 Public Education and Information

6.4.1 Instructional Material

The NMPNS, in cooperation with the James A. Fitzpatrick Nuclear Power Plant and with state and county authorities, develop and periodically disseminate emergency planning instructional material to residents and transient populations in the Emergency Planning Zone (EPZ). This ensures that the permanent and transient adult population is provided an adequate opportunity to become aware of this information. This instructional material includes basic education information on:

- Basic educational information on radiation
- Public notification system
- Public response to warning signals
- Protective measures
- Sheltering procedures
- Evacuation routes and procedures
- Special needs of the handicapped
- Contact for additional information

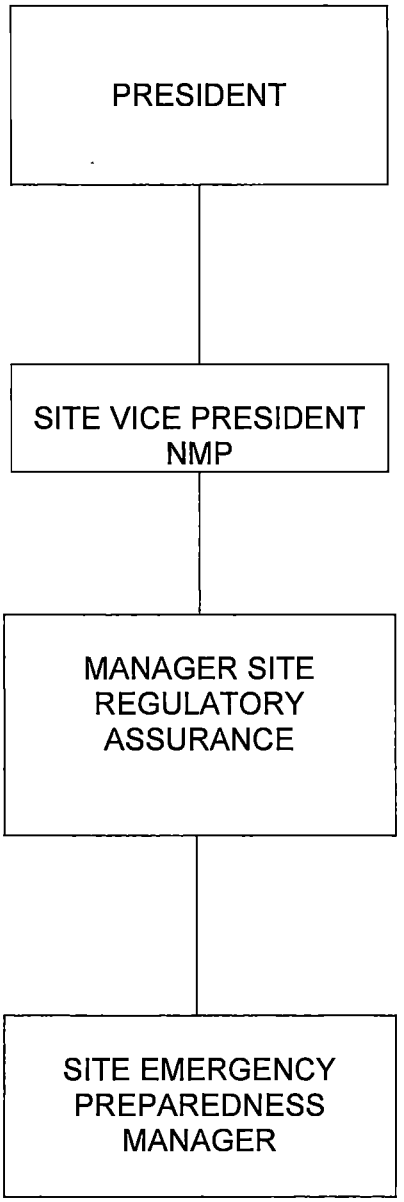
6.4.2 Dissemination of Instructional Material

The following methods may be used to ensure that emergency planning information is transmitted to residents and transients in the EPZ:

- Advertisements summarizing the actions to be taken by residents are published annually in the local newspapers
- Printed instructions and evacuation maps are distributed to EPZ residents
- Printed instructions are included in the local telephone directory
- Printed instructions and evacuation maps are distributed to motels, hotels and recreation areas

A sample of this material is retained in the Emergency Preparedness Permanent Plant File. This material is developed and distributed periodically as required by EP-AA-120.

**FIGURE 6.1**
**EMERGENCY PREPAREDNESS DEPARTMENT**



## FIGURE 6.2
## INITIAL TRAINING AND PERIODIC RETRAINING*

| Emergency Response Category | | Involved Personnel (Typical) | Initial Training and Periodic Retraining |
|---|---|---|---|
| 1. | Emergency Plan Indoctrination | Persons granted unescorted access to the Protected Area | Initial - Emergency Plan content and implementation; specifically: personal actions, warnings, assembly areas, use of station communications, personnel accountability and evacuation to an offsite assembly area. |
| 2. | Emergency Directors/ ERF Coordinators | Plant Manager; Managers of Operations, SMs, Initial responders, and others as designated | Initial - Instruction on the scope, responsibilities, and function of the Emergency Plan and Implementing Procedures, including Incident Command System (ICS) concepts, position titles and terminology.<br><br>Periodic – Once per calendar year not to exceed 18 months between training sessions. Review of any changes made since the last training period. |
| 3. | Personnel responsible for accident assessment and/or accident management | SM/Emergency Director and the Emergency Director at EOFand TSC, OSC and EOF Managers; and Alternates | Initial - Instruction on the NMPNS Emergency Plan and Implementing Procedures and Technical Support Guidelines germane to their particular assessment/management function, including Incident Command System (ICS) concepts, position titles and terminology.<br><br>Periodic - Retraining will be once per calendar year not to exceed 18 months between training sessions and will include a review of the above material and any changes made since the last training period. |
| 4. | Radiological Monitoring /Analysis personnel | Radiation Management Supervisors, Radiation Protection Technicians, and others as designated | Selected Radiation Protection personnel receive substantial training in radiation monitoring.<br><br>Initial - Training for personnel performing radiation monitoring and analysis duties will consist of instruction in the downwind and/or in plant radiation monitoring and sampling Implementing Procedures, including Incident Command System (ICS) concepts, position titles and terminology.<br><br>Periodic - Retraining will be once per calendar year not to exceed 18 months between training sessions with hands-on instrumentation usage including interpretation of results. |

**FIGURE 6.2 (Cont.)**
**INITIAL TRAINING AND PERIODIC RETRAINING***

| | Emergency Response Category | Involved Personnel (Typical) | Initial Training and Periodic Retraining |
|---|---|---|---|
| 5. | Fire Response /First Aid/Rescue/Medical Support | NMPNS Fire Brigade/Offsite Fire Departments Ambulance and Hospital Personnel | Designated members will receive training as appropriate in basic patient care and treatment. Members will also be instructed on the availability of onsite medical treatment supplies and equipment; communication systems; access controls radiological hazards; and roles, interfaces and responsibilities with local fire/ medical support personnel, including Incident Command System (ICS) concepts, position titles and terminology. |
| 6. | Damage Control/Repair Teams personnel | Nuclear Operators, Nuclear Auxiliary Operators, Maintenance Supervision, I&C Supervision, Radiation Protection Supervision Selected Maintenance, I&C and Radiation Protection Personnel, and others as designated | Repair and Damage Control are considered a normal part of the job functions of the listed personnel and, as such, special training in these functions, other than appropriate emergency plan and procedures training, is not required. |
| 7. | Security Personnel/Local Law Enforcement Officials | Security personnel assigned responsibilities for Emergency Plan function, and Local Law Enforcement Officials. | Training and retraining requirements are outlined in the Nine Mile Point Nuclear Security Training and Qualification Plan, including Incident Command System (ICS) concepts, position titles and terminology. |
| 8. | Communication Personnel | As designated | Initial - Training shall consist of a review of appropriate Implementing Procedures, communications equipment and messages, including Incident Command System (ICS) concepts, position titles and terminology.<br><br>Periodic - Retraining will be conducted once per calendar year not to exceed 18 months between training sessions. |

## Section 7: Recovery

Actions taken during an emergency situation fall into two general categories; response and recovery. Response actions are those taken to manage the consequences of an emergency and to bring the emergency under control. Recovery actions are those longer-term actions taken to restore the station, as nearly as possible, to its pre-emergency condition.

This section describes recovery actions and establishes typical criteria for declaring that an emergency has entered the recovery phase.

### 7.1 Progression From Emergency Response to Recovery

The two general action categories, response and recovery, are directed by separate organizations: the On-Site Emergency Organization is responsible for initial response while the Recovery Organization is responsible for long term response and recovery.

#### 7.1.1 Re-entry Phase

The Re-entry Phase is the period following evacuation during which access to the station is restricted. This period can commence with the start of the emergency, or can develop as the emergency progresses, and may last into the recovery phase. Re-entry may be made to perform essential tasks such as saving human life, controlling release of radioactive materials, and preventing additional damage to plant and equipment.

Additional actions to be taken during the Re-entry Phase are controlled by implementing procedures and will be directed by the Emergency Director or the Recovery Manager (RM). Planning for re-entry will include evaluation of available survey data, review of exposures incurred, projection of manpower and equipment needs, and re-entry survey team activation. Upon re-entry, a comprehensive survey of the plant will be made to define radiological problem areas. Data gathered during the re-entry operation and additional information developed by the various technical support groups will be assessed and used in developing subsequent recovery plans.

The planned radiation exposure limits for re-entry should be consistent with 10 CFR 20. If the need arises for exposures in excess of the limits of 10 CFR 20, the ED may institute the higher limits identified in Section 4.0 of the NMPNS Station Annex.

#### 7.1.2 Termination of Emergency Phase

The Station Emergency Director will periodically evaluate and assess the status of the emergency, the effectiveness of emergency actions, and the need to update the emergency class. The Station Emergency Director, in consultation with the Corporate Emergency Director and offsite authorities, will determine when the emergency phase has ended. Notification of the appropriate authorities (e.g., county, state, and federal agencies, etc.) and the Emergency Response Organization will then take place. Criteria for declaring an emergency situation resolved is dependent on the emergency classification declared but may

include: Radiation levels in all in-plant areas are stable or are decreasing with time.

- Reactor and associated systems are in a safe, stable condition, a reactor cool-down is in progress and it has been determined that the plant has the ability to achieve and maintain a cold shutdown condition.
- Releases of radioactive materials to the environment are under control or have ceased.
- Any fire, flooding or similar emergency conditions are under control or have ceased.
- Drywell pressure is at normal levels.

Emergency Plan Implementing Procedure EP-CE-115, Termination and Recovery provides the specific guidance on termination of the emergency phase and commencement of the recovery phase.

7.1.3 Recovery Phase

During the initial stage of the Recovery Phase, data gathered from re-entry operations and additional information developed by the various technical support groups will be assessed. A plan of action for returning the plant to a condition within Technical Specifications limits will be developed using the guidance provided in EP-CE-115.

## 7.2 Recovery Operations

Recovery operations necessary to restore the plant to an operational condition will be conducted within the framework of the Recovery Organization. From the EOF, the CED or Recovery Manager (RM) and EOF staff will direct entry into recovery operations.

Specific recovery tasks and the sequence in which they are performed will be at the direction of the Recovery Manager. The Recovery Manager will be responsible for deactivating the Recovery Organization. Activities for which the Recovery Organization is responsible during the recovery phase include, but are not necessarily limited to, the following:

a. Logistical

b. Corrective Actions

c. Engineering

d. Radiological

e. Administrative

Procedures detailing performance of the above tasks will be developed if required, during the recovery phase.

During recovery operations, the radiation exposure limits of 10 CFR 20 apply. Compliance with those limits will be the responsibility of the Recovery Manager via the applicable Health Physics organization.

Recovery actions that plan for or may result in radioactive releases will be evaluated by the Recovery Manager and EOF staff as far in advance of the action as possible. These actions and data pertaining to the release will be reported to the appropriate off-site emergency response organizations and agencies.

## 7.3 Emergency Organization Transformations

The emergency response organization may go through a series of transformations depending upon the time of initiation, type, severity and duration of the emergency condition.

A long-term recovery organization that is general in nature has been defined. The transition to the Recovery Organization will be communicated to concerned parties by the Recovery Manager, via the ERF managers/coordinators.

## 7.4 Recovery Organization

The Recovery Organization is comprised of two major groups: Functional and Support. (See Figure 7-1)

The Functional Group is essentially comprised of the normal station organization and would be responsible for the development and implementation of plans and procedures necessary for the long-term emergency response and recovery operations. The Functional Group is directed and coordinated by the RM through the Plant Manager, the Engineering Director, the Maintenance Director and the Director, Work Control and Outage Management. The Functional Group utilizes personnel performing duties they normally perform, such as; Operations, Maintenance, Engineering, Chemistry, Radiation Protection and Outage Management.

The Support Group is comprised essentially of those positions established in the augmentation of the initial on shift emergency response at the Emergency Operations Facility with the addition of the following managers/directors providing support functions as required/needed from the following organizations: Human Resources, Training, Business Planning, JIC Director, Nuclear Oversight, Security and Emergency Preparedness (Corporate), Procurement and Warehouse Services (Corporate), IT and Telecommunications Services (Corporate). The Support Group would assist the Functional Group in areas such as plant modification, design, construction, recovery engineering, quality assurance/control, and administrative support functions such as purchasing, transportation, treasury, materials management, communications, legal, claims, and risk management, etc.

Other personnel may be called upon to enable the Recovery Organization to function on a 24 hour per day basis for extended periods or to provide special expertise in specific areas as dictated by the type and severity of the particular emergency.

7.4.1 Recovery Organization Staff

As stated above, the recovery organization is comprised of positions already in place during the emergency, and other staff performing normal functions. Examples of additional staff that may be called on to support the recovery operations are described below. It is expected that the additional staff will be performing duties similar to those they are normally expected to perform on a day to day basis, thus additional training for these positions is not required.

7.4.1.1 Functional Group

a. Plant Manager

The Plant Manager is the typical designee for this position. The Plant Manager reports to the Recovery Manager during the recovery phase of an emergency and is responsible for obtaining and coordinating services from the various departments that are the normal direct reports to this position. Additionally, the Plant Manager has responsibility for oversight of the Plant Operations Review Committee (PORC). These services/departments may include:

- Operations
- Chemistry
- Radiation Protection
- Reactor Engineering

The Plant Manager will be expected to ensure that staffing and work schedules are setup as required to support the recovery organization.

b. Director Engineering

The Director Engineering is the typical designee for this position. This position reports to the Recovery Manager during the recovery phase of an emergency and is responsible for obtaining and coordinating services from the various departments that are the normal direct reports to this position. These services/departments may include:

- Electrical Engineering
- Structural Engineering
- Mechanical Engineering
- Systems Engineering
- Thermo-hydraulic Engineering

The Director Engineering Services will be expected to ensure that staffing and work schedules are setup as required to support the recovery organization.

c. Director Maintenance

The Director Maintenance is the typical designee for this position. This position reports to the Recovery Manager during the recovery phase of an emergency and is responsible for obtaining and

coordinating services from the various departments that are the normal direct reports to this position. These services/departments may include any of the maintenance disciplines (electrical, mechanical, I & C).

The Director Manager will be expected to ensure that staffing and work schedules are setup as required to support the recovery organization.

d. Director, Work Management

The Director, Work Management is the typical designee for this position. This position reports to the Recovery Manager during the recovery phase of an emergency and is responsible for obtaining and coordinating services from the various departments that are the normal direct reports to this position. These services/departments may include: work control, outage planning and scheduling, project management and onsite material procurement services.

The Director, Work Management will be expected to ensure that staffing and work schedules are setup as required to support the recovery organization.

7.4.1.2 Support Group

a. Director, Training

The Director, Training is the typical designee for this position. This position reports to the Recovery Manager during the recovery phase of an emergency and is responsible for providing whatever training services are required.

b. Manager, Human Resources

The Manager, Human Resources is the typical designee for this position. This position reports to the Recovery Manager during the recovery phase of an emergency and is responsible for providing all necessary aspects of human resources, including occupational health and safety aspects as required.

c. Manager, Finance and Business Operations

The Director Finance and Business Operations is the typical designee for this position. This position reports to the Recovery Manager during the recovery phase of an emergency and is responsible for ensuring all necessary business management aspects of the emergency recovery are provided for as required.

d. Manager, Quality & Performance Assessment

The Manager Nuclear Oversight is the typical designee for this position. This position reports to the Recovery Manager during the recovery phase of an emergency and is responsible for ensuring all quality aspects of the emergency recovery as required.

e. Directors (Corporate)

The Directors of Security and Emergency Preparedness, Procurement and Warehouse Services, and Information Technology and Telecommunications are the typical designees for these positions. These positions, as requested, report to the ALM during the recovery phase of an emergency and are responsible for obtaining and coordinating services from their departments. These services may include:

- Nuclear Security
- Procurement
- Emergency Preparedness
- Site Services
- Technical Services

The Directors (Corporate) will be expected to ensure that staffing and work schedules are setup as required to support the recovery organization.

7.4.2 Augmentation of the Emergency Response/ Recovery Organization

Additional augmentation may be necessary, as the situation dictates, by the Institute for Nuclear Power Operations (technical personnel and equipment), by the NSSS vendor (technical personnel, equipment and replacement parts as needed) and by other local nuclear power plants (survey teams and laboratory facilities).

7.4.2.1 Contract Services

Long-term emergency response and recovery activities may require additional personnel and equipment.

When contracted services are required, the normal practice of assigning a NMPNS employee to administer the contracted service, i.e., provide overall technical direction, coordination, and review, will be employed to ensure the actions of the contractor support the needs of the recovery operation.

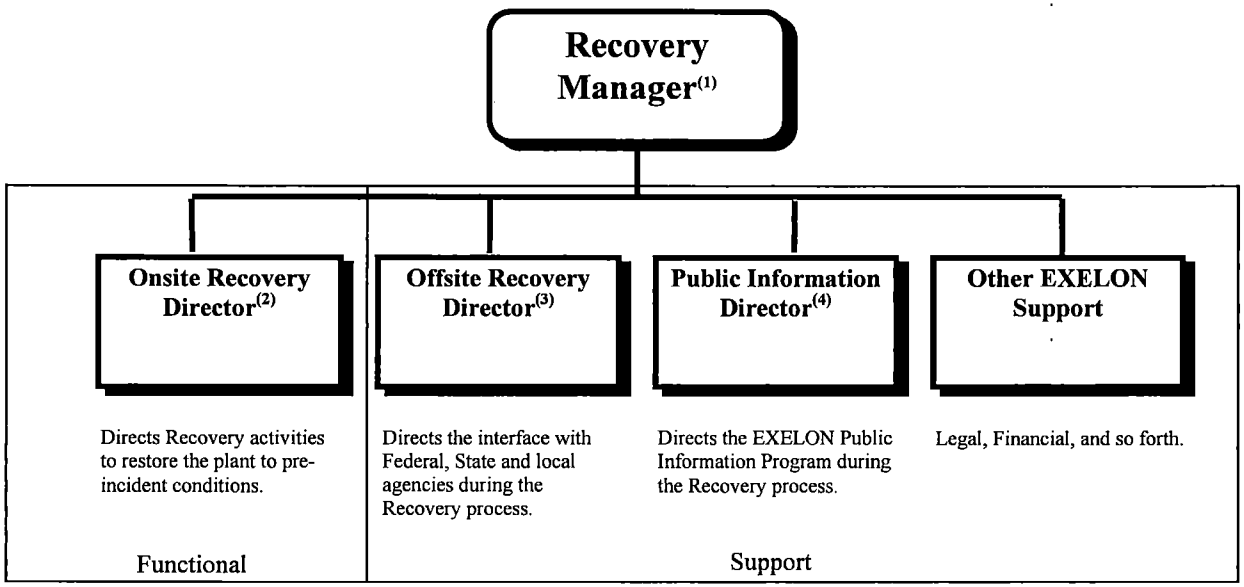
7.4.2.2 Local Support Services

Local support services necessary to support a large influx of personnel from the contractors, vendors and government support organizations may be required. These services include items such as:

- Lodging
- Food
- Transportation

There are sufficient facilities in the vicinity of the station to supply these basic services. Individual contracts will be negotiated for these facilities as necessary.

## Figure 7.1: Typical Recovery Organization (for Site Area or General Emergency)




**NOTES:**

(1) The Recovery Manager position will normally be filled by a Vice President- or designee. IF the station VP does not fill position the Recovery Manager reports to the VP.

(2) The Onsite Recovery Director position will normally be filled by the Plant Manager or designee. The normal plant staff will support recovery activities as required. A special Radiation Protection Manager and/or Administrative and Logistics Manager may need to be appointed for events which involving severe plant damage or large releases of radioactive materials inside or outside the plant.

(3) The Offsite Recovery Director position will normally be filled by the Site Emergency Preparedness Manager or designee. Radiological support positions should be designated to support offsite recovery activities if there was a significant release of radioactive materials.

(4) The Public Information Manager position will normally be filled by the Communications Department personnel.

(5) Other positions may be designated to support completion of the Recovery Plan as needed.

## SECTION 8: ACRONYMS AND DEFINITIONS

### 8.1 Acronyms

This section contains the acronyms of terms that are used in a special context in this plan and/or are unique to Nine Mile Point Nuclear Station (NMPNS).

- ALARA - As Low As Reasonably Achievable
- ARM - Area Radiation Monitor
- $CDE_T$ - Committed Dose Equivalent - Thyroid (Child)
- CRS – Control Room Supervisor
- CWP - County Warning Point
- DOE - U.S. Department of Energy
- EAL - Emergency Action Level
- EAS - Emergency Alert System
- ED - Emergency Director
- EDE - Effective Dose Equivalent
- ENS - Emergency Notification System
- EOC - Emergency Operations Center
- EOF - Emergency Operations Facility
- EPA - U.S. Environmental Protection Agency
- EPIP - Emergency Plan Implementing Procedure
- EPMP - Emergency Plan Maintenance Procedure
- EPZ - Emergency Planning Zone
- ERF - Emergency Response Facilities
- ETE - Evacuation Time Estimate
- FRMAP - Federal Radiological Monitoring and Assessment Plan
- FSAR - Final Safety Analysis Report
- ISFSI - Independent Spent Fuel Storage Installation
- JAFNPP - James A. Fitzpatrick Nuclear Power Plant
- JIC – Joint Information Center

- KI - Potassium Iodide
- LCO - Limiting Condition for Operation
- MMS - Meteorological Monitoring System
- NED - Nuclear Engineering Department
- NMPNS - Nine Mile Point Nuclear Station
- NRC - U.S. Nuclear Regulatory Commission
- NSRB - Nuclear Safety Review Board
- NSSS - Nuclear Steam Supply System
- NWS - National Weather Service
- NYSDOH - New York State Department of Health
- OCEMO - Oswego County Emergency Management Office
- OCEOC - Oswego County Emergency Operations Center
- ODAM - NMPNS Offsite Dose Assessment Manager
- OEM - Office of Emergency Management (New York State)
- OSC - Operations Support Center
- OSLD - Optically Stimulated Luminescent Dosimeter
- PAG - Protective Action Guide
- PAR - Protective Action Recommendation
- PNS - The Oswego County Prompt Notification System
- PORC - Plant Operations Review Committee
- QATR - Quality Assurance Topical Report
- RAM - NMPNS Radiological Assessment Manager
- RECS - Radiological Emergency Communications System
- RO - Reactor Operator
- SEOC - State Emergency Operations Center
- SM – Shift Manager
- SOP - Special Operating Procedure

- o SRD - Self-Reading Dosimeters
- o SRO - Senior Reactor Operators
- o STA - Shift Technical Advisor
- o STOC - Security Tactical Operations Center
- o SWP - State Warning Point
- o TEDE - Total Effective Dose Equivalent
- o TIBL - Thermal Internal Boundary Layer
- o TLD - Thermoluminescent Dosimeter
- o TSC - Technical Support Center
- o USAR - Updated Safety Analysis Report
- o WSFO - Weather Service Forecasting Office

## 8.2 Definitions

This section contains the definitions of terms that are used in a special context in this plan and/or are unique to Nine Mile Point Nuclear Station (NMPNS).

- o ACCESS CONTROL POINTS - Checkpoints for incoming traffic to be stopped and identification verified. These points are established by Nuclear Security at the Alert, or higher emergency classification, or as directed by the Emergency Director. The Access Control Points are pre-designated at two locations:
  - Owner Controlled Area (OCA) Checkpoint, Lake Road
  - NMP/Fitzpatrick Property Line, Lake Road
- o AFFECTED UNIT - The affected unit is NMPNS Unit 1 and/or Unit 2 whichever has declared an emergency.
- o ALTERNATE STATE WARNING POINT - The Alternate SWP is located in the N.Y. State Police Communications Center in the Public Security Building, State Office Building Campus, Albany, N.Y. This facility is manned 24 hours per day and could perform the same functions as the State Warning Point (see State Warning Point).
- o AREA RADIATION MONITOR (ARM) - A fixed instrument which typically measures gross gamma radiation levels in a local area and alarms when the radiation exposure rate reaches the preset alarm level.

- o ASSESSMENT ACTIONS - Those actions taken during or after an accident to obtain and process information that is necessary to make decisions to implement specific emergency measures.
- o ASSESSMENT FACILITY - A facility used for evaluation of information including instrument data, to assess the scope and severity of an emergency condition. Such facilities available to Nine Mile Point include:
  - Onsite
    - Control Rooms
    - Technical Support Center
  - Off-Site
    - Emergency Operations Facility
- o $CDE_T$ - Represents the dose equivalent to the child thyroid, weighted on the basis of the relative detriment to the individual, for an exposure period of 50 years.
- o MITIGATIVE ACTIONS - Those emergency measures taken to mitigate or terminate an emergency situation at or near the source of the problem in order to prevent an uncontrolled release of radioactive material or to reduce the magnitude of a release.
- o COUNTY WARNING POINT (CWP) - The communications center at Oswego County 911 Center in Oswego, N.Y. is the County Warning Point. It serves as a 24-hour notification point for messages from the utilities to appropriate officials in the county.
- o DOSE PROJECTION - A calculated estimate of the potential dose to individuals at a given location onsite or offsite. It is determined from the quantity of radioactive material released and the appropriate meteorological transport and diffusion parameters.
- o EMERGENCY - A situation outside of routine operational events or minor equipment malfunction which could lead to a radiological hazard affecting the health and safety of workers or the public, or result in significant damage to property
- o EMERGENCY ACTIONS - A collective term encompassing the assessment, corrective and protective actions taken during the course of an emergency.
- o EMERGENCY ACTION LEVELS (EAL) - Specific indications or conditions used as thresholds for initiating specific emergency actions.
- o EMERGENCY ALERT SYSTEM (EAS) - A system of radio stations organized to permit designated government officials to issue emergency information and instructions in threatened or actual emergencies.

- o EMERGENCY CLASSIFICATION - A condition which falls into one of the following categories: Unusual Event, Alert, Site Area Emergency, or General Emergency.
- o EMERGENCY DIRECTOR - The individual responsible for the implementation and administration of the NMPNS Station Annex. Directs the emergency response organization and has overall authority for control of the emergency situation and for assuring continuity of resources.
- o EMERGENCY OPERATIONS CENTERS (EOC) - Local and State facilities for assessment of emergency information and direction of local and State emergency response personnel.
- o EMERGENCY PLAN IMPLEMENTING PROCEDURES - A procedure that provides detailed instructions to NMPNS personnel and implements an action or activity described in the Station Annex. These procedures are considered Technical Specification related and are listed in Appendix 3.
- o EMERGENCY PLAN MAINTENANCE PROCEDURES - Procedures which provide instructions, checklists, and guidance to maintain the emergency preparedness program, equipment and associated documents.
- o EMERGENCY PLANNING ZONE (EPZ) - A designated area around NMPNS used to facilitate offsite emergency planning. There are two Emergency Planning Zones: the plume exposure pathway and the ingestion exposure pathway.
- o EMERGENCY RESPONSE FACILITY (ERF) - A generic term referring to a facility that is used for emergency purposes. These facilities include the Control Room, Technical Support Center, Emergency Operations Facility, Operations Support Center, Joint Information Center, Oswego County Emergency Operations Center, etc.
- o EMERGENCY RESPONSE/RECOVERY ORGANIZATION - The organization, which consists of Nuclear Division, corporate and outside personnel, that manages the large scale or long-term response to and recovery from an accident.
- o ENVIRONMENTAL MONITORING TEAMS - These teams are characterized by personnel from the station staff (Radiation Protection or Environmental Departments) or contractor staff that collect environmental measurements as part of the Expanded Radiological Environmental Monitoring Program.
- o EVACUATION ASSEMBLY AREAS - Areas outside of the protected area where personnel evacuated from the protected area are assembled. The two primary areas typically designated are the P-Building at Unit 2 for personnel exiting the protected area via the Unit 2 security access, and

the Nuclear Learning Center for personnel exiting the protected area via the Unit 1 security access.

- o EXCLUSION AREA - The area controlled by NMPNS surrounding the station, in which the licensee has the authority to determine all activities including exclusion or removal of personnel and property from the area. For emergency preparedness purposes, the NMPNS/JAFNPP exclusion areas are considered to be one exclusion area.
- o EXPANDED RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM - This program is characterized by an increase in the number and frequency of samples collected, plus other additional sampling of critical pathways (such as snow, ground deposition, surface water, etc.)
- o FEDERAL RADIOLOGICAL MONITORING AND ASSESSMENT PLAN (FRMAP) - The Federal government's means of providing in-depth assistance to licensees, States, and local governments in the event of a radiological emergency. The monitoring and assessment teams are normally provided by the Department of Energy (DOE).
- o HAZARDOUS MATERIALS - Any element, compound or combination thereof, which is detonable, flammable, corrosive, toxic, an oxidizer, an etiologic agent, or highly reactive and which because of handling, storage processing, or packaging may have detrimental effects upon operating personnel and emergency personnel, the public, plant equipment, and/or the environment.
- o INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI) - The ISFSI is a complex designed and constructed for the interim storage of spent fuel, solid reactor-related greater than Class C (GTCC) waste, and other radioactive materials associated with spent nuclear fuel assemblies discharged from NMPNS Unit 1 and Unit 2 reactors.
- o INGESTION EXPOSURE PATHWAY - The principal exposure from this pathway would be from ingestion of contaminated water or foods such as milk or fresh vegetables. The duration of principal exposures could range in length from hours to months.
- o LOCAL AREA EVACUATION - Evacuation of personnel from localized areas within the station with assembly outside the affected local area.
- o NINE MILE POINT NUCLEAR STATION L.L.C (NMPNS) - A limited liability corporation and operator of Nine Mile Point Nuclear Station.
- o NUCLEAR SAFETY REVIEW BOARD (NSRB) - a committee which provides independent review and audit of designated activities affecting the safe operation of the stations.
- o OFFSITE - Any area outside of the joint property controlled by NMPNS and JAFNPP.

- o OFFSITE ASSEMBLY AREA (OAA) - Specific location outside the NMPNS 10 mile EPZ for the assembly of personnel in the event of an exclusion area evacuation. This area is typically the Oswego County Airport, Hanger K; in the town of Volney.
- o ONSITE - The area within the joint property controlled by NMPNS and JAFNPP, the exclusion area.
- o ONSITE ASSEMBLY AREAS - These are areas within the protected area where personnel will gather to allow for continuous accountability of personnel remaining within the protected area.
- o OSWEGO COUNTY EMERGENCY OPERATIONS CENTER (OCEOC) - A facility that serves as the county command post from which emergency operations will be directed and coordinated. The OCEOC is located in the Oswego County Emergency Management Offices in the basement of the Oswego County Branch Building, Route 481, Fulton, N.Y.
- o OWNER CONTROLLED AREA (OCA) EVACUATION - Evacuation of all non-essential personnel from the NMPNS OCA to either the designated Offsite Assembly Area or to their home. This includes, as appropriate, the evacuation of individuals from the NMPNS OCA including the Nuclear Learning Center; Energy Center, Sewage Treatment Facility, all other NMPNS site locations, and a notification to the James A. Fitzpatrick Nuclear Station of the evacuation.
- o PERSONNEL ACCOUNTABILITY SYSTEM - A system of accounting for personnel within the Protected Area. The system was developed in response to NUREG-0654 (Section II.J.5) and uses the Nuclear Security Proximity Cards assigned to personnel entering the Protected Area, Emergency Accountability Card readers located throughout the protected area, and a computerized database. The system provides timely identification of individuals who have NOT reported to Onsite Assembly Areas or exited the protected area and generates a personnel accountability report.
- o PA SYSTEM - A generic term used throughout the Site Emergency Plan referring to a Public Address system where an announcement or alarm can be made and heard throughout the protected area. Other terms used for the PA system are the GAltronics, Plant Paging System, Page Party/Public Address Communications Subsystem (PP/PA), etc.
- o PREVENTIVE PAG - These are projected dose commitment values at which recommendations should be made to responsible offsite officials. These actions should have minimal impact to prevent or reduce the radioactive contamination of human food or animal feed.
- o PLANT OPERATIONS REVIEW COMMITTEE (PORC) - A review group which, in accordance with the QATR, functions by advising the PORC

Chairman and the Nuclear Safety Review Board concerning the safety aspects of proposed courses of action.

- o PLUME EXPOSURE PATHWAY - A pathway by which individuals can be exposed to radiation. The principal exposure sources from this pathway are: (a) whole body external exposure to gamma radiation from the plume and from deposited material; and (b) inhalation exposure from the passing radioactive plume.
- o PROTECTED AREA - This is the area within the station security fence designated to implement the security requirements of 10CFR73. It is sometimes referred to in the context of Unit 1 and/or Unit 2 protected area.
- o PROTECTED AREA EVACUATION - Evacuation of nonessential individuals within the stations' protected area, to assembly areas outside of the protected area designated as Evacuation Assembly Areas. These areas are typically the Nuclear Learning Center and the P-Building.
- o PROTECTIVE ACTIONS - Those emergency measures taken before or after a release of radioactive material has occurred for the purpose of preventing or minimizing radiological exposures to persons that would be likely to occur if the actions were not taken. Some of the possible protective actions are:
  - Evacuation
  - Isolation of Ingestion Pathway and Sources
  - Radioprotective Drug Administration
- o PROTECTIVE ACTION GUIDES (PAGs) - Projected radiological dose or dose commitment values to individuals in the general population that warrant protective action before or following a release of radioactive material. Protective actions would be warranted provided that the reduction in individual dose expected to be achieved by carrying out the protective action is not offset by excessive risks to individual safety in taking the protective action. The PAG does not include the dose that has unavoidably occurred prior to the assessment.
- o RADIOLOGICALLY CONTROLLED AREA (RCA) - Major plant areas to which access is limited for the purpose of protecting personnel from exposure to radiation and contamination.
- o RADIOLOGICAL EMERGENCY COMMUNICATIONS SYSTEM (RECS) - A dedicated telephone system used to provide initial notification of an emergency, and continuing emergency information, to the State and to Oswego County.
- o RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM - Characterized by the collection of normal radiological samples required by technical specifications and additional optional

samples not covered in technical specifications (such as soil, meat, poultry, etc.)

- RECOVERY ACTIONS - Those actions taken after an emergency to restore the plant as nearly as possible to its pre-emergency condition.
- REQUISITE TRAINING - The training specified for an emergency position, and contained within Training Department Procedures for Emergency Preparedness.
- RESTRICTED AREA - Any area to which access is controlled by NMPNS for purposes of protection of individuals from exposure to radioactive materials.
- SAFE SHUTDOWN SYSTEM - A descriptive term applying to a combination of systems that can be used to provide a decay heat removal path.
- SAFETY ANALYSIS REPORT (SAR) - A periodically updated multi volume report describing a nuclear power station's site, design features, safety features and the utility's intended methods of operation. The SAR must be submitted to the U.S. NRC by the utility when applying for an operating license for the nuclear station. The Unit 1 SAR may be referred to as UFSAR and Unit 2 to as USAR.
- SAFETY ANALYSIS REPORT FOR THE ISFSI - The Standardized NUHOMS® Updated Final Safety Analysis Report (NUHOMS® UFSAR) provides the generic safety analysis for the Standardized NUHOMS® system for storage of light water reactor spent nuclear fuel assemblies (No. NUH-003, Revision 11, NRC Docket No. 72-1004). This system provides for the safe dry storage of spent fuel in a passive ISFSI which fully complies with the requirements of 10CFR72 and ANSI 57.9. This UFSAR formed the basis for generic NRC certification of the standardized NUHOMS® system and is used by 10CFR50/10CFR72 general license holders in accordance with 10CFR72 Subparts K and L.
- SAFETY PARAMETER DISPLAY SYSTEM (SPDS) - This system provides a display of plant parameters from which the safety status of station operations may be assessed in the Control Rooms and Technical Support Center.
- SECURITY CONTINGENCY EVENT - A deliberate act or perceived threat of an act which could imperil the station and endanger the public health and safety by exposure to radiation.
- SECURITY TACTICAL OPERATIONS CENTER (STOC) - A security command center that may be activated during a security contingency event, or activation of the site emergency plan.

- SHIFT MANAGER/EMERGENCY DIRECTOR - The individual responsible for the implementation and administration of the NMPNS Site Emergency Plan. Directs the emergency response organization and has overall authority for control of the emergency situation and for assuring continuity of resources until relieved by the Emergency Director in the EOF.
- SITE EMERGENCY PREPAREDNESS MANAGER - The individual responsible for the coordination of emergency planning efforts.
- SPECIAL OPERATING PROCEDURES (SOP) - These procedures contain instructions for station operators usually attributed to emergency procedures in the regulatory guides and standards.
- STATE EMERGENCY OPERATIONS CENTER (SEOC) - The State command post from which emergency operations will be directed and coordinated.
- STATE WARNING POINT (SWP) - Serves as a notification point for messages from the utilities to appropriate officials in the State. The SWP is manned on a 24-hour per day basis.
- STATION - As used in the Site Emergency plan, Station refers to the site containing the two Nine Mile Point reactors, associated outbuildings and all personnel working to support the operation of the site.
- STATION EMERGENCY DIRECTOR - The individual responsible for implementation of on-site support activities necessary to effectively implement the emergency plan and mitigate the emergency. The Station ED has the leadership role to ensure on-site emergency activities are carried out in accordance with the emergency plan and implementing procedures.
- TOTAL EFFECTIVE DOSE EQUIVALENT (TEDE) - Represents the sum of the effective dose equivalent and the committed effective dose equivalent.
- UNRESTRICTED AREA - Any area to which access is not controlled by NMPNS for purposes of protection of individuals from exposure to radiation and radioactive materials, and any area used for residential quarters.

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| O.3 | Onsite First Aid Training | Fig. 6.2 |
| O.4.a | Initial and Continuing Training Requirements - Directors/Coordinators | Fig. 6.2 |
| O.4.b | Initial and Continuing Training Requirements - Accident Assessment Personnel | Fig. 6.2 |
| O.4.c | Initial and Continuing Training Requirements - Radiological Monitoring and Analysis Teams | Fig. 6.2 |
| O.4.d | Initial and Continuing Training Requirements - Police, Security, Fire Fighters | 6.1.1, Fig. 6.2 |
| O.4.e | Initial and Continuing Training Requirements - Damage and Repair Teams | Fig. 6.2 |
| O.4.f | Initial and Continuing Training Requirements - First Aid and Rescue Personnel | Fig. 6.2 |
| O.4.g | Initial and Continuing Training Requirements - Local Support Services Personnel | 6.1.1, Fig. 6.2 |
| O.4.h | Initial and Continuing Training Requirements - Medical Support Personnel | 6.1.1, Fig. 6.2 |
| O.4.i | Initial and Continuing Training Requirements - Licensee Headquarters Personnel | Fig. 6.2 |
| O.4.j | Initial and Continuing Training Requirements - Communicators | Fig. 6.2 |
| O.5 | Initial and Continuing Training Requirements - ERO | Fig. 6.2 |

APPENDIX 1

CROSS-REFERENCE INDEX
BETWEEN NMPNS EMERGENCY PLAN
AND NUREG-0654/FEMA-REP-1 REV 1

| NUREG 0654 | CRITERIA | NMPNS STATION ANNEX SECTION |
|---|---|---|
| P.1 | EP Department Personnel Training | 6.1.1, 6.1.1.h |
| P.2 | EP Director Authority Requirement | 6.1.3, Fig. 6.1 |
| P.3 | EP Director Responsibility Requirement | 6.1.3 |
| P.4 | Annual Recertification of Plan and Procedures | 6.2.3 |
| P.5 | Procedures for Plan and Procedure Revision/ Distribution | 6.2, 6.2.3 |
| P.6 | Listing of Supporting Plans | Appendix 5 |
| P.7 | Requirement for List of Implementing Procedures | Appendix 3 |
| P.8 | Requirement for Emergency Plan Table of Contents, NUREG 0654 Cross Reference | Table of Contents, Appendix 1 |
| P.9 | Requirement for Independent Audit of EP Program | 6.2.1 |
| P.10 | Requirement to Update Telephone Numbers Quarterly | 6.2.2 |

# APPENDIX 2

## LETTERS OF AGREEMENT

| The up-to-date Letters of Agreement are maintained under separate cover in the Emergency Preparedness Group's file but are considered to be incorporated as part of this document by reference. | |
|---|---|
| **Current Letters of Agreement exist between NMPNS and:** | **In regards to** |
| 1) EA Engineering, Science, and Technology | Provides technical assistance |
| 2) General Electric | Provide assistance per SIL #324 |
| 3) INPO | Provide information on the availability of personnel and equipment able to assist |
| 4) New York State | Provide assistance as per the New York State Radiological Emergency Preparedness Plan |
| 5) Upstate Emergency Medical Inc. | Provide emergency medical care |
| 6) County of Oswego | |
| a) Oswego County Emergency Management Office | Provide assistance as per the Oswego County Radiological Emergency Preparedness Plan |
| b) Oswego County 911 Center | Provides 24 hour, 7 day a week contact point for local fire and ambulance service. |
| c) Oswego County Sheriff's Department | Provides for support from all local law enforcement agencies. |
| 7) Oswego Hospital | Provide medical care of radioactivity contaminated patients |
| 8) Upstate University Hospital | Provide emergency medical care for radioactively contaminated patients |
| 9) Department of Energy | Provide radiological assistance<br>Provide emergency medical assistance (REAC/TS) |

## APPENDIX 2

LETTERS OF AGREEMENT

| The up-to-date Letters of Agreement are maintained under separate cover in the Emergency Preparedness Group's file but are considered to be incorporated as part of this document by reference. | |
|---|---|
| **Current Letters of Agreement exist between NMPNS and:** | **In regards to** |
| 10) Oswego County Airport | Provide support for the following via service level agreement:<br>• Use of Hanger K for Alternate and Alternative facilities for NMPNS |
| 12) Oswego County Ambulance | Provide Emergency Medical Response |
| 13) Oswego County Fire | Provides local fire support and coordination |

## APPENDIX 3

Emergency Plan Implementing Procedures

| Number | Title |
|---|---|
| EP-AA-1013, Addendum 3 | Nine Mile Point Nuclear Station Unit 1 Emergency Classification Technical Bases |
| EP-AA-1013, Addendum 3 Appendix 1 | NMP Unit1 EAL Wallboard |
| EP-AA-1013, Addendum 4 | Nine Mile Point Nuclear Station Unit 2 Emergency Classification Technical Bases |
| EP-AA-1013, Addendum 4 Appendix 1 | NMP Unit2 EAL Wallboard |
| EP-AA-110-200 | Dose Assessment |
| EP-AA-110-201 | On-Shift Dose Assessment |
| EP-AA-112-100 | Control Room Operation |
| EP-AA-112-200 | Technical Support Center Activation and Operations |
| EP-AA-112-300 | Operations Support Center Activation and Operations |
| EP-AA-112-400 | Emergency Operations Facility Activation and Operations |
| EP-AA-112-500 | Emergency Environmental Monitoring |
| EP-AA-112-600 | Public Information Organization |
| EP-CE-111 | Emergency Classification and Protective Action Recommendations |
| EP-CE-113 | Personnel Protective Actions |
| EP-CE-114-100 | Emergency Notifications |
| EP-CE-115 | Termination and Recovery |
| EPIP-EPP-01-EAL | Emergency Action Level Matrix Unit 1 |
| EPIP-EPP-02-EAL | Emergency Action Level Matrix Unit 2 |
| EPIP-EPP-09 | Determination of Core Damage Under Accident Conditions |
| OP-NM-106-104 | Security Contingency Actions |

# APPENDIX 4

## Emergency Response Organization Responsibilities

Note: The positions and responsibilities described in this Appendix apply to Nine Mile Point station and supersede the list of ERO positions and respective ERO responsibilities identified in the Exelon Standard Plan.

## 1.0 ON-SHIFT STAFF POSITIONAL RESPONSIBILITIES

1.1 Shift Emergency Director / Shift Manager:
NOTE: * Indicates Non-Delegable responsibilities when performing Emergency Director duties.

- Coordinate between CR, OSC and TSC to set OSC team task priorities.
- Perform or direct emergency PA announcements.
- Ensure flow of information within and between the emergency response facilities.
- Integrate ERO activities with the Incident Command Post (ICP) response activities.
- Assume overall command and control of emergency response.
- Classify and declare emergencies.*
- Direct notification and activation of the ERO.
- Direct and approve offsite emergency notifications to state and local authorities*.
- Direct ENS communications with the NRC.
- Oversee the performance and evaluate the results of dose projection activities.
- Ensure appropriate accountability and search and rescue actions for plant personnel.
- Ensure appropriate evacuation actions for plant personnel*.
- Approve the issuance of KI.
- Make Protective Action Recommendations to offsite authorities*.
- Approve emergency exposures.*
- Terminate the emergency event.

1.2 Shift Manager (After Transfer of Command and Control)

- Coordinate between CR, OSC and TSC to set OSC team task priorities.
- Perform or direct emergency PA announcements.
- Ensure flow of information within and between the emergency response facilities.
- Participate in Inter-Facility Briefings to communicate and obtain event and response information.
- Authorize and prioritize requests for external assistance (police, fire, medical) as necessary.
- Assist with Emergency Classification.

## APPENDIX 4

## Emergency Response Organization Responsibilities

1.3 Shift Technical Advisor (STA), SROs and ROs
- Assist with emergency classification.

1.4 Designated Shift Communicator
- Notify the ERO.
- Perform offsite emergency notifications to state and local authorities.
- Provide plant data and plant information to the NRC via the ENS.

1.5 Designated Shift Dose Assessor
- Perform dose assessments.

1.6 Shift Radiation Protection Technician(s)
- Ensure habitability is established and maintained for occupied onsite areas.
- Monitor in-plant radiological conditions.
- Coordinate RP support for personnel dispatched into the plant.

1.7 Shift Chemistry Technician
- Conduct sampling to assist with emergency assessment activities.

1.8 Security Shift Supervisor
- Supervise security force activities.
- Perform offsite emergency notifications to state and local authorities.
- Establish and maintain Protected Area accountability.
- Establish and supervise plant access controls.
- Supervise security actions for site evacuation.
- Coordinate administration of KI to the security officers.

1.9 Other Shift Personnel (Non-licensed Operators, Security Force, Maintenance Personnel)
- Support emergency response as directed.

### 2.0 TECHNICAL SUPPORT CENTER (TSC)

2.1 Station Emergency Director
NOTE: * Indicates Non-Delegable responsibilities when performing Emergency Director duties.

- Approve emergency exposure controls.*
- Approve the issuance of KI.
- Ensure appropriate evacuation actions for plant personnel*.
- Classify and declare emergencies.*

## APPENDIX 4

## Emergency Response Organization Responsibilities

- Manage all onsite emergency activities in support of plant operations.
- Establish plant/station response priorities.
- Integrate ERO activities with the Incident Command Post (ICP) response activities.
- Authorize and prioritize requests for external assistance (onsite technical support, manpower) as necessary.
- Provide informational updates and recommendations to the ED, regarding plant status and activities.
- Direct ENS communications with the NRC.
- Authorize emergency response facility relocations.
- Evaluate event assessments and mitigative strategies to determine operational and response actions.
- Ensure appropriate accountability and search and rescue actions for plant personnel.
- Ensure accountability, once established, is maintained in all occupied areas of the station.
- Ensure appropriate evacuation actions for plant personnel.
- Coordinate between CR, OSC and TSC to set OSC team task priorities.
- Conduct facility briefs and updates.
- Participate in the Inter-Facility briefing to communicate and obtain event and response information.
- Coordinate integration of the NRC Site Team.
- Terminate the Emergency Event.
- Assist in the development of recovery plans.

2.2 TSC Director

- Activate the Facility.
- Establish and maintain facility accountability.
- Manage the operation of the facility.
- Review and ensure facility displays are maintained current.
- Coordinate ERO shift relief rosters for the onsite facilities.
- Develop ERO shift relief rosters for the facility.
- Perform or direct emergency PA announcements.
- Coordinate integration of the NRC Site Team.
- Arrange for logistics support.
- Ensure flow of information within and between the emergency response facilities.
- Provide input for facility briefs and updates.
- Coordinate TSC relocation.

## APPENDIX 4

## Emergency Response Organization Responsibilities

2.3 Technical Manager

- Manage the activities of the TSC engineering / technical staff.
- Ensure additional personnel and/or equipment is arranged for, as necessary.
- Provide engineering support for accident detection and assessment.
- Develop mitigative strategies based on assessment of the event.
- Analyze and develop extreme measures actions (SAMGs, EDMGs, §50.54(x) or suspend security controls).
- Provide input for facility briefs and updates.

2.4 Electrical Engineer

- Provide engineering support for accident detection and assessment.
- Provide input into mitigative strategies.
- Analyze and develop extreme measures actions (SAMGs, EDMGs, §50.54(x) or suspend security controls).

2.5 Mechanical Engineer

- Provide engineering support for accident detection and assessment.
- Provide input into mitigative strategies.
- Analyze and develop extreme measures actions (SAMGs, EDMGs, §50.54(x) or suspend security controls).

2.6 Core/Thermal Hydraulic Engineer

- Provide engineering support for accident detection and assessment.
- Provide input into mitigative strategies.
- Perform core damage estimations.
- Analyze and develop extreme measures actions (SAMGs, EDMGs, §50.54(x) or suspend security controls).

2.7 Technical Staff

- Provide input for mitigative strategies

2.8 TSC/OSC Computer Specialist

- Support the setup of systems and equipment within the facility.
- Monitor facility equipment (computer related and communications) to ensure adequate operation.
- Resolve any IT related malfunctions.

2.9 TSC Operations Manager

- Manage the activities of the TSC Operations staff.
- Assist with emergency classification.

## APPENDIX 4

## Emergency Response Organization Responsibilities

- Provide technical assistance communication path to the Shift Manager.
- Support the establishment of plant/station response priorities.
- Provide operations support for accident detection and assessment.
- Recommend operations actions to the Shift Manager in support of restoration and accident mitigation.
- Analyze and develop extreme measures actions (SAMGs, EDMGs, §50.54(x) or suspend security controls).
- Coordinate between CR, OSC and TSC to set OSC team task priorities.
- Coordinate operations activities outside of the Control Room between the Shift Manager and OSC.
- Provide input for facility briefs and updates.

2.10 ENS Communicator

- Provide event data and plant information to the NRC via the ENS.
- Verify Emergency Response Data System (ERDS) operation.
- Monitor assigned communication line and provide key information to facility staff.
- Monitor event information on the facility display systems.

2.11 TSC Operations Communicator

- Communicate key information between the facilities over the Operations Status Line.
- Monitor assigned communication line and provide key information to facility staff.
- Display, monitor and trend plant data and event information on the facility display systems.

2.12 CR Operations Communicator

- Communicate key information between the facilities over the Operations Status Line
- Monitor assigned communication line and provide key information to facility staff.

2.13 Maintenance Manager

- Provide input into mitigative strategies.
- Coordinate between CR, OSC and TSC to set OSC team task priorities.
- Coordinate repair and OSC team task information between the TSC and OSC.
- Provide input for facility briefs and updates.

2.14 TSC Radiation Protection Manager

## APPENDIX 4

## Emergency Response Organization Responsibilities

- Manage and direct the radiological activities of the RP personnel.
- Ensure additional personnel and/or equipment is arranged for, as necessary.
- Provide radiological support for accident detection and assessment.
- Monitor, evaluate and communicate conditions involving any release of radioactivity.
- Provide support and logistics for site evacuation activities.
- Evaluate the need for and ensure proper use of KI.
- Ensure habitability is established and maintained for occupied onsite areas.
- Ensure proper emergency exposure controls are taken for personnel.
- Provide radiological assistance for planning rescue operations and repair team monitoring.
- Direct personnel decontamination activities.
- Provide radiological assistance for the transfer of injured and/or contaminated personnel.
- Provide input for facility briefs and updates.

2.15 Security Coordinator

- Integrate ERO activities with the ICP response activities.
- Manage the activities of the site security force.
- Request and coordinate emergency activities with Local Law Enforcement Agencies (LLEAs).
- Provide security related communications with the NRC.
- Direct accountability and search & rescue activities.
- Direct site evacuation activities.
- Direct site access controls activities.
- Coordinate security activities between the SSS and OSC.
- Determine radiation protection measures for security force personnel and law enforcement agency personnel on site.
- Provide input for facility briefs and updates.

2.16 TSC Administrative Staff

- Perform administrative and logistic support functions for facility personnel.
- Establish and maintain facility accountability.

## APPENDIX 4

## Emergency Response Organization Responsibilities

### 3.0 Operations Support Center (OSC):

3.1 OSC Director

- Activate the Facility.
- Manage the operation of the facility.
- Develop ERO shift relief rosters for the facility.
- Ensure flow of information within and between the emergency response facilities.
- Support the establishment of plant / station response priorities.
- Direct accountability and search & rescue activities.
- Establish and maintain facility accountability.
- Coordinate between CR, OSC and TSC to set OSC team task priorities.
- Coordinate OSC team dispatch and control.
- Conduct facility briefs and updates.
- Participate in the Inter-Facility Briefing to communicate and obtain event and response information.

3.2 Assistant OSC Director

- Coordinate between CR, OSC and TSC to set OSC team task priorities.
- Participate with OSC team dispatch and control.
- Assemble and dispatch OSC and offsite monitoring teams.
- Provide input for facility briefs and updates.

3.3 OSC Group, Chemistry and Operations Leads

- Manage OSC manpower needs.
- Assist with formation of OSC teams.
- Participate with OSC team dispatch and control.
- Provide technical support to dispatched OSC teams.

3.4 OSC Group, Chemistry and Operations Personnel

- Perform job duties as an OSC team member.

3.5 OSC Radiation Protection (RP) Lead

- Manage OSC manpower needs.
- Brief and dispatch the onsite/offsite radiation monitoring teams.
- Monitor in-plant radiological conditions.
- Ensure habitability is established and maintained for occupied onsite areas.
- Participate with OSC team dispatch and control.
- Coordinate RP support for OSC teams.
- Track OSC Team emergency exposure.

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## Emergency Response Organization Responsibilities

- Implement appropriate protective measures for OSC personnel.
- Establish OSC and plant access radiological controls.
- Provide input for facility briefs and updates.

3.6 OSC Radiation Protection Technicians(s)

- Perform habitability monitoring in occupied areas.
- Perform job duties as an OSC team member.

3.7 OSC Team Tracker

- Maintain Team Tracking Status display.
- Participate with OSC team dispatch, control and tracking.
- Track and maintain communications with OSC teams.

3.8 OSC Operations Communicator

- Communicate key information between the facilities over the Operations Status Line
- Monitor the Operations Status Line and announce key information to facility staff.
- Display, monitor and trend plant data and event information on the facility display systems.

3.9 OSC Administrative Staff

- Perform administrative and logistic support functions for facility personnel.

### 4.0 Corporate Emergency Operations Facility - Offsite ERO

4.1 Emergency Director

NOTE: * Indicates Non-Delegable responsibilities when performing Emergency Director duties.

- Assume overall command and control of emergency response.
- Ensure all EXELON emergency response facilities are properly staffed and activated.
- Direct and approve offsite emergency notifications to state and local authorities.*
- Make Protective Action Recommendations to offsite authorities.*
- Integrate ERO activities with the Incident Command Post (ICP) response activities.
- Authorize and prioritize requests for external assistance (governmental) as necessary.

## APPENDIX 4

## Emergency Response Organization Responsibilities

- Authorize and prioritize requests for external assistance (offsite technical support, manpower) as necessary.
- Ensure other organization's management/decision makers (NRC, State, EXELON, etc.) are kept informed of the emergency situation.
- Ensure flow of information within and between the emergency response facilities.
- Approve technical content of media statements.
- Coordinate integration of the NRC site team.
- Establish a recovery plan and organization.
- Conduct facility briefs and updates.
- Conduct an Inter-Facility briefings to communicate and obtain event and response information.

4.2 EOF Director

- Activate the Facility.
- Manage the operation of the facility.
- Assist offsite agency personnel responding to the facility.
- Coordinate integration of the NRC site team.
- Support the completion of timely offsite event notifications to State and local authorities.
- Evaluate conditions and determine recommendations for PARs.
- Assist in the development of recovery plans.
- Participate in the Inter-Facility briefing to communicate and obtain event and response information.
- Provide input for facility briefs and updates.

## APPENDIX 4

## Emergency Response Organization Responsibilities

4.3 EOF Technical Advisor

- Monitor plant status and Control Room activities.
- Provide input for facility briefs and updates.

4.4 EOF Operations Communicator

- Communicate key information between the facilities over the Operations StatusLine.
- Monitor assigned communication line and provide key information to facility staff.
- Display, monitor and trend plant data and event information on the facility display systems.

4.5 EOF Logistics Manager

- Ensure ERO personnel have been properly notified and are responding to the facilities.
- Oversee staffing of EOF and assist with staffing for other facilities.
- Develop ERO shift relief rosters for the facility.
- Coordinate ERO shift relief rosters for all facilities and the notification of personnel.
- Manage the administrative support staff.
- Review and ensure facility displays are maintained current.
- Manage the procurement and logistical support activities for the onsite and offsite emergency response personnel and facilities.
- Monitor and maintain access controls for the facility.
- Communicate with and coordinate support for ERO responders or plant personnel sent offsite to relocation areas.
- Provide input for facility briefs and updates

4.6 EOF/JIC Computer Specialist

- Support the setup of systems and equipment within the facility.
- Monitor facility equipment (computer related and communications) to ensure adequate operation.
- Resolve any IT related malfunctions.
- Assist in operation of JIC audio visual equipment.

4.7 EOF Administrative Staff

- Callout ERO relief shift.
- Set up EOF equipment in preparation for facility activation.
- Perform administrative and logistic support functions for facility personnel.

## APPENDIX 4

## Emergency Response Organization Responsibilities

4.8 EOC Communicator

- Monitor plant conditions and event response activities.
- Provide information updates to and address questions and support requests from the offsite liaisons.
- Notify and brief external agencies and groups (INPO, ANI) of the emergency event.
- Provide input for facility briefs and updates.

4.9 State Liaison

- Communicate EOC / ICP actions and decisions to the EOF.
- Provide technical support and information to the EOC / ICP.

4.10 County Liaison(s)

- Communicate EOC / ICP actions and decisions to the EOF.
- Provide technical support and information to the EOC / ICP.

4.11 EOF Radiation Protection Manager

- Manage and direct the radiological activities of the Offsite RP personnel.
- Coordinate activities with the external agency field monitoring teams.
- Coordinate the comparison and exchange of dose assessment results with offsite agency personnel.
- Monitor, evaluate and communicate conditions involving any release of radioactivity.
- Oversee the performance and evaluate the results of dose projection activities.
- Perform dose assessment.
- Oversee the performance and evaluate the results of Offsite Monitoring Team (OMT) activities.
- Provide support and logistics for site evacuation activities.
- Evaluate the need for and ensure proper use of KI.
- Evaluate conditions and determine recommendations for PARs.
- Ensure proper emergency exposure controls are taken for personnel.
- Provide assistance to state and federal agencies for ingestion pathway radiological activities.
- Provide input for facility briefs and updates.

4.12 HPN Communicator

- Provide event data and plant information to the NRC via the HPN.
- Monitor assigned communication line and provide key information to facility staff.

## APPENDIX 4

## Emergency Response Organization Responsibilities

4.13 Dose Assessor

- Monitor, evaluate and communicate conditions involving any release of radioactivity.
- Perform dose assessment.
- Evaluate conditions and determine recommendations for PARs.

4.14 Environmental Coordinator

- Direct and track Offsite Monitoring Team activities.
- Coordinate activities with the external agency field monitoring teams.
- Establish and maintain OMT communications.
- Maintain and update the radiological status displays.
- Coordinate the receipt, analysis, storage and transfer of field monitoring samples.
- Record and report field monitoring survey, sample and exposure information.

4.15 Offsite Monitoring Teams

- Establish and maintain OMT communications.
- Perform equipment checks and inventories in preparation of deployment.
- Track radiological plumes.
- Perform and report results of radiation surveys and environmental sampling.
- Coordinate the receipt, analysis, storage and transfer of field monitoring samples.
- Communicate exposure status to the Environmental Coordinator.

4.16 State/Local Communicator

- Perform offsite emergency notifications to state and local authorities.

**5.0 Public Information ERO (JIC Staff)**

5.1 JIC Manager

- Activate the Facility.
- Manage the operation of the facility.
- Assist offsite agency personnel responding to the facility.
- Coordinate integration of the NRC Site Team.
- Provide liaison to the NRC Site Team.
- Arrange for support for Emergency Alert System (EAS) information.

## APPENDIX 4

## Emergency Response Organization Responsibilities

- Ensure flow of information within and between the emergency response facilities.
- Interface with offsite agency Public Information Officers (PIOs) to coordinate overall information flow to the media and public.
- Coordinate facilitation of the media briefing schedule.
- Ensure news media briefings are held regularly during the course of the emergency.
- Oversee conduct of media briefings.
- Integrate ERO activities with the Incident Command Post (ICP) response activities
- Assist in the development of recovery plans.
- Conduct facility briefs and updates.
- Participate in the Inter-Facility Briefing to communicate and obtain event and response information.

5.2 Company Spokesperson

- Establish periodic contact with the communications personnel in the corporate office.
- Interface with offsite agency PIOs to coordinate overall information flow to the media and public.
- Provide interviews to the media.
- Serve as Company Spokesperson during press conferences at the JIC.
- Participate in the Inter-Facility Briefing to communicate and obtain event and response information.
- Provide input for facility briefs and updates.

5.3 EOF Logistics Manager

- Manage the administrative support staff.
- Develop ERO shift relief rosters for the facility.
- Arrange for logistics support.
- Oversee set-up and testing of JIC equipment.
- Maintain access control to the JIC.
- Provide input for facility briefs and updates.
- Oversee collection of technical data and station activities for drafting Media Statements and answering JIC questions.
- Coordinate preparation, review and distribution of Media Statements.
- Obtain ED approval for the technical content of Media Statements.
- Keep JIC staff informed of plant status and EXELON emergency response activities.

## APPENDIX 4

## Emergency Response Organization Responsibilities

5.4 News Writer

- Prepare draft Media Statements.
- Develop public information materials (bulletins, backgrounders and chronologies).

5.5 JIC Technical Advisor

- Provide technical expertise to the JIC staff.
- Assist the News Writer with development of technically accurate media statements.
- Provide answers to technical questions from the news media regarding the emergency situation.
- Periodically monitor EOF/TSC briefings and Operations Status Line to obtain information.
- Provide technical information support to the Company Spokesperson.
- Monitor event information on the facility display systems.
- Provide input for facility briefs and updates.

5.6 Media Liaison

- Ensures media is informed of protocol and schedules established for media briefings.
- Coordinate preparations for media briefings.
- Distribute media statements to the media in the media briefing area.
- Coordinate media relations in JIC and update media between press conferences.
- Coordinate special interviews and facility tours for the media.
- Coordinate JIC briefing area preparation and establish briefing protocol.

5.7 JIC Administrative Staff

- Assist in badging and direction of members of the media to proper work locations.
- Perform administrative and logistic support functions for facility personnel.
- Distribute media materials to the press.

5.8 Media Monitoring / Rumor Control Coordinator

- Supervise media monitoring and Inquiry Phone Team personnel.
- Review Media Monitoring team information for trends, misinformation and rumors.
- Review Phone Team information for trends, misinformation and rumors.
- Ensure adequate staff is available to perform media monitoring and phone team functions.

## APPENDIX 4

## Emergency Response Organization Responsibilities

- Provide input for facility briefs and updates.

5.9 Inquiry Phone Team
- Respond to and log phone inquiries from the media and the public.
- Monitor telephone lines for trends, misinformation and rumors.

5.10 Media Monitoring Team
- Monitor media coverage of the event for trends

5.11 JIC Security
- Provide badging and access controls for the facility.

**6.0** In addition to the position specific responsibilities listed above all ERO members have the following general responsibilities:
- Perform position turnover for protracted events
- Respond as directed when notified of a declared event
- Maintain personal event logs and records in support of the after-action report
- Restore area and materials upon event termination
- Apply fundamental ERO knowledge in the performance of your ERO duties
- Properly use ERO procedures and checklists in the performance of your ERO duties
- Acquire & maintain qualification in your assigned ERO position
- Apply human performance error reduction techniques in the performance of you ERO duties

APPENDIX 5

**OSWEGO COUNTY RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN**
**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN**

The Oswego County Radiological Emergency Preparedness Plan and the New York State Radiological Emergency Preparedness Plan are submitted under separate cover but are considered to be incorporated as part of this document by reference. Locations of maps to relocation centers in host areas as required by NUREG 0654 II.J.10a are contained within the Host County Plan and is included by reference to the Oswego County Radiological Emergency Preparedness Plan.

APPENDIX 6
TYPICAL ADDITIONAL SUPPORT RESOURCES

1. AIRFIELDS

a. Greater Rochester International
1200 Brooks Avenue
Rochester, NY 14624
Tel. (585) 753-7020

b. Oswego County Airport
40 Airport Dr.
Fulton, NY 13069
Tel. (315) 591-9130, (315) 591-9132

c. Griffiss International Airport
592 Hangar Rd
Rome, NY 13342
Tel. (315) 736-4171 - Airport Manager

d. Syracuse Hancock International Airport
Hancock Field
Syracuse, NY 13212
Tel. (315) 374-4629 Director of Operations,
Operations Department (315) 374-4403, 4405
(315) 455-6218 (Air Traffic Control)

e. Watertown International Airport
22529 Airport Dr.
Dexter, NY 13634
Tel. (315) 639-3809

2 COMMAND POSTS

a. NMPNS Emergency Operations Facility
County Route 176 & Airport Rd.
R.D.#2 Box 656
Fulton, NY 13069

APPENDIX 6
TYPICAL ADDITIONAL SUPPORT RESOURCES

2. COMMAND POSTS (Cont.).

b. NMPNS Technical Support Center
NMPNS
Lake Road P.O. Box 63
Lycoming, NY 13093
Tel. (315) 349-2487

c. Joint Information Center
Oswego County Airport
County Route 176
Volney, NY 13069
Tel. (315) 592-3700

d. New York State Emergency Operations Center
Emergency Management Office
Public Security Building, State Campus
Albany, NY 12232
Tel. (518) 457-9997

e. Oswego County Emergency Operations Center
200 North Second Street
Fulton, NY 13069
Tel. (315) 591-9150

3. TELEPHONE SYSTEMS IN 10-MILE EPZ

a. Windstream
108 S. 2nd St.
Fulton, NY 13069
(800) 800-6609, (315) 592-8246

b. Verizon
1095 Avenue of the Americas
New York, NY 10036
(800) 579-8702, (800) 890-6611 (Repair No.)

APPENDIX 6
TYPICAL ADDITIONAL SUPPORT RESOURCES

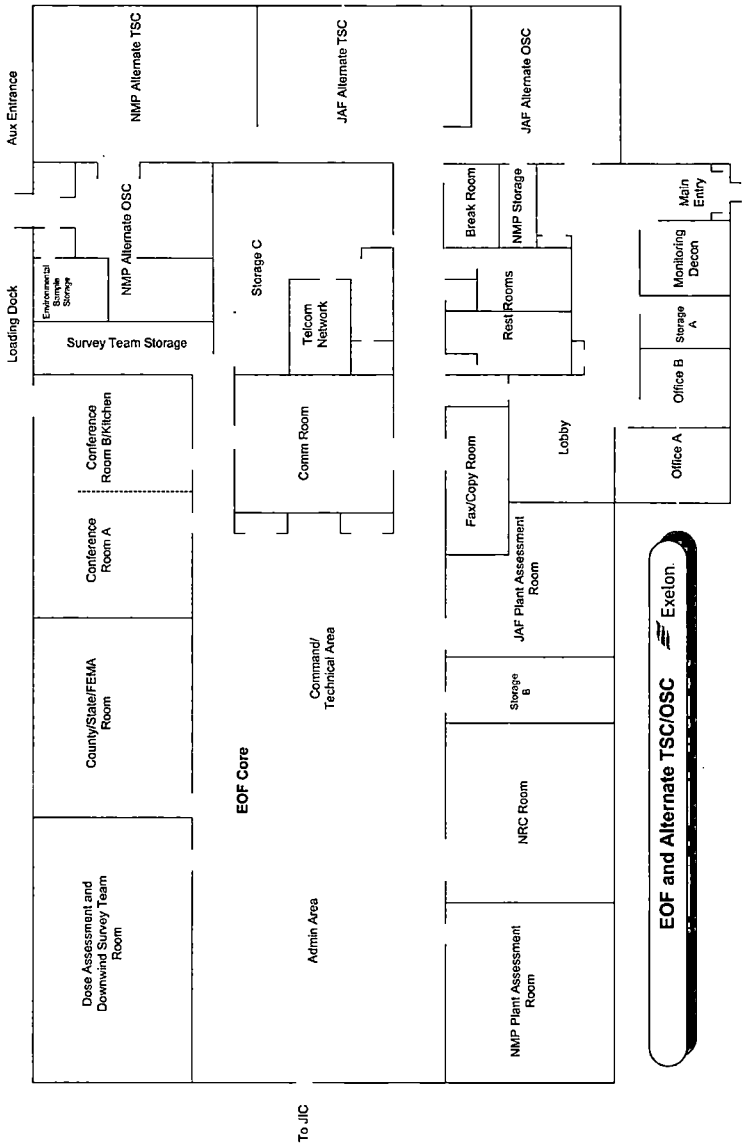
4. NINE MILE POINT UHF RADIO SYSTEM

   a. Base, mobile, and portable transceivers

   b. In plant and off-site repeaters

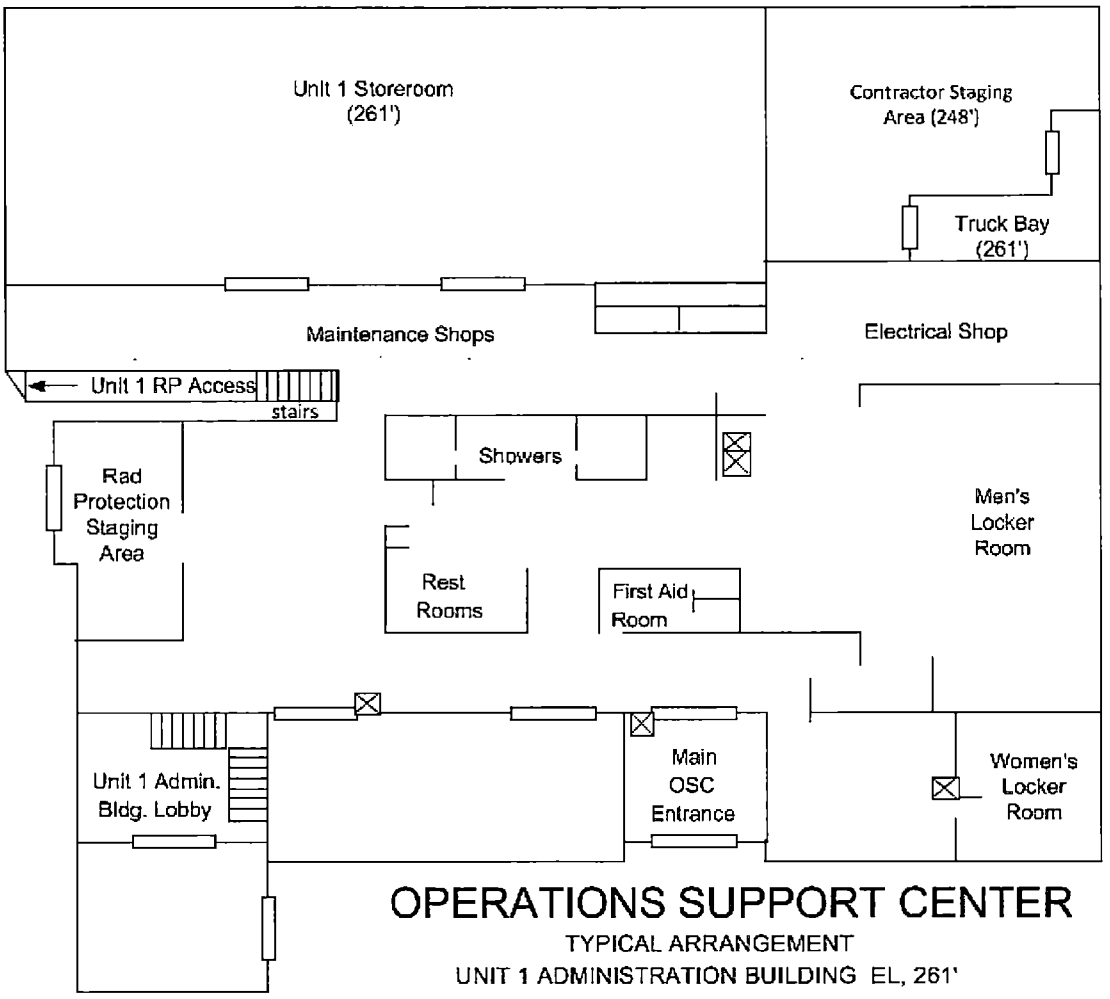
## APPENDIX 7 - RESOURCE MATERIAL

EMERGENCY OPERATIONS FACILITY
(Typical Arrangement)

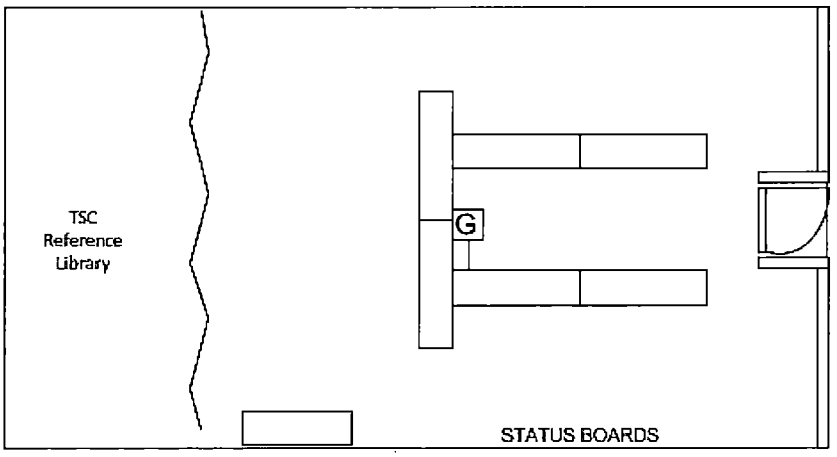


## APPENDIX 7 - RESOURCE MATERIAL

OPERATIONS SUPPORT CENTER (Typical Arrangement)




OPERATIONS SUPPORT CENTER
TYPICAL ARRANGEMENT
UNIT 1 ADMINISTRATION BUILDING EL, 261'




**KEY**

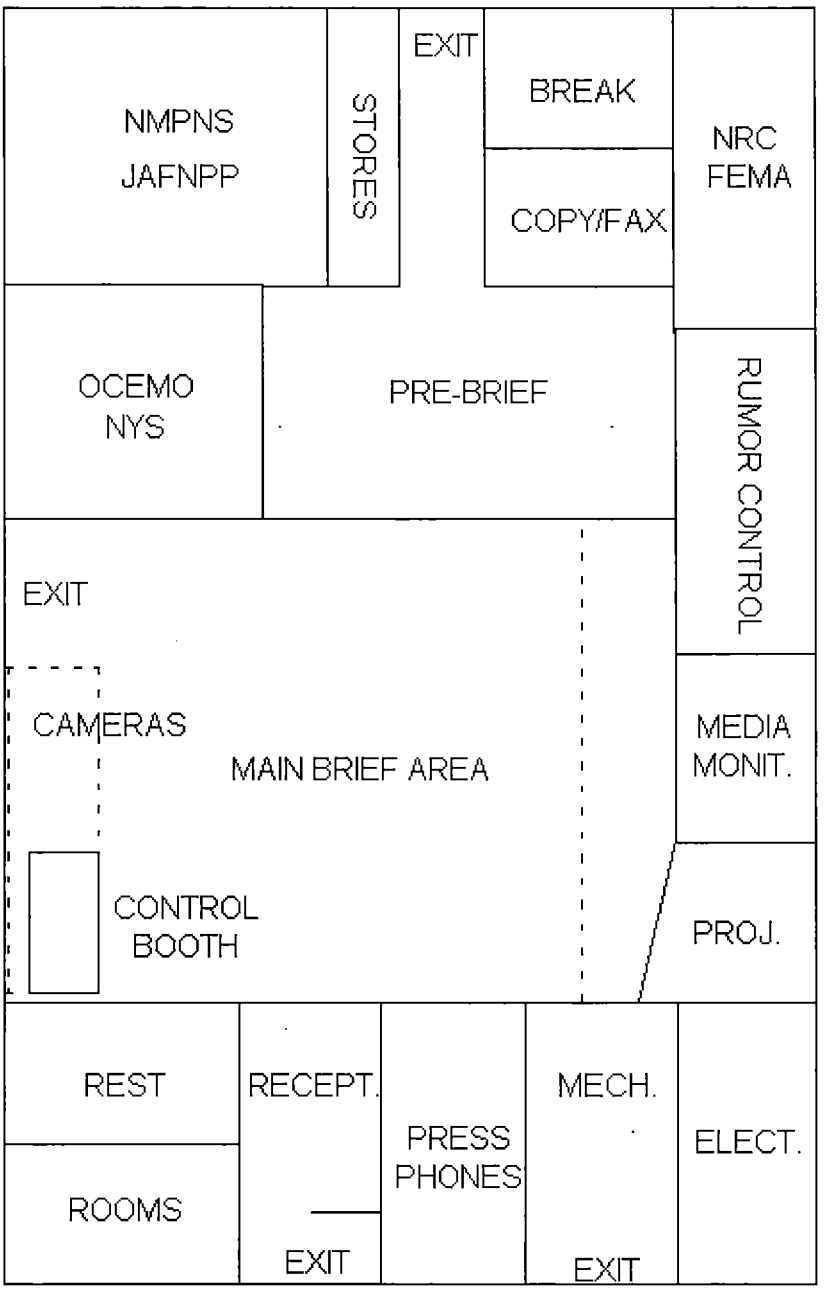
G Gaitronics

Emergency Accountability Reader

DETAIL OF THE
**OPERATIONS SUPPORT CENTER**
***CORE AREA*** **EL. 248'**
TYPICAL ARRANGEMENT

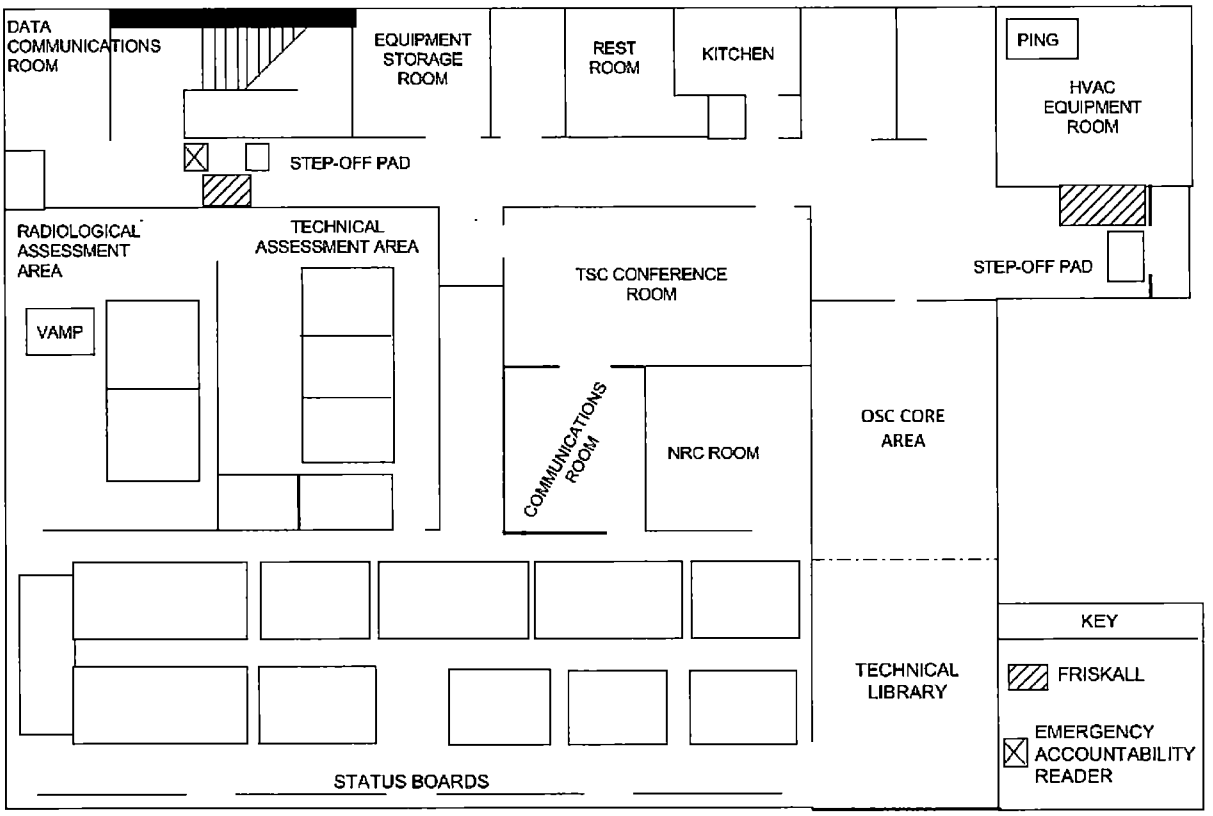
JOINT INFORMATION CENTER
(Typical Arrangement)

## APPENDIX 7 - RESOURCE MATERIAL



## APPENDIX 7 - RESOURCE MATERIAL

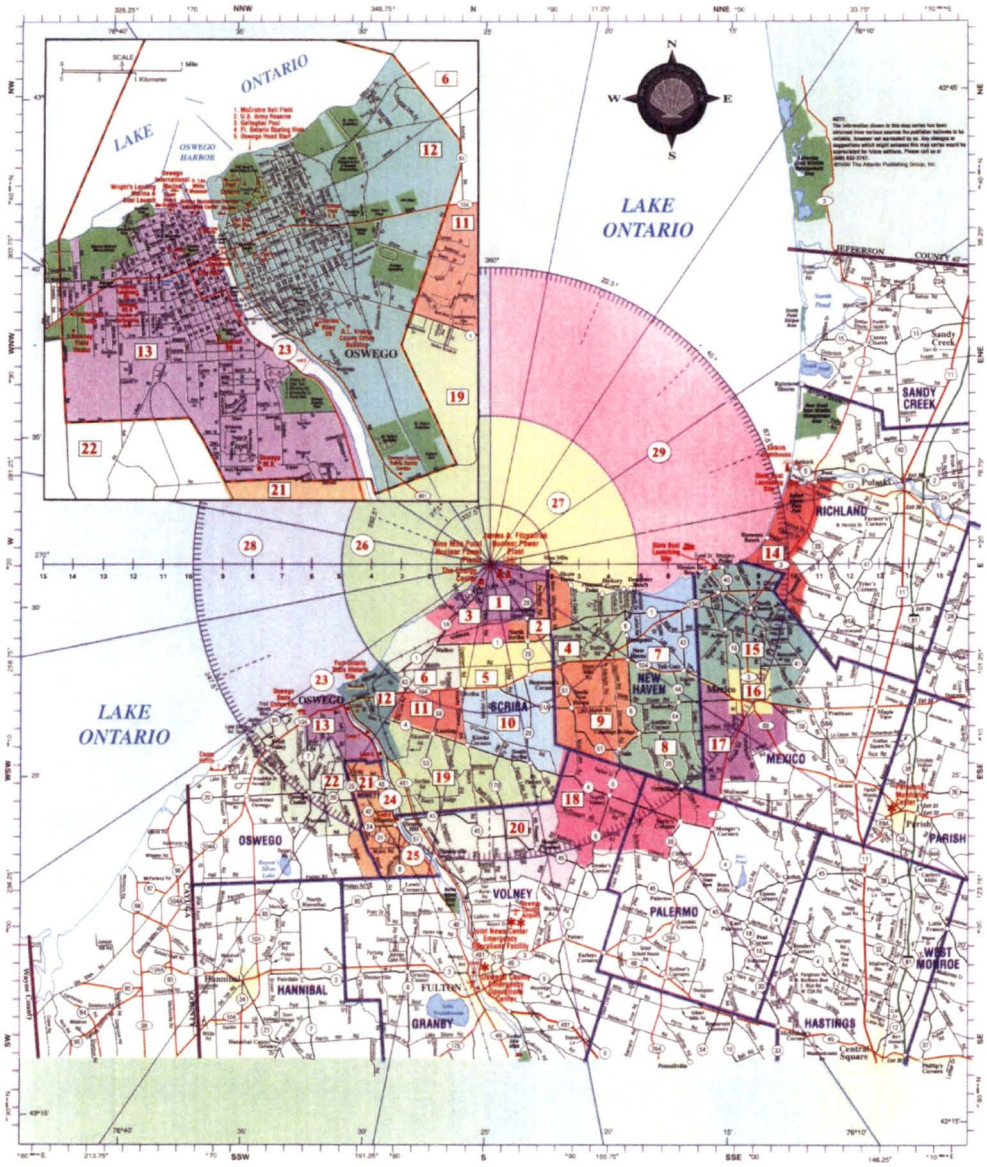
TECHNICAL SUPPORT CENTER
(Typical Arrangement)




TECHNICAL SUPPORT CENTER
TYPICAL ARRANGEMENT
UNIT 1 ADMINISTRATION BUILDING EL.248'

## APPENDIX 7 - RESOURCE MATERIAL

TEN MILE EMERGENCY PLANNING ZONE




**Ten Mile Emergency Planning Zone (Plume Exposure Pathway)**

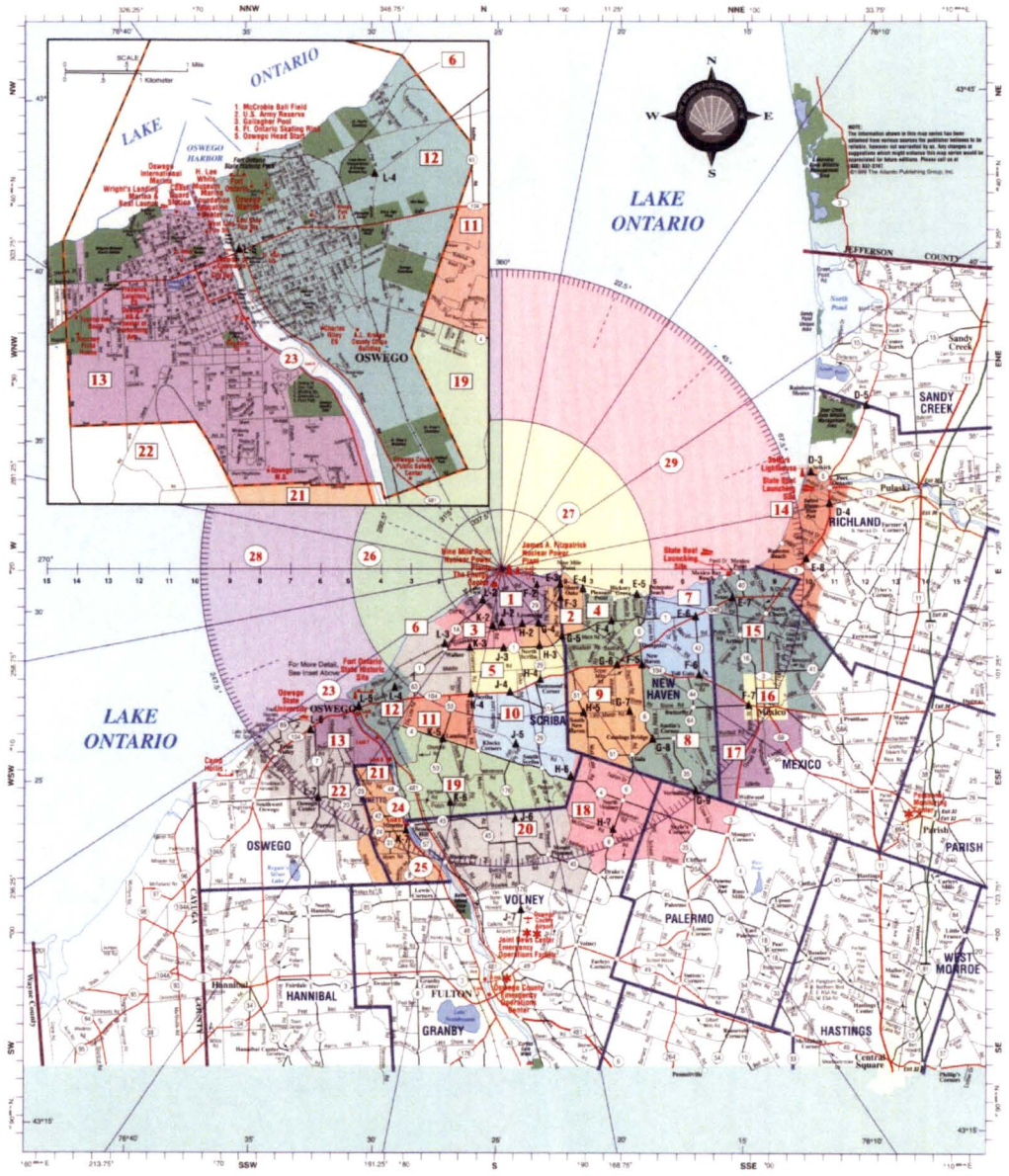
Interstate Highways
U.S. & State Highways
County Roads
Town Roads
County Boundaries
Township Boundaries
City and Villages
Railroads
Emergency Response Planning Area (ERPA) & Number
ERPA- Water Area Numbers
Emergency Facility

**Nine Mile Point / James A. Fitzpatrick Radiological Emergency Plans and Procedures**

NINE MILE POINT
EMERGENCY PREPAREDNESS

# APPENDIX 7 - RESOURCE MATERIAL

## OFFSITE SURVEY LOCATIONS




**Offsite Survey Locations**

Interstate Highways
U.S. & State Highways
County Roads
Town Roads
County Boundaries
Township Boundaries
City and Villages
Railroads
Emergency Response Planning Area (ERPA) & Number
ERPA- Water Area Numbers
Offsite Survey Locations ▲ L-6
Emergency Facility

**Nine Mile Point / James A. Fitzpatrick Radiological Emergency Plans and Procedures**

NINE MILE POINT
EMERGENCY PREPAREDNESS

## APPENDIX 7 - RESOURCE MATERIAL

PRIMARY EVACUATION ROUTES


**Primary Evacuation Routes**

Interstate Highways
U.S. & State Highways
County Roads
Town Roads
County Boundaries
Township Boundaries
City and Villages
Railroads
Emergency Response Planning Area (ERPA) & Number
ERPA- Water Area Numbers
Primary Evacuation Routes
Emergency Facility

**Nine Mile Point / James A. Fitzpatrick Radiological Emergency Plans and Procedures**

NINE MILE POINT
EMERGENCY PREPAREDNESS

## Appendix 8

## Emergency Plan Commitments

| Section(s)/Step Number | NCTS Number | Description |
|---|---|---|
| 3.2.1, 4.1.3<br>5.2, 5.4, 7.1.4 | NCTS #503441-02 | Revise E Plan and procedures to more clearly follow the intent of the NRC rule. Delete Sympathetic Alert. |
| 5.2.2 | NCTS #504223-26 | Identify the control room staffing requirements during Modes 1, 2, 3 and when the emergency plan is activated |

**Attachment 7**

**EP-AA-1014, Revision 2, *"Exelon Nuclear Radiological Emergency Plan Annex for James A. FitzPatrick Station"***

**Emergency Plan Annex Revision**

Exelon Generation®

EP-AA-1014
Revision 2

# EXELON NUCLEAR

# RADIOLOGICAL EMERGENCY PLAN ANNEX FOR JAMES A. FITZPATRICK STATION

## REVISION HISTORY

| | | |
|---|---|---|
| Revision 0: 03/18 | | |
| Revision 1: 04/18 | | |
| Revision 2: 05/19 | | |
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# RADIOLOGICAL EMERGENCY PLAN ANNEX FOR JAMES A. FITZPATRICK STATION

## TABLE OF CONTENTS

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A. Emergency Plan Implementing Procedures
B. Policy Statement
C. Letters of Agreement
D. New York State Plan and Procedures
E. Oswego County Plan and Procedures
F. Typical Support Companies
H. Public Information Program
I. Emergency Equipment Kits
J. Supporting Documents
L. NUREG-0654 Cross Reference
N. Typical Federal Support Resources

## ADDENDUMS

Addendum 1, James A. FitzPatrick Nuclear Power Plant On-Shift Staffing Analysis Report
Addendum 2, James A. FitzPatrick Nuclear Power Plant Evacuation Time Estimates
Addendum 3, James A. FitzPatrick Nuclear Power Plant Emergency Action Levels

**RADIOLOGICAL EMERGENCY PLAN ANNEX**

FOR JAMES A. FITZPATRICK STATION

# Section 1: Introduction

As required in the conditions set forth by the Nuclear Regulatory Commission (NRC) for the operating licenses for the Exelon Nuclear Stations, the management of Exelon recognizes its responsibility and authority to operate and maintain the nuclear power stations in such a manner as to provide for the safety of the general public.

The Exelon Emergency Preparedness Program consists of EP-AA-1000, Exelon Nuclear Standardized Radiological Emergency Plan (henceforth known as the Standard Plan), Station Annexes, emergency plan implementing procedures, and associated program administrative documents. The Exelon Nuclear Standardized Radiological Emergency Plan outlines the basis for response actions that would be implemented in an emergency. Planning efforts common to all Exelon Nuclear stations are encompassed within the Emergency Plan.

This document serves as the Radiological Emergency Plan Annex for FitzPatrick Station and contains information and guidance that is unique to the station. This includes facility geography and location for a full understanding and representation of the station's emergency response capabilities. The Station Annex is subject to the same review and audit requirements as the Exelon Nuclear Standardized Radiological Emergency Plan per EP-AA-120, "Emergency Plan Administration".

## 1.1 Site Description

The James A. FitzPatrick Nuclear Power Plant (JAFNPP) is a single-unit electric power generating plant equipped with a boiling water reactor rated at approximately 2536 megawatts thermal with a net electrical output of approximately 850 megawatts. The plant's principal components are a nuclear steam generating system, a turbine-generator unit, 345 kv and 115 kv switchyards, lake water pumping facilities complete with intake and discharge structures, and other auxiliary equipment.

The plant consists of five principal buildings interconnected to form one structure approximately 640 feet long and 250 feet wide. These buildings are the turbine building, the reactor building, the radwaste building, the pump house and screen well building, and the administrative building. There is a 385 foot high stack located approximately 400 feet south of the plant. The 345 kV and 115 kV switchyards are approximately 200 feet west of the plant. Figure 1.1 shows a map of the site. The plant buildings and switchyards use approximately one percent of the total site area. About 600 acres of the site has been left in its natural condition.

The plant site is on the shore of Lake Ontario in the town of Scriba, Oswego County, New York. The plant is located adjacent to and east of the Nine Mile Point Nuclear Station (NMPNS) which is operated by another Corporation. Figure 1.5 shows a map of the combined NMPNS/JAFNPP Site. Exclusion

distances for the NMPNS/JAFNPP site are 3,000 feet to the east, over a mile to the west and approximately one and one-half miles to the southern site boundary. Markers have been placed in Lake Ontario denoting an exclusion distance north of the plant site. These markers are removed prior to the onset of the winter season. For the purpose of off-site emergency planning, the NMPNS/JAFNPP sites are considered to be one exclusion area. This exclusion area may also be referred to as the site boundary or combined owner controlled areas.

## 1.2 Purpose

The Emergency Preparedness plan for the James A. FitzPatrick Nuclear Power Plant consists of the Exelon Nuclear Standardized Radiological Emergency Plan, Fitzpatrick Station Annex, off-site radiological emergency plans, and procedures for protection of plant personnel and the general public. The JAFNPP Emergency Plan provides guidance for response to both onsite and off-site emergency situations. This JAFNPP Emergency Plan provides guidance for response to both onsite and off-site emergency situations. The plan provides responses to all levels of emergencies that have an actual or potential degradation of the level of safety at FitzPatrick, including hostile action. To this end, this plan has been prepared in general accordance with NUREG-0654/ FEMA-REP-1, Revision 1, *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants*, November 1980.

This plan presents the organization and emergency response activities that will be performed to provide an organized response to an accident. Detailed actions are described in the Emergency Plan Implementing Procedures. Inter relationships of this plan with procedures, other plans and emergency arrangements include:

A. Detailed actions to be taken by plant personnel in response to emergency conditions are described in Emergency Plan Implementing Procedures. A listing of JAFNPP Emergency Plan Implementing Procedures is contained in Appendix A.

B. Plant Operating Procedures are coordinated with the Emergency Plan and Implementing Procedures to ensure appropriate actions are taken on a timely basis.

C. The FitzPatrick Radiation Protection Procedures define such areas as radiological controls and precautions, personnel decontamination and instructions for health physics activities. These instructions are implemented on a routine basis and may be used during emergency situations as necessary. Specific Implementing Procedures, such as those necessary for emergency radiological surveys, are included in the Emergency Plan Implementing Procedures.

D. The FitzPatrick Security and Safeguards Plans and Implementing Procedures

and the Emergency Plan and Implementing Procedures are coordinated to ensure compatibility. The Oswego County Radiological Emergency Preparedness Plan and the New York State Radiological Emergency Plan, in conjunction with this Plan and Implementing Procedures, provide for early and redundant notification schemes, continual assessment and update, and the initiation of protective actions.

E. The concept of JAF emergency operations and its relationship to the Federal, State, County and private organizations is described in Section 5.0 and 6.0. A block diagram which illustrates these interrelationships is included in Figure 5.1.

## 1.3 Concept

The JAFNPP Emergency Plan describes the emergency response organization that will be in place during an emergency and describes the interfaces with and responsibilities of the corporate, state, county, federal, and private organizations.

### 1.3.1 Emergency Plan (Standard Plan, Station Annex, and Addendums)

The Emergency Plan ensures that emergency situations, including those involving radiation or radioactive material, are handled properly and efficiently. The Emergency Plan covers a spectrum of emergencies from minor localized emergencies to major emergencies involving off-site emergency response. The Emergency Plan provides for advance planning required to develop implementation methods. The Emergency Plan describes:

1. An emergency classification system used at the plant and emergency measures to be taken that are compatible with those used by Federal, State and county emergency response agencies and organizations.
2. Organizational control of emergencies by on-site, off-site, and augmentation organizations, including identification of normal and emergency operating organizations.
3. Identification of Federal, State, and County authorities and agencies and other outside organizations that are available for assistance, including plans and agreements pertaining to participating off-site organizations and agencies.
4. Requirements for ensuring a high degree of emergency preparedness and operational readiness such as through training, drills, reviews, and audits.
5. Information pertaining to on-site and off-site emergency facilities and equipment such as the Emergency Operations Facility, Technical Support Center, Operational Support Center, and Joint Information Center.
6. Figures and tables that display information and data such as organizations, maps, and population distributions.

1.3.2 Emergency Plan Implementation Procedures

Emergency Plan Implementation Procedures are used in conjunction with plant operating, chemistry, radiological control, security, and other technical procedures, as appropriate, to respond to emergency conditions and mitigate accident consequences.

These documents are made available to those individuals, facilities, and organizations where immediate use of such instructions would be required during an emergency.

These documents provide:

1. Specific instructions for emergency organizations including responsibilities, facilities, equipment, emergency classification, and seeking emergency assistance used to implement the Emergency Plan and support implementation of the State Radiological Emergency Response Plan.
2. Specific authorities and responsibilities for emergency response personnel responsible for assessing emergency conditions and providing steps to be taken to mitigate the consequences of an accident.
3. Specific instructions to ensure prompt actions, notifications, and communications.
4. A record of completed actions.
5. A mechanism for maintaining emergency preparedness.

Emergency Plan Implementation Procedures are developed to respond to a variety of accident scenarios. These include minor events up to core melt situations with unplanned radioactive material release to the environment. While the emergency level(s) listed in the procedures is sufficient to cause their implementation, it is not necessary to implement all Emergency Plan Implementation Procedures under these conditions. Specific procedures may not be used if the actual emergency does not call for their use. For example: a security threat may not result in plant damage and an unplanned release; therefore, radiological monitoring procedures may not be used.

The following types of documents include the Emergency Plan Implementation Procedures:

- Fleet EP Procedures and T&RMs (Training and Reference Materials)
- Station/Region EP procedures and T&RMs
- Position Specific Checklists and Forms

1.3.3 County, State and Federal agencies having lead responsibilities specifically related to this Emergency Plan are:

a. New York State Department of Health (NYSDOH) - The lead State emergency response agency, responsible for requesting necessary monitoring and for activating assessment and evaluation of personnel,

equipment and other resources.

b. New York State Office of Emergency Management (NYSOEM) - Responsible for developing, implementing, and maintaining comprehensive emergency plans and procedures for prompt reactions to potential emergencies at nuclear power plants in New York or in bordering states and adjoining provinces.

c. Oswego County Emergency Management Office (OCEMO) - Designated by local laws and executive orders to coordinate Oswego County's emergency response.

d. U.S. Nuclear Regulatory Commission (NRC) - The cognizant Federal agency responsible for verifying appropriate emergency plans have been implemented and for conducting investigative activities associated with an emergency.

e. U.S. Federal Emergency Management Agency (FEMA) - The Federal agency designated to serve as the contact point for State officials and to coordinate and manage all non-technical aspects of the Federal response.

f. U.S. Department of Energy (DOE) - The Federal agency responsible for coordinating offsite monitoring, evaluation and assessment activities.

1.3.4 Emergency response is categorized by the following four functional areas:

a. Initiation
Initiation of the emergency response occurs with the classification of a situation into one of the four emergency classes: Unusual Event (UE}, Alert, Site Area Emergency, and General Emergency. Based on the level of emergency, the appropriate plant staffing, emergency facility activation, and notification of offsite authorities occurs. Appropriate initial action to alleviate the situation is taken in accordance with plant operating procedures.

b. Assessment
The emergency, and its potential or actual radiological consequences, is assessed by the plant operating and emergency staffs. Onsite plant instrumentation, both fixed and portable, and other parametric measurements provide data for projecting radiological exposures. Offsite, radiological survey teams sample air, effluent water, snow, rain, vegetation, and milk; measure ambient gamma and beta radiation levels; and otherwise evaluate actual environmental levels of radiation to provide radiological data. The most reliable assessment data available are utilized to make offsite and onsite protective action recommendations.

c. Protective and Mitigative action

Based on the assessment, onsite or offsite protective actions may be required. The Shift Emergency Director or Station Emergency Director may implement the plant protective actions of protected area assembly or site evacuation. Only the Shift Emergency or the Corporate Emergency Director may recommend to offsite authorities that the implementation of protective actions is appropriate. These actions may include sheltering or evacuation. It is the responsibility of offsite authorities to evaluate these recommendations and implement any protective actions in accordance with Oswego County Radiological Emergency Preparedness Plans and the New York State Radiological Emergency Preparedness Plan and their respective implementing procedures.

Mitigative actions will be implemented by onsite personnel to alleviate the emergency situation. Onsite personnel may be supported by local offsite organizations in implementing onsite mitigative actions.

d. Recovery

Once the emergency situation has been controlled, recovery begins. Recovery is defined as: restoration of the plant to its pre-emergency conditions. The onsite emergency organization will be supported with assistance from corporate, federal, and private organizations, as needed.

## 1.4 Emergency Planning Zones

There are two Emergency Planning Zones (EPZ). The first is the Plume Exposure Pathway Emergency Planning Zone which is an area approximately 10 miles in radius around the JAFNPP (see Figure 1.2), for which detailed emergency planning consideration of the plume exposure pathway has been given to ensure prompt and effective protective actions for the public. The second is the Ingestion Exposure Pathway Emergency Planning Zone which is an area approximately 50 miles in radius around the JAFNPP (see Figure 1.3), for which emergency planning consideration of the ingestion exposure pathway has been given to ensure effective protective measures for the public.

The area within 10 miles of the James A. FitzPatrick Nuclear Power Plant is located on Lake Ontario and in Oswego County. Oswego County is predominantly rural in nature with the majority of its total land acres consisting of woodland, wetlands and inactive agricultural land. Although active agricultural lands account for only a small part of the total land acres, agriculture is the major land use in the county. In recent years, there has been a trend toward fewer farms and increased residences in low density areas.

Available statistics indicate that the area surrounding the site is primarily woodland with some active agricultural land. The major agricultural activity in Oswego County is dairy, accounting for the greatest percentage of the value of all farm products produced in the county. The major harvested crops are hay, alfalfa, and corn. The major livestock animals are cattle.

The industrial activities within 10 miles of the site are confined principally to the city of Oswego and the community of Scriba, with little industry in the outlying communities of Minetto, Volney, and Mexico. One facility in the immediate area is the NOVELIS manufacturing plant which is located approximately three miles southwest of the site on Route 1. An electrical generating facility has been constructed adjacent to the NOVELIS manufacturing plant.
The public institutions, aside from the schools and churches, within the 10-mile Plume Exposure EPZ of the site are a hospital and a college in the city of Oswego. There are no public institutions within five miles of the site.

A detailed listing of special facilities in Oswego County within the 10-mile Plume Exposure EPZ is presented in the "Oswego County Radiological Emergency Response Plan."

## 1.5 Population

The total 2016 population of the plume exposure pathway EPZ is 41,049. (This data is from 2010 census data as updated in 2016 and is discussed in EP-AA-1014, Addendum 2, Evacuation Time Estimates.) The population density of the immediate area surrounding the site is quite low, with the exception of the city of Oswego whose population in 2015 was 17,787 and the Village of Mexico, located approximately nine miles from the site, which contains about 1,574 residents. According to the 2011 Residence Census performed for the Radiological Environmental Monitoring Program, the nearest permanent resident is on Lake Road, about 0.7 miles east-southeast of the plant. The population distribution within 10 miles of the site is presented in Figure 2.4.

## 1.6 Figures, Forms and Attachments

Figure 1.1 JAFNPP Fenced Area Map
Figure 1.2 Plume Emergency Planning Zone (10 Mile Radius)
Figure 1.3 Ingestion Emergency Planning Zone (50 Mile Radius)
Figure 1.4 Population Distribution by Emergency Response Planning Area
Figure 1.5 Combined NMPNS/JAFNPP Site Map

**Figure 1-1**
**JAFNPP Fenced Area Map**

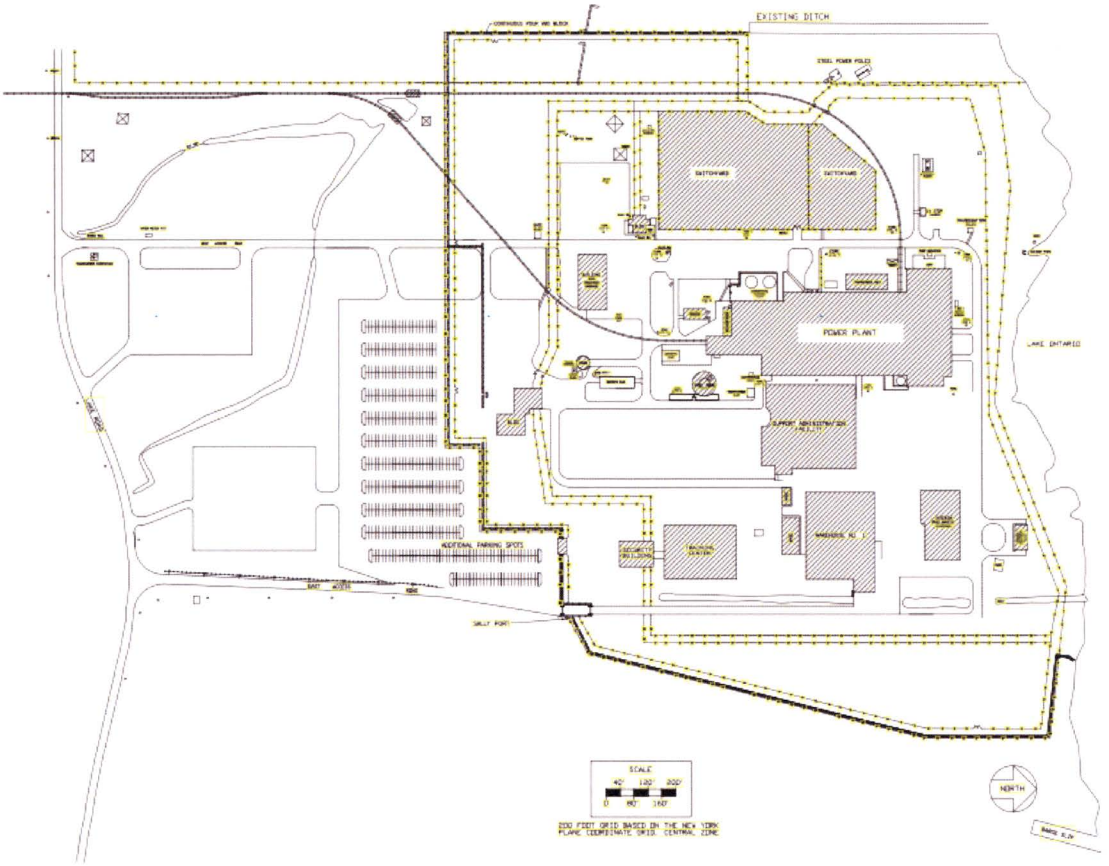


Figure 1-2

Plume Exposure Pathway Emergency Planning Zone

**This page is a large map and can be viewed in the Electronic Data Management System (EDMS).**

To search for the map, do the following in EDMS:

1.) Log onto EDMS
2.) Set the Object Type to: Exelon Record
3.) Set the facility to: Fitzpatrick
4.) Click the search button located at the bottom right
6.) Double click to view the record that displays in the search results screen
7.) The map will appear in Adobe Reader

**NOTE:** Reference to locate Map in Emergency Planning Dept. efiles. G:\EPlan Procedures\Emergency Plan Maps and Figures\MAP 1-Rev-1 - Plume
(Map Number 1) Ten-mile Emergency Planning Zone (Plume Exposure Pathway)

**Figure 1-3**
**Ingestion Exposure Pathway Emergency Planning Zone**

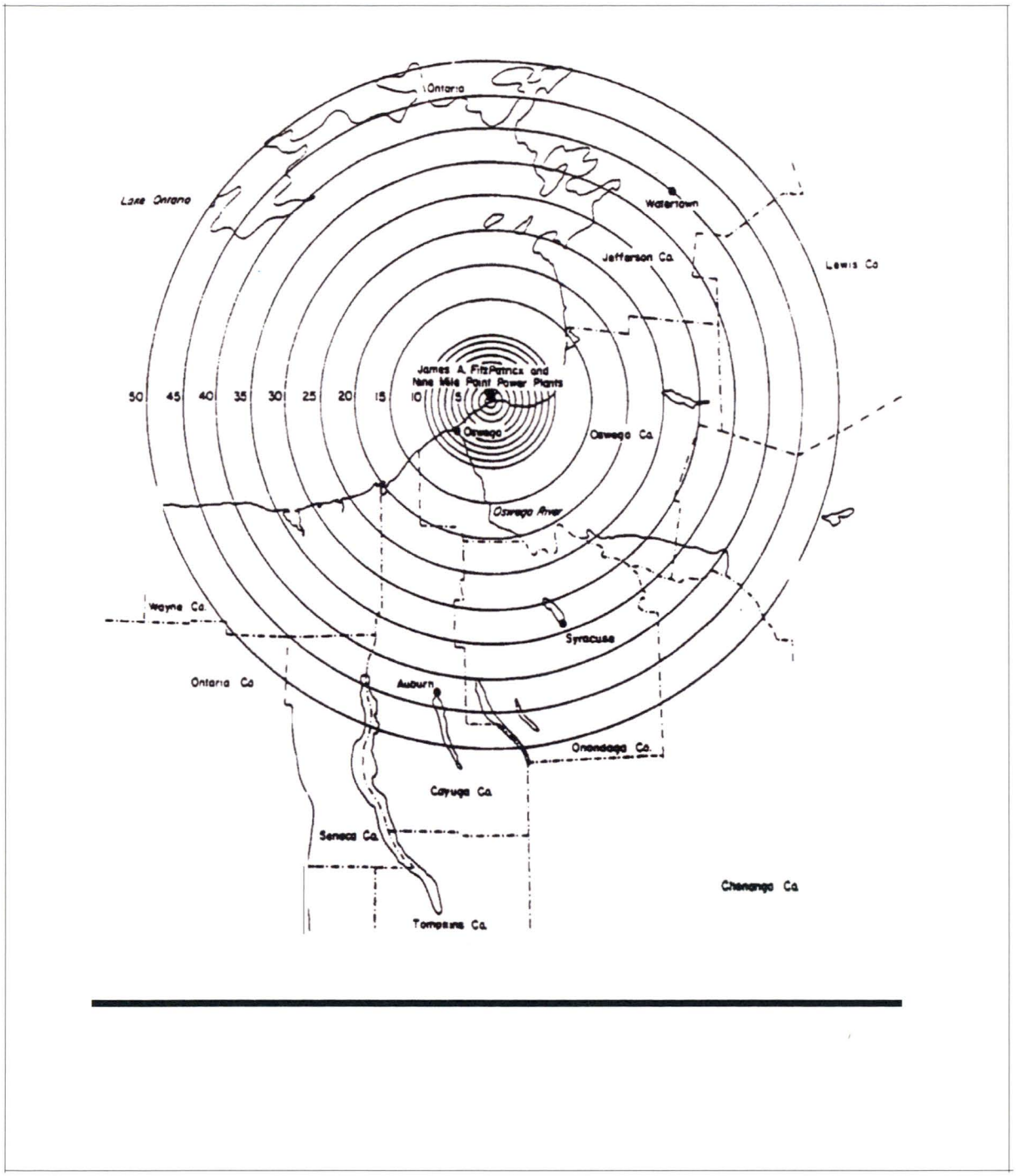
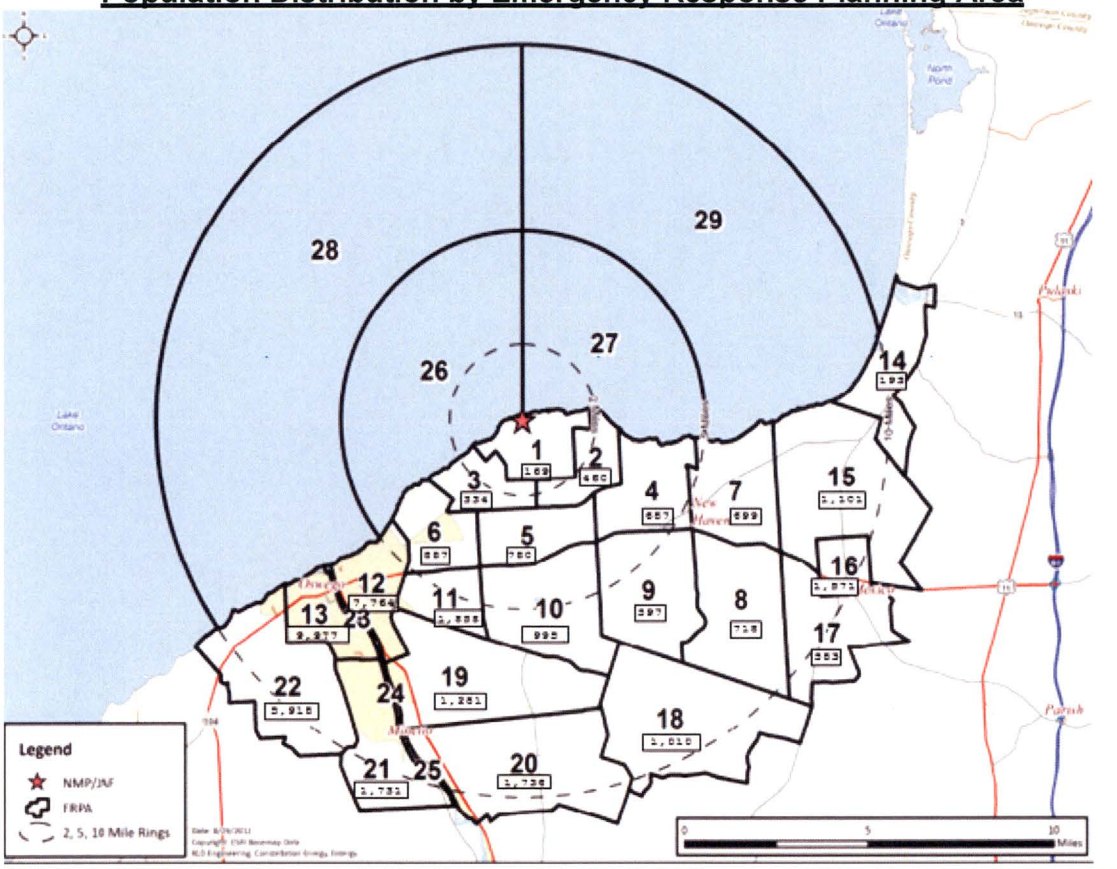


**Figure 1-4**
**Population Distribution by Emergency Response Planning Area**




LEGEND 1 ERPA NUMBER 169 ERPA POPULATION

**2016 Population Estimates**
**Emergency Response**
**Planning Areas (ERPAs)**

**J.A. FitzPatrick/Nine Mile Point**
**Radiological Emergency Response**
**Plan and Procedures**

**Figure 1-4 (Continued)**

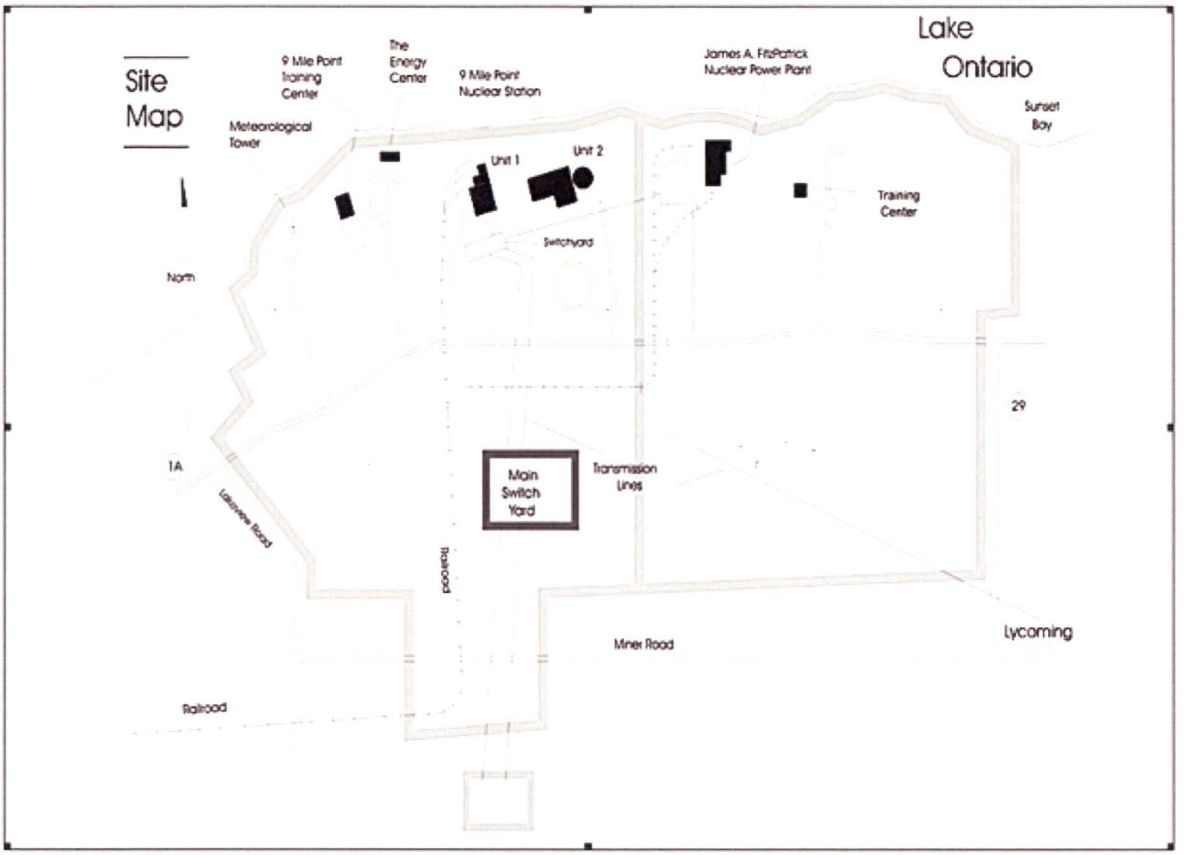
2016 PERMANENT RESIDENT POPULATION ESTIMATES

EMERGENCY RESPONSE PLANNING AREAS

| Emergency Response Planning Area | 2016 Permanent Resident Population Estimates |
|---|---|
| 1 | 169 |
| 2 | 460 |
| 3 | 334 |
| 4 | 687 |
| 5 | 780 |
| 6 | 887 |
| 7 | 699 |
| 8 | 718 |
| 9 | 597 |
| 10 | 995 |
| 11 | 1,858 |
| 12 | 7,764 |
| 13 | 9,977 |
| 14 | 193 |
| 15 | 1,101 |
| 16 | 1,571 |
| 17 | 583 |
| 18 | 1,010 |
| 19 | 1,281 |
| 20 | 1,736 |
| 21 | 1,731 |
| 22 | 5,918 |
| TOTAL | 41,443 |

Source: 2010 census data.

**Figure 1-5**
**Combined NMPNS / JAFNPP Site Map**



## Section 2: Organizational Control of Emergencies

JAFNPP has established an emergency response organization to respond to hostile actions and radiological emergencies. That organization includes on-shift personnel, additional plant personnel who may be offsite, other JAFNPP personnel, local services support, and private organizations support. The interfaces among the various emergency organizations are shown in Figure 2-1. The following sections describe in detail the JAFNPP plant and corporate organization and identify the interaction of the total emergency response organization.

### 2.1 Normal Operating Organization

The James A FitzPatrick Nuclear Power Plant (JAFNPP) organization for normal operation is described in OP-AA-20, Conduct of Operations Process Description, which is consistent with the JAFNPP - specific On Shift Staffing Analysis conducted October 2013. The typical minimum shift crew consists of:

1 Shift Manager (SRO)
1 Control Room Supervisor (SRO)
1 Field Support Supervisor (FSS)/Shift Technical Advisor (STA)*
3 Senior Nuclear Operator (RO)
6 Nuclear Plant Operators (NPO)-covers Fire Brigade member, AOP-43 and E-Plan Communicator requirements
1 Radiation Protection Technician (Health Physics)
1 Chemistry Technician
Security Personnel in accordance with Security Plan

* (STA responsibilities may lie with a different member of the Control Room staff. The STA function is not required in modes 4 and 5.)

### 2.2 Onsite Emergency Organization

If initiating conditions exist that result in the declaration of an emergency, the Shift Manager will assume the role of Emergency Director and will be responsible for emergency direction and coordination. The normal operating organization will also assume their pre-assigned emergency response roles. This onsite emergency organization is shown in Figure 2-2. This is a short-term response organization that will be augmented within approximately one hour after call-out by additional plant personnel. The augmented (minimum staffing) emergency response positions for the onsite plant personnel are depicted in Table 2-1.

A roster of personnel qualified and assigned to these positions is maintained by Emergency Planning.

## 2.3 Augmented (Minimum Staffing) Emergency Organization

If an Alert, Site Area Emergency, or General Emergency is declared or if the minimum shift crew requires assistance during a Notice of Unusual Event (NUE) the onsite emergency organization will be augmented by additional plant personnel. The augmented (minimum staffing) emergency organization is shown in Table 2-1 and the ERO positions listed below. The augmented (minimum staffing) emergency organization shall staff and operate the TSC, OSC, EOF, and JIC (Joint Information Center) as needed within approximately one hour of the request for activation. Augmentation for an Unusual Event may consist of the entire or part of the defined organization for each facility requested, at the discretion of the Emergency Director.

Table 2-1 is included as a cross reference to NUREG-0654 B-1 staffing chart. This table describes the on-shift and augmented (minimum staffing) emergency assignments for JAFNPP staff.

As the onsite organization is augmented, the shift crew may concentrate on their shift duties or continue to assist in the emergency response roles and activate emergency facilities in accordance with the emergency class. At least two individuals are designated for each emergency position.

The head each major functional area reports to the Corporate Emergency Director or Station Emergency Director.

In addition to those ERO positions listed in Table 2-1, the following ERO positions make up the augmented (minimum staff) positions.

- OSC Director
- Operations Manager
- CED
- EOC Communicator
- State Liaison
- County Liaison
- SED
- TSC Director
- Security Coordinator
- Maintenance Manager
- Technical Manager
- Company Spokesperson
- JIC Manager
- MM/Rumor Control Coordinator

## 2.4 Offsite Support Organizations

The onsite emergency organization will be augmented, if necessary, by corporate, local and private response personnel. The response of these groups is in accordance with their letters of agreement with JAFNPP (presented in Appendix C).

2.4.1 Headquarters Support

The Corporation will provide personnel from headquarters or other facilities to assist in the emergency response/recovery operations at JAFNPP. This support will be in accordance with Section 3.7 of this plan and Emergency Plan Implementing Procedures.

The Recovery Organization is specified by EP-CE-115, Termination and Recovery. The Recovery Organization is under the overall direction of the Site Recovery Director. The Site Recovery Director shall be responsible for interfacing with government authorities when the focus shifts from response to recovery.

The company's Corporate Office will be notified by the plant of an emergency situation.

2.4.2 Local Services Support

The nature of an emergency may require the augmentation of onsite response groups by local services, personnel and equipment. Support from the following local organizations may be obtained:

- Oswego Hospital
- Oswego County Sheriff
- University Hospital in Syracuse
- The City of Oswego (Fire Department)
- Oswego County E-911 Center (Fire Department)
- Specific methods for notification of these organizations are contained in Emergency Plan Implementing Procedures.

2.4.3 Private Organization Support

JAFNPP may obtain emergency response support from various private organizations. These organizations and the support they may provide are:

A. Nine Mile Point Nuclear Station - Will provide use of laboratories, equipment and personnel for radiological monitoring, decontamination, backup communications, and personnel to assist in recovery operations.
B. R.E. Ginna Nuclear Power Plant - Will provide use of laboratories, equipment and personnel for radiological monitoring, backup communications, and personnel to assist in recovery operations.
C. General Electric- Will provide technical support and personnel.

## 2.5 Coordination with Participating Government Agencies

2.5.1 State and Local Agencies

This section identifies the principal state and local government agencies having

action responsibilities for radiological emergencies in the vicinity of the JAFNPP. The radiological emergency response plans of these agencies describe their respective responsibilities, authorities, capabilities and emergency functions, and are included as part of this Plan. The following is a summary of the provisions for preparedness and response to radiological emergencies by each organization, as well as the primary and alternate methods of emergency notification.

A. State Office of Emergency Management (SOEM) The SOEM is the lead state agency for offsite coordination and response. SOEM coordinates the development of radiological emergency plans. The New York State Emergency Plan received Federal approval on February 1, 1985 and is titled "New York State Radiological Emergency Preparedness Plan." See Appendix D for the locations of plan copies.

The New York State plan includes provisions for:

- Planning and coordination with local, state, Canadian and federal authorities.
- Initial response to notification by JAFNPP.
- Alert and warning of local political subdivisions.
- Evacuation and other protective measures for local populations.
- Emergency services. Situation analysis.
- Declaration of a "State of Emergency" and provision of state resources to support protective response actions.

B. Oswego County Emergency Management Office (OCEMO)

The OCEMO is the lead local government agency for coordination and response. The OCEMO emergency plan titled, "Oswego County Radiological Emergency Preparedness Plan" received Federal approval on February 1, 1985 and the locations of plan copies are contained in Appendix E.

- The OCEMO plan contains provisions for: Notification and management to other emergency response personnel.
- Public notification and dissemination of information concerning the incident.
- Alert and warning of local officials. Implementation of protective response actions.
- (The OCEMO Plan also contains the implementing procedures for an emergency response.)

The primary method of notification to the OCEMO is through Oswego County E-911 Center. The dispatcher is available for twenty-four hours per day communications. Backup radio communications are also available.

2.5.2 Federal Agencies

This section identifies the principal federal government agencies receiving

notification of an emergency along with those that may be called on for assistance during an emergency. Typical resources available and additional information concerning Federal response is included in Appendix N "Typical Federal Support Resources."

A. U. S. Department of Energy (DOE)

The DOE, Brookhaven Area Office, will respond to requests from JAFNPP, Oswego County, and NYSDOH and provide assistance. This assistance consists of advice and emergency action essential for the control of the immediate hazards to public health and safety as specified in the letter of agreement. As part of this emergency action, DOE will supply personnel and equipment in accordance with the Federal Radiological Monitoring and Assistance Program (FRMAP).

The primary method of notification to DOE is by telephone. Notification may also be made through the NRC. Upon notification, estimated arrival time of personnel is within four (4) hours.

B. U.S. Department Of Energy (REACTS)

DOE Radiation Emergency Assistance Center/Training Site (REAC/TS) is a deployable DOE National Nuclear Security Agency (NNSA) asset, on call 24/7 to offer its expertise on managing the medical component of a radiation incident.

REAC/TS has developed an interdisciplinary radiation emergency medical response approach that integrates medicine with health physics. This enables rapid dose assessment, radiological and medical triage, diagnosis, and medical management during a radiation emergency.

REAC/TS maintains specialized response teams to ensure readiness to respond. Each team consists of a physician, nurse/paramedic, and a health physicist, all cross-trained in the details of managing a radiation emergency.

Response teams are equipped with state-of-the• art medical equipment that can be transported to the site or used in their facility in Oak Ridge, Tenn. Capabilities include:

- medical and radiological triage
- decontamination
- diethylenetriaminepentaacetic acid (DTPA) and Prussian Blue therapy for specific radiological materials
- diagnostic and prognostic assessments of radiation-induced injuries
- biological and radiological dose estimates by methods that include cytogenetic analysis, bioassay, and in vivo counting

C. Federal Emergency Management Agency (FEMA)

The Federal Emergency Management Agency has the lead responsibility for

all offsite nuclear emergency planning and response. This agency is charged with establishing policy for and coordinating all civil emergency planning and assistance functions for executive agencies.

D. Nuclear Regulatory Commission (NRC)

The U.S. Nuclear Regulatory Commission is responsible for verifying that appropriate emergency plans have been implemented and for conducting investigative activities associated with a radiological emergency. An NRC Response Team will offer assistance during an emergency. Estimated time of arrival is within 3 hours. The Agency Procedures for the NRC Incident Response Plan (NUREG-0845) describes the functions of the NRC during an incident and the kinds of actions that comprise the NRC response.

## 2.6 Administrative and Logistics Support

During the response to a radiological emergency, it may be necessary to supplement the Company's resources and/or provide response personnel with necessary support. Arrangements for this support which includes: the means and sources for obtaining food, lodging, sanitation, office supplies, temporary offices, communications equipment, and vehicles in support of an extended or augmented emergency response. This will be made by the Company Corporate Staff.

## 2.7 Figures, Forms, and Attachments

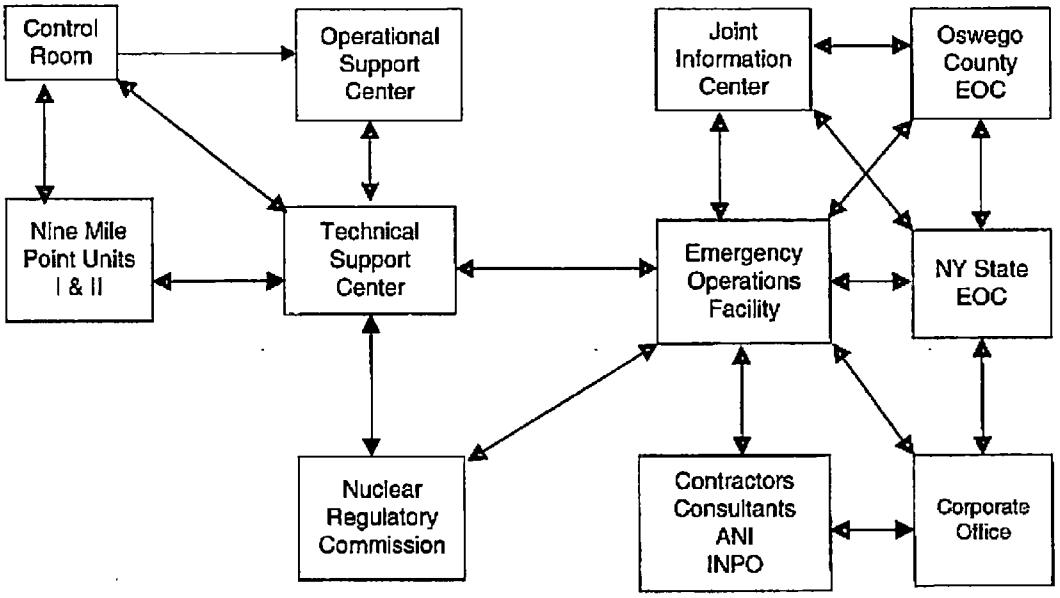
FIGURE 2-1 Emergency Organization interface

FIGURE 2-2 Emergency Staffing – On Shift Response Organization

TABLE 2-1 Plant Personnel – Emergency Activity Assignments

NOTES FOR TABLE 2-1

**Figure 2-1 EMERGENCY ORGANIZATION INTERFACE**




*J. A. FitzPatrick Nuclear Power Plant*
Emergency Plan

**Figure 5-1**
**Emergency Organization Interface**

**Figure 2-2 JAFNPP EMERGENCY STAFFING ON SHIFT RESPONSE ORGANIZATION**

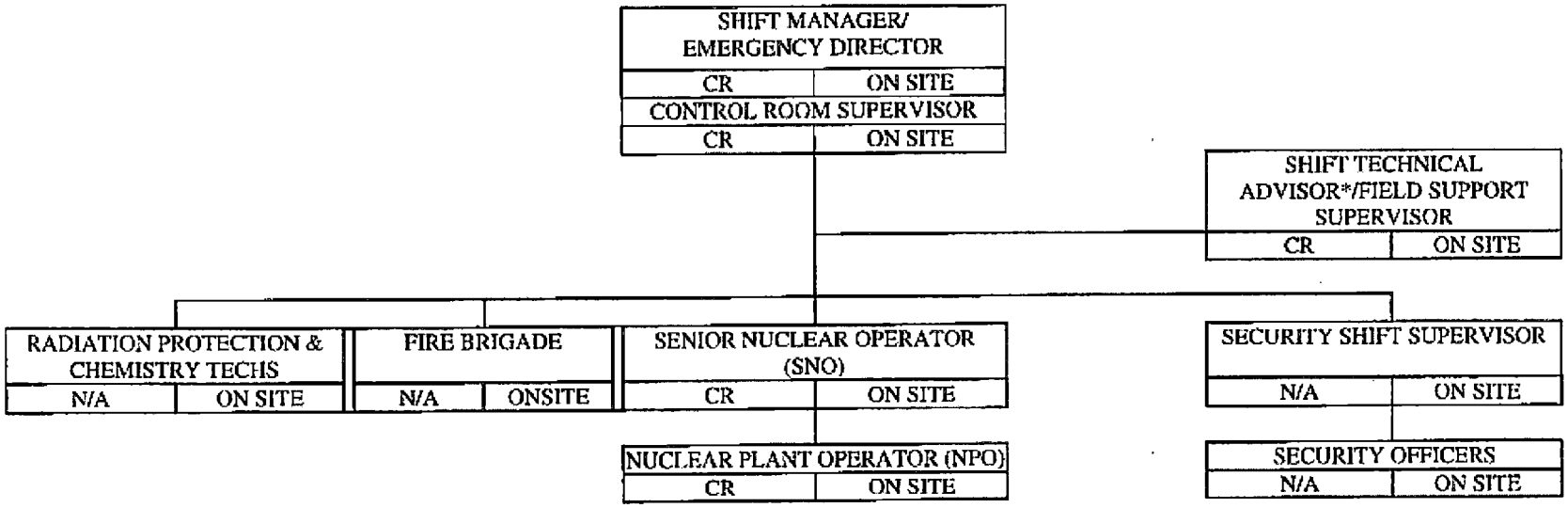


**TABLE 2-1**
**PLANT PERSONNEL – EMERGENCY ACTIVITY ASSIGNMENTS**
**(IN ACCORDANCE WITH JAMES A. FITZPATRICK NUCLEAR POWER PLANT ON-SHIFT ANALYSIS-OCTOBER 2013)**

| Major Functional Area | Major Tasks | JAFNPP Position, Title, or Expertise | Number On Shift | Notes (in Below table) | Number on shift required by B-1 chart | Number available within 60 minutes after call |
|---|---|---|---|---|---|---|
| Operations (Assessment of Operational Aspects) | Direct and perform actions for mitigate plant emergency conditions | Shift Manager (SRO)<br>Control Room Supervisor (SRO)<br>Senior Nuclear Operator (SNO)<br>Nuclear Plant Operator (NPO) | 1<br>1<br>3<br>4 | (A)<br>(A) | 1<br>1<br>2<br>2 | -<br>-<br>-<br>- |
| Emergency Director | Direct onsite emergency response | Shift Manager Operations, General Manager Plant Operations, Director Nuclear Safety Assurance, Director Engineering, Emergency Planning Manager or Designated Alternate | 1* | (B) | - | - |
| Notification/ Communication | Notify JAFNPP, State, local, and Federal personnel and maintain communication. Staff Notifications and Security Contacts. | Nuclear Plant Operator | 1 | (C) | 1 | 2 |
| Radiological Accident Assessment | Direct dose projection, radiological surveys, interface with State. | Radiological Protection (RP) Manager or other RP Supervisor | 0 | (D) | 0 | 2 |
| Radiation Protections Functions / Radiological Surveys (Support of Operational Accident Assessment (In-Plant) Protective Actions) | Onsite (out-of-plant) survey.<br>In-plant surveys.<br>Out-of-plant and offsite surveys.<br>Chemistry/radiochemistry offsite surveys.<br>Radiation Protection Access Control<br>HP coverage for repair, mitigative actions, search and rescue, first aid and firefighting.<br>Personnel monitoring.<br>Dosimetry | Offsite Monitoring Team<br><br><br><br><br>(RP) Technician<br><br>RP Technician (RP / Chem) | <br><br><br><br><br>1<br><br>1 | (E) | <br><br><br><br><br>1<br><br>1 | <br><br><br><br><br>8<br><br>1 |

**TABLE 2-1 (CONT)**

**PLANT PERSONNEL – EMERGENCY ACTIVITY ASSIGNMENTS**
**(IN ACCORDANCE WITH JAMES A. FITZPATRICK NUCLEAR POWER PLANT ON-SHIFT ANALYSIS-OCTOBER 2013)**

| Major Functional Area | Major Tasks | JAFNPP Position, Title, or Expertise | Number On Shift | Notes (in Below table) | Number on shift required by B-1 chart | Number available within 60 minutes after call |
|---|---|---|---|---|---|---|
| Plant Systems Engineering | Technical Support | Shift Technical Advisor<br>Core Thermal/Hydraulic<br>Electrical Engineer<br>Mechanical Engineer | 1<br>0<br>0<br>0 | (A) | 1<br>0<br>0<br>0 | -<br>1<br>1<br>1 |
| Repair and Mitigative actions | Access and correct in-plant Conditions | Mechanical Maintenance<br>Electrical Maintenance<br>Instrument and Control Tech.<br>Rad Waste Operator | 0<br>1*<br>0<br>1* | (F)<br>(F)<br>(F)<br>(G) | 0<br>1*<br>0<br>1* | 2<br>2<br>1<br>- |
| Fire Fighting / Rescue Operations And First Aid | - Combat fires<br>- Search & Recue<br>- First Aid | Plant Fire Brigade<br>Search and Rescue Brigade<br>First Aid Team | 1 | (H)<br>(I)<br>(J) | N/A | Local Support via Oswego County Fire Coordinator & Oswego Hospital |
| Site Access Control, Security and Personnel Accountability | Maintain site access, security, and perform accountability. | Security Force | | Per Security Plan | | |

Table 2-1 Staffing Chart Notes

* Indicates that position may be provided by shift personnel assigned other functions.

The B-1 Staffing Chart appears in NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants", pages 37 and 38.

NOTES FOR TABLE 2 -1

A. May include a SM, CRS, or FSS as the STA. The STA is not required in modes 4 and 5.

B. The Shift Manager performs the duty of the Emergency Director until relieved by a qualified individual.

C. On-shift communicator is normally a qualified NPO but may be other qualified individuals who have equivalent or higher plant operational knowledge. This position is normally augmented by TSC and EOF designated communications positions when those facilities assume communications responsibilities.

D. On-shift Radiation Protection and Chemistry technicians are directed by Shift Manager/Emergency Director until the arrival of RP and/or Chemistry Department supervision.

E. RP technicians are trained for offsite, onsite and in-plant surveys. RP technicians are brought to the plant to supplement on-shift personnel using a call-out procedure.

F. Emergency Mechanical, Electrical and Instrument & Control Maintenance require call-in of applicable departmental personnel to conduct tasks. Normal operations shift personnel can conduct limited emergency mechanical, electrical and Instrument & Control work.

G. The radwaste operator is an on-shift auxiliary operator (Nuclear Plant Operator).

H. The JAFNPP Fire Brigade complement is a Senior Nuclear Operator and 4 Nuclear Plant Operators.

I. The JAFNPP Search and Rescue team is composed of the JAFNPP Fire Brigade.

J. The JAFNPP First Aid Team is composed of a Senior Nuclear Operator, two Nuclear Operators, and one RP Technician.

# Section 3: Classification of Emergencies

## 3.1 Classification System

This plan and its associated implementing procedures provide the means for responding to a wide range of emergency conditions.

NOTE: As used in the following paragraph, "plant operator" means any member of the plant staff, who by virtue of training and experience, is qualified to assess the indications or reports for validity and to compare the same to the EALs in the emergency classification scheme.

JAFNPP maintains the capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an emergency action level has been exceeded and shall promptly declare the emergency condition as soon as possible following identification of the appropriate emergency classification level.

These emergency conditions have been categorized into four emergency classes, which cover the spectrum of postulated accidents. The classification system used in this plan has been developed based on the guidance contained in NEI 99-01 Rev. 5, "Methodology for Development of Emergency Action Levels" and NRC Bulletin 2005-02 "Emergency Preparedness and Security Related Events" and is compatible with the systems used by county and state agencies.

Emergency conditions will be evaluated using the classification guidance in EP-AA-1014 Addendum 3, *JAF Emergency Action Levels,* and EP-CE-111, *Emergency Classification and Protective Action Recommendations.* That procedure contains event categories, initiating conditions, and emergency action levels for each of the four emergency classes. The emergency action levels are specific plant conditions, instrument readings, alarms, or other conditions that indicate that an abnormal condition exists which warrants the declaration of an emergency and implementation of the emergency plan.

The purpose of the emergency classification system is to initiate a planned response to a given severity of accident. JAFNPP, county, and state plans and implementing procedures provide for specific emergency organization, notification, emergency facility activation, and preliminary actions to be taken based on the
level of emergency that is declared.

As the emergency situation changes, the emergency class will be reviewed and revised in accordance with the classification guidance documents. This allows for the augmentation of emergency personnel and resources to respond to a more severe emergency and provides for an orderly close out of the emergency and entry into recovery operations once the situation has been controlled.

Facility activation may be modified by the Emergency Director if the safety of incoming personnel may be jeopardized by a security event or other event hazardous to incoming personnel.

## 3.2 Unusual Event

### 3.2.1 Description

This class applies to an unusual plant condition, which either has occurred or is impending. This plant condition could eventually lead to a potential degradation in overall safety or indicate a security
threat to facility protection. Inherently, however, this is a situation in which sufficient time is available to take precautionary and constructive steps to prevent a more serious event or to mitigate any consequences that may occur.

The primary purpose for this class is to ensure that the plant operating staff recognizes initiating conditions, takes appropriate action such as assessment and verification, and comes to a state of readiness to respond if the condition becomes more severe. The Unusual Event class requires that off-site authorities be notified of the event.

No protective actions will be recommended to state and county authorities for an Unusual Event and no offsite agency response is required. The TSC, OSC, or other facilitiesmay be activated as a precautionary measure, or to assist as needed.

### .3.2.2 Emergency Action Levels

Initiating conditions established as Emergency Action Levels for determining an Unusual Event classification are listed in EP-AA-1014, Addendum 3. An Unusual Event is declared any time that respective Emergency Action Levels are met or exceeded. All minor events are analyzed in light of their potential for degrading the level of plant safety.

## 3.3 Alert

### 3.3.1 Description

An Alert emergency class is declared when events are in process or have occurred which involve an actual or potential substantial degradation of the level of plant safety 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 ACTIONS. Although the potential for limited releases of radioactivity in excess of technical specification limits may exist, the initial assessment leading to this class indicates that it is unlikely that a public hazard will be created. An Alert requires response by the plant emergency organization, augmentation of onsite emergency resources and constitutes the lowest level where emergency off site response may be required.

The declaration of an Alert results in the activation of the Technical Support Center (TSC), Emergency Operations Facility (EOF), Operational Support Center (OSC) and the Joint Information Center (JIC). The JIC may be declared operational prior to a Site Area Emergency at the discretion of the JIC Director, or designee. Also prompt initial and follow-up notification is provided to federal, state, and local authorities.

At the Alert classification, the JIC may be deactivated at the discretion of the Emergency Director if operation is not necessary based upon conditions or events. (This decision should be discussed with State and County authorities prior to deactivation of the JIC.)

Although initial and follow-up notification to state and county authorities will include projected off site exposures, if applicable, no protective actions will be recommended to those authorities since the exposures possible during an Alert are below the Protective Action Guides (PAG).

3.3.2 Emergency Action Levels

Initiating conditions established as Emergency Action Levels for determining an Alert emergency classification are listed in EP-AA-1014, Addendum 3. An Alert is declared any time that respective Emergency Action Levels are met or exceeded.

## 3.4 Site Area Emergency

3.4.1 Description

The Site Area Emergency class is declared when events are in process or have occurred which involve actual or probable major failures of plant functions needed for protection of the public or security events that result
in intentional damage because of intentional malicious dedicated efforts of HOSTILE ACTIONS; (1) towards site personnel or equipment that could lead to the likely failure of or; (2) prevents effective access to equipment needed for the protection of the public. Many events within this class constitute an actual or clear potential for significant releases of radioactive material to the environment. These releases, however, are not normally in excess of the PAGs.

The Technical Support Center (TSC), Operational Support Center (OSC), Emergency Operations Facility (EOF) and Joint Information Center will be activated for a Site Area Emergency.

The declaration of a Site Area Emergency requires the notification of federal, state, and county authorities so that they may activate their emergency operation centers and dispatch key emergency personnel.

3.4.2 Emergency Action Levels

Initiating conditions established as Emergency Action Levels for determining Site Area Emergency classification are listed in EP-AA-1014, Addendum 3. A Site Area Emergency is declared any time that respective Emergency Action Levels are met or exceeded.

## 3.5 General Emergency

### 3.5.1 Description

The General Emergency class is declared when events are in process or have occurred which involve actual or imminent substantial core degradation or melting with the potential for loss of containment integrity and significant releases of radioactivity to the environment or security events that result in an actual loss of physical control of the facility.

The Technical Support Center (TSC), Operational Support Center (OSC), Emergency Operations Facility (EOF), and Joint Information Center will be activated for a General Emergency.

The declaration of a General Emergency requires the notification of federal, state, and county authorities so that they may activate their emergency operating centers and dispatch key emergency personnel.

A General Emergency involves the potential or actual release of airborne radioactivity which may result in off-site projected exposures that would exceed the limits specified in the USEPA Protective Action Guides. The Emergency Director will recommend protective actions to state and county authorities based on actual measurements, projections, or calculations.

It is the responsibility of state and county authorities to implement off site protective actions and to provide an independent determination of the type and extent of such actions.

### 3.5.2 Emergency Action Levels

Initiating conditions established as Emergency Action Levels for determining General Emergency are listed in EP-AA-1014, Addendum 3. A General Emergency is declared any time that a respective Emergency Action Level is met or exceeded.

## 3.6 Spectrum of Postulated Accidents

The Emergency Action Levels contained in EP-AA-1014 Addendum 3, JAF Emergency Action Levels, provide the ability for classifying approximately eighty discrete types and levels of events. However, to develop the maximum projected exposure information contained in Figure 3.2, it was necessary to evaluate several discrete accidents. The discrete accidents addressed in this section are those which are defined in the JAFNPP FSAR Update as "design basis accidents."

3.6.1 Control Rod Drop Accident

An accident that results in radioactive material release from the fuel with the Reactor Coolant Pressure Boundary, Primary Containment and Secondary Containment intact.

As an example, this accident is postulated to occur with the reactor in hot standby, critical condition, and is expected to result in the failure of about 330 fuel rods. With the elimination of the automatic closure of the Main Steam Isolation Valves (MSIVs) on high radiation fission products will be transported to the offgas system and subsequently out the stack. The whole body dose at the site boundary is detailed in the JAFNPP FSAR.

3.6.2 Refueling Accident

An accident that results in radioactive material release directly to the Secondary Containment with the Primary Containment not intact.

As an example, this accident is postulated to occur with the reactor in shutdown condition with the vessel head removed. A fuel assembly is assumed to drop onto the top of the core, resulting in the failure of about 440 fuel rods. The refueling floor ventilation radiation monitoring system alarms, isolates the ventilation system, and starts operation of the Standby Gas Treatment System (SGTS), within about one minute.

Noble gases and radioiodines are released to the reactor coolant, migrate to the secondary containment, and are released to the environment through the SGTS.

3.6.3 Main Steam Line Break

An accident that results in radioactive material releases outside the Secondary Containment.

As an example, this accident is postulated to occur with the reactor operating at rated conditions. The steam line break occurs outside the secondary containment and releases reactor coolant for a period no longer than 10.5 seconds, until complete closure of the MSIVs. Noble gases and radioiodines in the coolant are assumed to be released directly to the environment.

An estimate of the resultant exposures as shown in Figure 3.2 is for worst case conditions. Actual exposures are proportional to the fission product activity in the steam, as monitored by the off-gas release rate prior to the accident. The exposures in Figure 3.2 are based on the assumption that the off-gas release rate is at the upper limiting condition for operation.

3.6.4 Loss of Coolant Accident (LOCA)

An accident that results in radioactive material release directly to the Primary Containment.

As an example, this accident is postulated to involve a complete circumferential break of a recirculating loop pipe inside the primary containment with the reactor operating at full power. The accident results in the release of a significant quantity of fission products into the primary containment, leakage into the secondary containment, and release to the environment through the SGTS.

3.6.5 Other Accident Types

Additional accident types have been included for the purposes of dose assessment. The types allow for the variability of isotopic mixtures and, by pre-establishing isotopic mixtures and developing a ratio of containment to atmosphere leakage, allow for simplified use. These include accidents "Containment Design Basis Accident" and "Severe Accident."

3.7 Recovery

After the initial emergency response actions are concluded (i.e., the plant is in cold shutdown and under control), a decision to begin the recovery phase will be initiated. A number of considerations will enter into the decision to begin the recovery phase and dismantle the Emergency Response Organization. The decision to enter the recovery phase from an alert or higher will be made by the Corporate Emergency Director in consultation with Senior Station Managers, Corporate Management, and, after a formal discussion with regulatory, State and local authorities has been conducted to ensure coordination and agreement is met for termination. EP-CE-115, Termination and Recovery will be used by the organization to transition from a response organization to a recovery organization.

Federal, State and local authorities shall be advised of any decisions and resulting changes pertaining to the Emergency Organization status.

3.7.1 Recovery Actions:

Re-entry of the plant, decontamination, repair, and return to operation will be controlled by a general implementing procedure which provides for development of a flexible plan of actions and specifies particular evaluation and planning activities. A recovery organization to provide long term augmentation of the emergency organization has been established. A procedure to alert these people and put the EOF into operation is part of the station implementing procedures.

EP-CE-115 details the establishment of a Recovery organization.

The Corporate Emergency Director will notify all response organizations that recovery operations are underway.

In the recovery phase, all actions will be carefully planned by station supervisory personnel in conjunction with the Recovery Team, the Technical Support Center personnel and the Ginna senior management. Planning for recovery will include evaluation of survey data, review of exposures incurred, projection of manpower

and equipment needs, and re-entry offsite monitoring team activities. Actions prescribed upon re-entry include a comprehensive survey of the plant to define radiological problem areas. Based on survey results, high radiation areas and areas of contamination will be isolated and posted and, if possible, portable shielding will be used, as appropriate.

Upon evaluation of plant conditions, further activities for making necessary repairs, decontamination and restoration to normal operations will be outlined by Ginna senior management in accordance with standard Radiation Protection practices. Personnel radiation exposure during the recovery stage of the incident shall be closely controlled and documented. Individual exposures shall be in accordance with 10CFR20 limits.

Corporate management and Emergency Response Organization personnel will augment the plant staff in long-term recovery operations.

a) Corporate groups such as Business Continuity may provide logistical support using corporate emergency plans, protocols and procedures.

b) Technical support may be provided by the Engineering Services Department and consultants under the direction of the Manager, Nuclear Services.

c) The Vice President, Ginna, will provide management level interface with government authorities. He or she will be assisted by the Corporate Communications group.

d) Communicating with the President of the United States and the Governor of New
York State is the responsibility of Company senior management.

## 3.8 Figures, Forms, and Attachments

Figure 3.1 Recommended Protective Actions for the General Population and Emergency Workers

Figure 3.2 Maximum Estimated Doses Resulting from Design Basis Accidents

FIGURE 3-1
RECOMMENDED PROTECTIVE ACTIONS FOR THE GENERAL POPULATION AND EMERGENCY WORKERS

PAGs for the Early Phase of a Nuclear Incident

| Protective Action | PAG (projected dose) | Comments |
|---|---|---|
| Evacuation (or sheltering[a]) | 1 – 5 rem[b] | Evacuation (or, for some situations, sheltering[a]) should normally be initiated at 1 rem. |
| Administration of stable iodine | 5 rem[c] | Per local and state upon declaration of a GE |

[a] Shelteringmay be the preferred protective action when it will provide protection equal to or greater than evacuation, based on consideration of factors such as source term characteristics, and temporal or other site• specific conditions.

[b] The sum of the effective dose equivalent resulting from exposure to external sources and the committed effective dose equivalent incurred from all significant inhalation pathways during the early phase. Committed dose equivalents to the thyroid and to the skin may be 5 and 50 times larger, respectively. Reference: Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, EPA-400-R-02-001, May 1992.

[c] committeddose equivalent to the child thyroid from radioiodine, per "Implementation of the Use of Potassium Iodide (KI) as a Protective Agent for the Public", Rev. 1 January 2005.

Guidance on Dose Limits for Workers Performing Emergency Services

| Dose Limit[a] (rem) | 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 volunteer basis to persons fully aware of the risks involved |

[a]Sum of external effective dose equivalent and committed effective dose equivalent to non-pregnant adults from exposure and intake during an emergency situation. Workers performing services during emergencies should limit dose to the lens of the eye to three times the listed value and doses to any other organ (including skin and body extremities) to ten times the
listed value. These limits apply to all doses from an incident, except those received in unrestricted areas as members of the public during the intermediate phase of the incident.

FIGURE 3-2
MAXIMUM ESTIMATED DOSES RESULTING FROM
DESIGN BASIS ACCIDENTS

| | Maximum Estimated Dose (rem) | | | |
|---|---|---|---|---|
| | Whole | | Thyroid | |
| Postulated Accident | 0-2 Hours<br>3000 Feet | 0-30 Days<br>3.4 Miles | 0-2 Hours<br>3000 Feet | 0-30 Days<br>3.4 Miles |
| Control Rod Drop | 0.0142 | 0.0049 | 0.201 | 0.137 |
| Refueling | 2.40 TEDE | 0.270 TEDE | ----- | ---- |
| Main Steam Line Break | 0.0906 | 0.0111 | 7.14 | 0.799 |
| Loss of Coolant | 2.34 | 1.89 | 62.2 | 68.7 |

Estimated doses taken from Chapter 14 of the JAFNPP FSAR

# Section 4: Emergency Measures

Emergency measures are actions taken to ensure that an emergency situation is assessed and that proper corrective and/or protective actions are taken. These actions include activation of the appropriate components of the emergency organizations, both onsite and offsite; assessment of plant systems status and radiological conditions; mitigative actions to ameliorate or terminate an emergency situation; protective actions to minimize the consequences of the emergency to plant personnel and to the general public in the plant environs; decontamination and medical treatment for plant personnel; and other supporting actions such as timely and accurate emergency news dissemination to the public media.

Emergency actions are initiated primarily in response to alarmed instrumentation, but may be initiated through notification to the Control Room by the first individual at the JAFNPP to become aware of an apparent emergency situation.

The occurrence of an off-normal event will initiate the classification of that event via an established procedure into one of the four emergency classes. Once an emergency is classified and declared, the implementation of the JAFNPP Emergency Plan Implementing Procedures will begin. This plan and procedures provide for the implementation of measures to respond to the emerge cy. The following sections provide a description of the emergency measures.

## 4.1 Activation of the Emergency Organization

Prior to an emergency being declared, the normal plant operating organization is in place. The initial classification of an off-normal event occurs in the Control Room and is performed by the Shift Manager (see Section 4). Upon the classification and declaration of an emergency the Shift Manager assumes the role of Emergency Director and retains that role until the CED and SED can assume control. It is the primary responsibility of the Shift Manager, however, to act in accordance with any Emergency Operating Procedures (EOPs), and Abnormal Operating Procedures (AOPs) to verify the proper operation of engineered safety features prior to implementation of the emergency plan procedures.

The Emergency Director will, upon classification of the emergency, immediately initiate the appropriate series EP-AA-112 procedure. This procedure directs the initiation of notification and activation of the emergency organization and for the initiation of mitigative and protective actions appropriate for the emergency class.

### 4.1.1 Notification and Activation of the Onsite Emergency Organization

The onsite emergency organization is activated by personnel notification or when the station alarm is sounded and the emergency is announced over the public address system.

Initially, the emergency response organization will consist of the normal operating shift personnel who will function as the emergency team members. The normal operating staff will be augmented, as needed, by plant personnel and corporate headquarters personnel. Those personnel onsite will respond when the station

alarm is sounded and the announcement is made or when individuals are notified by another means. Personnel not onsite during off-hours operations or located at the corporate headquarters will be notified. A designated on-staff plant employee shall perform notifications. The details of notifying all emergency operations personnel during normal and off-hours are contained in EP-AA-112-100-F-57, ERONS NOTIFICATION DETAILS.

4.1.2 Notification and Activation of the Offsite Emergency Organization

The offsite organization will be notified as soon as possible after the declaration of an emergency. Offsite notifications will be made in accordance with EP-CE-114-100, Emergency Notifications. Notifications will be made to:

A. NRC

B. State of New York, Nine Mile Point Nuclear Station and Oswego County

C. Company headquarters

The contents of the initial notification message are in a pre-arranged notification form that will be used by both the transmitting and receiving parties. The initial messages will transmit key information. Date, time, location of emergency, person reporting information and telephone number, the emergency class, whether a release is occurring, the potentially affected area (s), the protective actions recommended,
and meteorological conditions are included on the form. No verification of message authenticity is required when the notification will be transmitted via a dedicated telephone line. The content of the notification message will be verified with the State of New York. It is the responsibility of the State to verify message content with other State and Local government agencies. The notification will be repeated for each change in emergency classification or on a periodic basis in accordance with the Notifications Procedure.

Once the initial notification is made, additional information will be transmitted from JAFNPP to offsite agencies. These follow-up messages will consist of the following information in addition to that transmitted during the initial notification (if known and appropriate):
A. General Release Information

B. Atmospheric Release Information

C. Waterborne Release or Surface Spill Information

D. Dose/Dose Rate Calculations

E. Field Measurements of Dose Rates or Surface Contamination

The information will be transmitted and received in accordance with the Notifications Procedure.

Additional follow-up information regarding plant parameters will be transmitted, if known and appropriate, in accordance with the Notifications Procedure. The following plant system information may be transmitted:

A. Primary coolant system information

B. Safety coolant system information.

C. Radiation monitoring system information

In addition to those organizations notified, other offsite agencies may be contacted as indicated in the Notifications Procedure. The Emergency Director will ensure that offsite emergency support groups are contacted to request the type and level of assistance, which may be necessary to deal with the emergency condition. The following organizations may be contacted for assistance, either through direct telephone contact or by message relay through the Oswego County Sheriff's Department or Oswego E-911 Center:

A. Local fire departments through agreement with the Oswego County Fire Coordinator

B. Oswego Hospital

C. University Hospital

D. Oswego County Sheriff's Department

E. Nine Mile Point Nuclear Station

F. United States Department of Energy

G. R.E. Ginna Nuclear Power Plant

Letters of agreement are maintained with each of the offsite agencies, which specify the commitment of that organization to provide assistance to JAFNPP. A listing of Letters of Agreement is contained in Appendix C. The offsite agencies contacted will activate their organizations to the level required in accordance with their plans and procedures. See Appendix J of this Plan for a list of supporting documents.

In addition to the services provided by the above• mentioned organizations, support may be provided by other private organizations.

## 4.2 Assessment Actions

Provisions throughout are made for assessment and continuing reassessment the course of an emergency to ensure the effective coordination, direction and upgrading of emergency activities in a timely manner. The assessment actions are described in detail in the Emergency Plan Implementing Procedures. The assessment functions and the general methodology and techniques utilized are identified in this section.

Initially, the Shift Manager will assume the responsibility for the emergency response direction and coordination and will take charge of all assessment activities until these functions are turned over to the CED and SED. The Radiation Protection Organization (TSC) will direct on-site survey teams. The Radiation Protection Organization (EOF) will direct off-site survey teams and the dose assessment activities of JAFNPP, once responsibility is turned over and accepted.

### 4.2.1 Assessment Actions and General Discussion

Unusual Event

Continuous assessment of the status of plant systems radiological conditions is provided by plant instrumentation and is supplemented by routine surveillance function. The occurrence of an Unusual Event will be recognized by instrument indications and / or alarms, surveillance results or other observations of an off-normal condition by an individual at the plant.

Many events within this classification involve exceeding the Limiting Conditions of Operation cases. Assessment and mitigative actions are described in detail in operating procedures. Supplementary assessment actions are described, where appropriate, in the Emergency Plan Implementing Procedures.

For events which require dispatching of emergency teams, such as a fire or damage control, the initial and continuing assessment will be performed by the team leader. Through training and experience the team leader will be able to evaluate the condition, implement proper mitigative action and escalate the response as necessary.

Offsite dose projections will be performed if the event involves radiological effluents exceeding the Technical Specification limits or if such releases are projected. These dose projections are based on the rate and estimated duration of the releases and current meteorological parameters. The projections will be repeated throughout the duration of the emergency to reflect any significant changes. Methods for performing rapid dose projections including the use of computerized meteorological/dose assessment models are described in the Emergency Plan Implementing Procedures.

Alert

Assessment actions for an Alert include an upgrading of the functions performed for an Unusual Event as appropriate for the condition. Examples are:

- Increased surveillance of in-plant instrumentation Additional assistance from off-duty personnel and/or offsite support groups.
- Possible radiological monitoring of offsite areas and increased dose projection activities.

Site Area Emergency

Assessment actions for a Site Area Emergency will be in accordance failure of release of material with the increased probability of a major failure of plant safety functions and the potential release of significant quantities of radioactive Examples are:

- Increased surveillance of instrumentation, which may provide information on the status of the core and reactor coolant system.
- Increased offsite monitoring efforts including direct radiation measurements, sampling and analysis of air and other environmental media.
- Dose projection results correlated with offsite monitoring data.
- Coordinated offsite dose assessment activities with other emergency response organizations.
- Increased reactor coolant sampling and analysis frequency.

General Emergency

The emphasis of assessment actions for a General Emergency will be based on the likelihood of substantial core degradation, potential loss of containment integrity, and the release of large quantities of radioactive material. Surveillance of instrumentation relative to the core condition, reactor coolant system activity, containment pressure and radiation level and radioactive effluents will be increased. Dose projection and offsite monitoring efforts will be further intensified and on-going communications will be maintained with the Oswego County Emergency Operations Center (OCEOC) and New York State Emergency Operations Center (NYSEOC) to ensure that offsite assessments are based on the best available information.

Specifically, post-accident assessment capability will include:

- Post-accident sampling analysis of reactor coolant and containment atmosphere.
- In-plant iodine instrumentation.
- Plots showing containment radiation versus time.
- Determination of the degree of reactor core damage.

4.2.2 Field Radiological Assessment

Field radiological data will be collected by onsite and offsite survey teams. There will be at least one onsite and one offsite survey team, when the ERO is fully staffed and radiological conditions warrant it. Each team should be comprised of at least two individuals. (In instances of a fast-breaking event, only a single technician may be available). The teams will be deployed for any emergencies, which involve actual releases of radioactive materials and at the discretion of the Emergency Director. Survey teams will be formed following the request by the Emergency Director or his designee by direct communication or over the PA system. It is expected that the teams can be deployed in about 30 minutes during normal working hours and in about 60 minutes during other hours. The survey teams will use emergency vehicles (or personal vehicles, if needed) for transportation and will maintain phone or radio contact with the Emergency Director or his designee while deployed.

An onsite survey kit and two offsite survey kits are maintained for emergency use by survey teams. Each kit contains portable instrumentation for direct radiation surveys, contamination surveys, and for collecting and analyzing airborne samples for gross and iodine radioactivity.

Rapid assessment of any radiological hazards resulting from the gaseous pathway will be made in the field by direct radiation surveys and by collecting airborne samples and then analyzing these samples for gross radioactivity and iodine radioactivity. These data will be communicated to the Emergency Director or his designee as the information is obtained.

Rapid field assessment of liquid samples is not considered to be essential because the nearest drinking water supply is far enough away to provide ample time for warning the appropriate state and local authorities in the event protective measures are required. When field liquid samples are required, they will be taken and transported to an Environmental Lab for assessment.

4.2.2.1 In-plant Surveys

In-plant survey teams will be dispatched during an emergency if annunciators, alarms, or other instrumentation indicate the possible or actual release of radioactivity to in-plant locations. The Shift Emergency Director, Station Emergency Director, or Radiation Protection Manager, or designee will notify, brief, and dispatch the survey teams. All dispatching and directing of survey teams and the performance of surveys will be accordance with the EP-AA-112-200-F-60, TSC Radiation Protection Manager Checklist.

The in-plant survey teams will be composed of a team leader and team member. The teams will report to and be dispatched from the Operational Support Center. Emergency survey kits are maintained for use by the in-plant survey teams. These kits contain portable instrumentation for direct radiation surveys, contamination surveys,

the collection and analysis of airborne samples for gross and iodine radioactivity, and the collection of liquid samples.
Equipment is also provided for post-accident reactor water sampling. For details of the specific type and quantities of equipment contained in each kit see inventory procedure SAP-2, EMERGENCY EQUIPMENT INVENTORY.

4.2.2.2 Out-of-plant Surveys

Out-of-plant survey teams may be dispatched if releases of radiation have occurred, or to verify that releases above technical specifications are not occurring. The Environmental Coordinator (EOF), or designee, will notify, brief, and dispatch the survey teams. The dispatching and direction of survey teams to designated locations (see Figures 4.5 and 4.8) and the performance of out-of-plant surveys will be performed in accordance with EP-AA-112-500, Emergency Environmental Monitoring.

Out-of-plant survey teams will (if possible), be composed of a team leader and team member. The teams will report to and be dispatched from the Technical Support Center or the Emergency Operations Facility. Emergency survey kits are maintained for use by the out-of-plant survey teams.

The out-of-plant survey teams have the capability and equipment to collect environmental and emergency TLD/DLR (Dosimeter of Legal Record), filter media from the environmental air samplers, water, milk, soil, vegetation, and snow samples. The field teams can also take direct radiation surveys and collect and analyze in the field, airborne samples for gross and iodine radioactivity. For details of the specific type and amount of equipment contained in the out-of-plant survey kits see SAP-2, EMERGENCY EQUIPMENT INVENTORY.

The field assessment of airborne samples will be reported back to the EOF where the Dose Assessor or RPM will use the data for dose assessment. Other environmental media will be transported to an Environmental Lab for analysis.

One type of radiological data which the onsite and offsite survey teams will be collecting to aid in dose assessment is airborne radioiodine concentrations. Monitoring is accomplished by the use of portable air sampling pumps equipped with a particulate filter and silver zeolite cartridge. The particulate filter and silver zeolite cartridge can be analyzed in a low background area using a count rate meter and mini-scaler for determination of total radioiodine. The silver zeolite cartridges have an iodine retention in excess of 99% while retaining only traces of noble gases. Particulates are removed using a pre-filter. Gamma spectrometry at an Environmental Lab will be used for analysis as time permits but is not necessarily required to make a rapid

estimation of airborne radioiodine.

The count rates obtained from the filter and silver zeolite cartridges are multiplied by correction factors to determine the concentrations of particulates and airborne radioiodine.

With the use of silver zeolite cartridges, the interference from the presence of noble gases is not expected to impair the capability to detect less than lE-7 µCi/cc of radioiodine. Cartridges and filters also can be analyzed using gamma spectrometry in either the JAFNPP counting laboratory, an environmental laboratory, or the adjacent NMPNPS, Unit 1 laboratory.

4.2.3 Dose Assessment Methods and Techniques

Three methods are available at JAFNPP to assess offsite doses following an accident. The first method utilizes EP-AA-112-201, On-Shift Dose Assessment, for Control Room Dose Assessment. The second method utilizes EP-AA-112-200, Dose Assessment, in conjunction with the Unified RASCAL Interface (URI) computer application. The third method uses measured activity in environmental samples collected by the Emergency Radiological Survey Teams. All of these methods estimate external doses from noble gases and thyroid doses from radioiodine. A summary of each method is described in the following paragraphs.

The computer applications used to provide dose calculations are evaluated against the EPA-400 plume exposure Protective Action Guides (PAGs) applicable for the early phase of an accident. These evaluations place an emphasis on determining the necessity for offsite protective action recommendations. Dose assessment actions will be performed in the following sequence:

4.2.3.1 The Dose Assessment and the Emergency Classification and Protective Action Recommendations Procedures will be utilized from the onset of a release to approximately 1 hour post-accident: Shift personnel will rely on a simplified computerized dose model (URI in "rapid mode")to assist them in developing offsite dose projections using real time data from effluent monitors and site meteorology.

4.2.3.2 The Dose Assessment and the Emergency Classification and Protective Action Recommendations Procedures will be utilized from approximately 1 hour post- accident to event termination. Estimates of off-site doses based on more sophisticated techniques are provided. Dedicated ERO personnel will analyze the offsite consequences of a release using the full capabilities of the URI model. These additional methods are able to analyze more offsite conditions than the simplified quick method, as well account for more specific source term considerations.

The URI program utilizes the following features:

a. The system provides results of the sum of the effective dose equivalent from external radiation (both the plume and ground

deposition) and the committed effective dose equivalent from inhalation of radioisotopes (this total is referred to as the TEDE), committed dose equivalent to the thyroid (CDE-thyroid), as well as deposition rates and cumulative deposition at the ground.

b. URI uses both meteorological and source term data screens with editing capabilities, allowing both easy data-entry and the ability to review, edit, or update data entered for other time steps. User "help" functions are available on command, and upon entry of invalid data.

c. The URI meteorological data entry screen also allows for direct entry of data from the NMP-JAF Meteorological Monitoring System (MMS).

d. Program results for URI calculation routines include those for considering source term and plume decay, as well as the effects of wet and dry deposition of iodines and particulates.

e. The model also includes predefined Protective Action Guidelines for the plume and ingestion pathway EPZs to alert users of the program to any exceedances of pre-determined limits.

f. Multiple source term selection representing different isotopic mixtures can be entered or the default values changed to more accurately characterize an accident.

g. The URI model and JAF procedures integrate both JAF and Nine Mile Point dose assessment information.

4.2.3.2 Dose Estimates from Field Measurements

The third method available to assess dose rate is based on activity measured in environmental media. Three techniques will be used to calculate doses from gross radioactivity measurements: Direct gamma dose by TLD/DLR, in mrem; direct beta-gamma dose rate by portable survey instruments, in mrem/hr; and dose from gross measurements following radioiodine sampling. The first two techniques yield direct dose information. The third technique for dose rate determinations, involve environmental sampling by the survey teams with later evaluation using the Dose Assessment Procedure to determine offsite doses. Dose rates will be measured using portable survey instruments. Selective sampling for radioiodine will be performed using a silver zeolite cartridge preceded by a particulate filter. Silver zeolite cartridges are iodine specific because they permit approximately 99% of the noble gases to pass through.

The particulate filters and the silver zeolite cartridges are analyzed in the field by determining a gross count rate using a portable count rate meter and mini-scaler. Calculations of dose from the silver zeolite cartridge are based on the assumption that any measured activity is totally attributable to I-131. Gross measurements of particulate filters and silver zeolite cartridges will be performed in the field.

Because this method of analysis is less accurate than laboratory

analysis, protective actions will not be taken based on these data unless protective actions are deemed necessary and laboratory analytical results are not available.

If it is determined that a release of radioactive liquid to Lake Ontario has occurred, the projected TEDE and CDE skin doses received while boating or swimming on the lake will be determined in accordance with site processes.

Survey teams will also collect environmental media such as milk, human food products, water, snow, and soil which will be analyzed in an environmental laboratory for radioiodine (I-131, 133) by gamma spectrometry. These results, along with the gross radioiodine measurements mentioned above, will be used in determining CDE thyroid dose estimates in accordance with the Dose Assessment Procedure and environmental surveillance procedures.

Dose rate and dose information will be provided to the Radiological Assessment Coordinator (or Radiological Coordinator} for use in determining recommended protective actions.

## 4.3 Mitigative actions

Detailed operating procedures, emergency operating procedures, and Severe Accident Operating Guidelines (SAOGs) are utilized by the plant operating personnel to assist them in responding to potential or actual emergency events.

These procedures describe the mitigative actions necessary to place the plant in a safe condition. Long term mitigative actions will be taken as part of the Recovery phase (Section 3.7)

In addition, the Operational Support Center will be activated and serve during the emergency as the location for the assembly and dispatch of teams to respond to plant conditions. Specifically, damage control teams, fire brigades, and search and rescue teams will be directed in accordance with emergency implementing procedures. The appropriate Emergency Director will direct all mitigative actions through the appropriate emergency coordinators.

Some essential mitigative actions may involve the risk of higher than normal radiation exposure to emergency response personnel. Such actions could involve protecting valuable property, protection of large populations, or lifesaving actions. Figure 4.1 specifies the limits for such emergency radiation exposure and other relevant criteria to be considered.

## 4.4 Protective Actions

Protective actions are measures which are implemented to prevent or mitigate consequences to individuals during or after a radiological emergency. Protective actions within the JAFNPP site boundary are primarily the responsibility of the Shift Manager or SED, but may include assistance by offsite organizations.

Protective actions outside the JAFNPP site boundary are primarily the responsibility of State and local emergency organizations, but may include coordination of activities and dissemination of appropriate data with JAFNPP, and recommendations by the JAFNPP Corporate Emergency Director.

4.4.1 Onsite Protective Actions

The primary protective measure for onsite personnel in an emergency is prompt evacuation from areas which may be affected by radiation, concentrations of airborne radioactivity that exceeds normal limits for specific area or areas and cannot be readily controlled, or other hazardous conditions.

All personnel (including employees not having emergency assignments, visitors, and contractor and construction personnel) will be notified of an emergency situation by the sounding of the station alarm and an announcement over the public address system and by Security for the Wellness Center, etc.

A range of protective actions to protect onsite personnel during hostile action is provided to ensure the continued ability to safely shut down the reactor and perform the functions of the emergency plan.

4.4.1.1 Protected Area Assembly

A Protected Area Assembly may be ordered by the Shift Manager or SED for all of the protected area based on initiating conditions such as; high radiation levels, fire, toxic gases, etc. Actions will be taken in accordance with EP-CE-113, *Personnel Protective Actions.*

When a Protected Area Assembly is ordered, personnel will be instructed to proceed to the nearest primary assembly area via a route that bypasses the hazardous area.

Once at the primary assembly areas, accountability will be conducted. The Shift Manager or SED will then decide whether to implement a Site Evacuation, order an early dismissal, or to allow personnel to return to their normal work stations.

4.4.1.2 Site Evacuation

A Site Evacuation involves the movement of personnel from the site to a remote assembly area offsite or to their homes. A site evacuation may be ordered by the Shift Manager or SED based on severe abnormal conditions such as high radiation levels, safety hazards, or

declaration of a General Emergency. Initiating conditions and the implementation of a Site Evacuation are described in detail in EP-CE-113.

When a Site Evacuation is ordered by the sounding of the evacuation alarm, all personnel without emergency assignments will proceed offsite to the remote assembly area or to their homes using their own vehicles.

A Staging/Muster area and an Alternative TSC and Alternative OSC are available if the site is under threat of or experiencing hostile action. Augmented emergency response staff can be staged at these locations in a manner that provides rapid response to mitigate site damage as soon as the site is accessible, as well as continuity of TSC and OSC functions.

The remote assembly area is located at the Oswego County Airport on County Route 176 adjacent to the EOF and JIC in the Town of Volney. Should offsite radiological considerations exist, the Shift Manager or Station emergency director will direct the evacuating personnel to take alternate routes or designate an alternate remote assembly area, if necessary.

A Site Evacuation may be ordered with or without a Protected Area Assembly previously being ordered. If a Protected Area Assembly was ordered, accountability will have been accomplished previously. If no Protected Area Assembly was ordered, accountability will be accomplished when personnel exit the plant.

To minimize the spread of contamination, the Shift Manager or SED Manager will direct a team to evaluate contamination on cars and decontaminate them by onsite washing, if time permits. Personnel will be monitored and decontaminated at the remote assembly area by a radiation survey team dispatched from the plant if necessary.

4.4.1.3 Personnel Accountability

The Shift Manager or SED will inform Security and direct them to begin personnel accountability. An accountability supervisor is designated and is responsible for the implementation of personnel accountability and the reporting of results. All actions will be taken in accordance with EP-CE-113.

Accountability compares the name and number of persons in the primary assembly areas with the name and number of persons badged into the protected area. The results of this comparison and any discrepancies are reported to the Shift Manager or SED.

Following any unsuccessful attempts to locate missing personnel through supervisors, co-workers, and PA announcements, the Shift Manager or SED will be notified and will initiate search and rescue actions.

4.4.1.4 Other Onsite Protective Actions

a. Contamination Control

The JAFNPP Radiation Protection Department Procedures and Programs contain provisions governing the control of contamination including access control, use of protective clothing, contamination monitoring, and the release of potentially contaminated items from Radiologically Controlled Areas. The guidelines of this manual shall apply to contamination control during emergency conditions.

b. Food and water in Plant

Drinking water at the JAFNPP is provided by the City of Oswego and distributed by the domestic water system, which is a closed system. As a result of this configuration, contamination of the drinking water is unlikely.

A supply of water is maintained in the Control Room. With the exception of food brought to the site by Plant personnel, or prepared in the cafeteria, all other food supplied to the site arrives sealed for vending machine sale. These machines and the cafeteria are located in non-radiologically controlled areas. If these areas become contaminated, they will be considered as radiologically controlled areas, and eating will be prohibited as is normally the case for radiologically controlled areas. Normal radiologically controlled areas access controls will prevent the removal of contaminated food from these radiologically controlled areas and possible ingestion by unwary individuals.

c. Exposure Control

The exposure of Plant personnel during emergency operations shall be maintained as low as reasonably achievable, and should be maintained less than the administrative guides established in JAFNPP RP Procedures and Programs and/or less than the Federal radiation exposure standards established in 10 CFR 20. In order to accomplish this objective, administrative means used during normal operations to minimize personnel exposure, such as Radiation Work Permits, Authorization to Exceed Radiation Exposure Guides, and ALARA measures should remain in force to the extent consistent with timely implementation of emergency measures.

The Personnel Protective Actions Procedure shall be utilized to provide guidance where normal operations exposure control procedures are not sufficient.

Dosimetry equipment in the form of TLDs/DLRs, direct reading dosimeters and electronic dosimeters are provided at the plant, and such dosimetry will continue to be used during emergency situations.

Personnel will be available 24 hours per day during an emergency to issue and/or process dosimetry devices. JAFNPP RP Procedures and Programs provide guidelines and procedures for issuing, using, and reading/processing dosimetry devices and provisions for exposure record keeping. During an emergency, the processing frequency will be based upon the exposure rates and/or the exposures received by emergency personnel.

Exposure control shall include accelerated or additional bioassays in the event there are individuals who are suspected of being exposed to elevated levels of airborne activity as a result of the emergency.

This bioassay consists primarily of whole body counts. This is supplemented by urinalysis when predetermined screening levels, or predetermined airborne activity exposure levels, are exceeded or suspected of being exceeded (with provisions for follow-up monitoring, medical treatment, and incident reporting).

Exposure control may also involve administration of radioprotective drugs in accordance with the Personnel Protective Actions Procedure.

d. Respiratory Protection

The JAFNPP RP Procedures and Programs contain provisions covering the use of respiratory protection equipment and the administration of the JAFNPP Respiratory Protection program. The provisions of this program shall apply to all usage of respiratory protection equipment during emergencies.

4.4.2 Offsite Protective Actions

If an emergency exists at JAFNPP that involves the actual or potential release of airborne or waterborne radiation, the RPM or designee, will evaluate the doses projected to occur in the offsite area as described in section 4.2.3. Based on the projected dose, the RPM, will evaluate the need for protective actions for the public using EP-CE-111, Emergency Classification and Protective Action Recommendations. The projected doses will be compared to the EPA Protective Action Guides Figure 4-1 and a protective action recommended to the Corporate Emergency Director. The results of this evaluation and the recommended protective action information will be transmitted to the State of New York and Oswego County by the Corporate Emergency Director, or designee, via the dedicated communication system, or alternate communication method.

NOTE: If a General Emergency has been declared, protective action recommendations will be based on the flowcharts contained in the Emergency Classification and Protective Action Recommendations Procedure. However, responsible offsite officials must decide the feasibility of implementing the protective actions at the time of the accident.

The responsibility for actions to protect offsite individuals rests with the State of New York Department of Health, as described in the New York State Radiological Emergency Preparedness Plan.

The Chairman of the Oswego County Legislature, possibly assisted by the Commissioner, State Department of Health is responsible for implementation of that plan and the ordering of actions to protect the public.

Oswego County and NYSDOH is responsible for evaluating information obtained from JAFNPP and/or other sources and recommending appropriate offsite protective actions to Oswego County. Such recommendations, based on all available data, local constraints and other consideration may include:

- Shelter for affected populations.
- Evacuation within designated area(s).
- Control of drinking water, milk, and agricultural products.

Since the 10-mile Emergency Planning Zone is located entirely in Oswego County (See Figure 1-2), the principal offsite local coordinating agency for providing response to radiological emergencies in the vicinity of the JAFNPP is the Oswego County Emergency Management Office. Upon notification by NYSDOH or by the JAFNPP SM/ED or CED of a situation which may require protective actions for offsite populations, the Oswego County Emergency Management Office will initiate appropriate actions, including notification (see Figure 4.7) and provision of prompt instructions to the people within the plume exposure EPZ, considering recommendations from the notifying party, and within the guidelines of the Oswego County Radiological Emergency Plan.

In order to facilitate the planning and implementation of protective actions, the 10-mile Emergency Planning Zone is further subdivided in Emergency Response Planning Areas (ERPAs), Figure 4-3. All recommendations from JAFNPP to the State and from the State to the County will be in terms of ERPAs. The Public Information Program, Appendix H, will ensure that the public is aware of the proper response to an emergency or protective action order.

4.4.2.1 Sheltering

Sheltering may be ordered for the population within the 10-mile EPZ.

Sheltering involves the population going or remaining inside of their homes or place of business, to wait further information and instructions.

Sheltering is particularly useful to assure that a population is positioned so that if the need arises, communication with the population can be carried out expeditiously.

4.4.2.2 Evacuation

Evacuation may be ordered for all or part of the population in the affected ERPAs.

The Oswego County Radiological Emergency Preparedness Plan contains a detailed evacuation plan, which includes specific county agency operating procedures and evacuation route maps (refer to Figures 4-4 and 4-9), as well as special facilities throughout the ten-mile EPZ (see Figure 4-6). In addition, a reception center and congregate care centers are designated in the Onondaga County Radiological Emergency Response Host Plan.

4.4.2.3 Thyroid Prophylaxis

Federal Guidance from the NRC and FDA has prompted New York State and Oswego County to include the prophylactic use of potassium iodide (KI) as an additional public protective action. Implementation of this measure is in accordance with the NYS and Oswego County Plans.

4.4.2.4 Food, Water, and Milk Control

Within the Ingestion Pathway Emergency Planning zone (approximate 50-mile radius), the State Commissioner of Health may order controls to minimize radiation doses to the public through ingestion of contaminated food, water and milk. When requested, JAFNPP will assist with radiological sampling of environmental media and the results reported to the NYSDOH. In addition, other sources of sampling information will be used to evaluate the need for controls.

Ingestion Pathway protective actions can include the quarantine or destruction of contaminated water and foodstuffs and the substitution of uncontaminated supplies.

## 4.5 Aid to Affected Personnel

Procedures are established which provide for the control of radiation exposure including emergency exposure, personnel contamination, and for assistance to injured personnel, including situations involving complications due to the presence of radiation or radioactive contamination.

### 4.5.1 Radiation Exposure Control

The JAFNPP has an onsite dosimetry system. The system consists of DLRs, and/or direct-reading dosimeters or electronic dosimeters. A limited number of TLDs/DLRs and direct reading dosimeters are also available in emergency kits. During an emergency, personnel are available 24 hours per day to issue and/or process dosimetry devices and to document and maintain the results.

Exposures will be controlled based on the guidance and recommendations contained in the Personnel Protective Actions Procedure. This procedure provides for expeditious decisions with consideration given for a known and reasonable balance of associated risks.

Reasonable measures will be taken to limit the radiation exposure of emergency personnel who provide rescue, first aid, decontamination and ambulance or medical treatment services to within applicable exposure limits specified in 10 CFR 20 unless higher exposures are deemed necessary by the Emergency Director or appropriate offsite authority. Figure 4-1 summarizes the emergency and lifesaving actions such as:

- Removal of injured persons
- Undertaking mitigative actions
- Performing assessment actions
- Providing first aid
- Performing personnel decontamination
- Providing ambulance service
- Providing medical treatment services

4.5.2 Decontamination and First Aid

Personnel contamination in emergency situations will be controlled to the extent feasible by the normal methods of using protective clothing and surveying for contamination following the removal of such clothing.

Personnel decontamination areas, consisting of showers and sinks, which drain to the radwaste system, are available for either routine or emergency use at the JAFNPP. Similar facilities are available at the NMPNPS. Plant employees are instructed in the proper methods of removal of minor contamination from skin surfaces. Decontamination efforts involving significant amounts of contamination, particularly in the vicinity of facial openings, will normally be performed under the direction of Radiation Protection personnel. Detailed criteria and methods for personnel decontamination are described in the JAFNPP RP Procedures and Programs.

At least two persons who are knowledgeable in basic first aid methods are onsite at all times. Procedure FPP-1.4, *Medical Emergencies,* delineates steps for handling a contaminated medical injury. First aid to injured personnel can normally be performed in conjunction with any necessary decontamination methods. However, if immediate treatment of injury is vital, that treatment shall take precedence over decontamination. The philosophy also extends to offsite emergency assistance involving radioactive contamination. For that purpose, measures are established to ensure timely offsite medical treatment, as described in Sections 4.5.3 and 4.5.4.

4.5.3 Medical Transportation

Arrangements have been made for the transportation to a medical treatment facility of personnel who may have injuries complicated with radioactive contamination or who may have been involved in a radiation incident from the JAFNPP.

Agreements from this organization to provide emergency services are listed in Appendix C. Ambulance emergency supply kits are available for use.

A communication link can be established by radio between the County dispatcher and emergency vehicles. A communication link can be established by telephone between the JAFNPP and the dispatcher.

4.5.4 Medical Treatment

Arrangements have been made with the Oswego Hospital for the medical treatment of patients from the JAFNPP who may have injuries complicated by radioactive contamination.

Similar arrangements have been made with the University Hospital for medical treatment of contamination injuries and significant overexposure to radiation. Both facilities have developed detailed procedures for handling radioactively contaminated patients from the JAFNPP.

A listing of Letters of Agreement is contained in Appendix C.

A communication link can be established by telephone between the JAFNPP and any of these medical facilities, if necessary.

Medical treatment facilities and onsite personnel may also contact a radiation management expert who is contracted to provide radiological treatment advice upon request. This service is available to medical personnel 24-hours per day year-round. This contracted letter of agreement is contained in Appendix C.

## 4.6 Figures, Forms, and Attachments

Figure 4-1 Emergency Exposure Criteria
Figure 4-2 Ten-Mile EPZ Map
Figure 4-3 2010 Population Estimates ERPAs
Figure 4-4 Bus Routes and Pickup Point Map
Figure 4-5 Offsite Survey Locations
Figure 4-6 Special Facilities
Figure 4-7 Siren Locations
Figure 4-8 Offsite Environmental Stations and TLD Locations
Figure 4-9 Primary Evacuation Routes

## FIGURE 4-1
## Emergency Exposure Criteria

| Planned exposure to the whole body and/or specific organs shall not exceed the following recommendations of the Environmental Protection Aqencv in EPA-400-R-92-001 | |
|---|---|
| Guidance on Dose Limits for Workers Performing Emergency Services | |
| Dose Limit[a] TEDE (rem) | Activity |
| 5 | All activities during the emergency |
| 10 | Protecting valuable property. Lower dose not practicable. |
| 25 | Lifesaving or protection of large populations. Lower dose not practicable. |
| >25 | Lifesaving or protection of large populations, only if individual receiving exposure is a volunteer, and fully aware of risks involved |
| [a] Workers performing services during emergencies should limit dose to the lens of the eye to three times the listed value and doses to any other organ (including skin and body extremities) to ten times the listed value. These limits apply to all doses from an incident, except those received in unrestricted areas as members of the public during the intermediate phase of the incident. | |
| Additional General Criteria | |
| • All reasonable means for keeping personnel emergency exposures as low as reasonable achievable and within 10 CFR 20 limits shall be expended before exposure exceeding 10 CFR 20 limits are permitted. | |
| • All reasonable measures shall be taken to minimize skin contamination and the uptake of radioactive material. | |
| • All personnel performing emergency activities involving exposures, which may or will exceed 10 CFR 20 limits, shall be volunteers and shall be briefed on potential exposure consequences prior to receiving such exposures. | |
| • Women of childbearing age shall not be permitted to receive emergency exposures, which exceed 10 CPR 20 limits. | |
| • Retrospective exposures shall be evaluated on an individual case basis. | |

**FIGURE 4-2**
**MAP NUMBER 1**
**TEN MILE EMERGENCY PLANNING ZONE (PLUME EXPOSURE PATHWAY)**

This page is a large map and can be viewed in EDMS under:

Object Type - EXELON RECORD

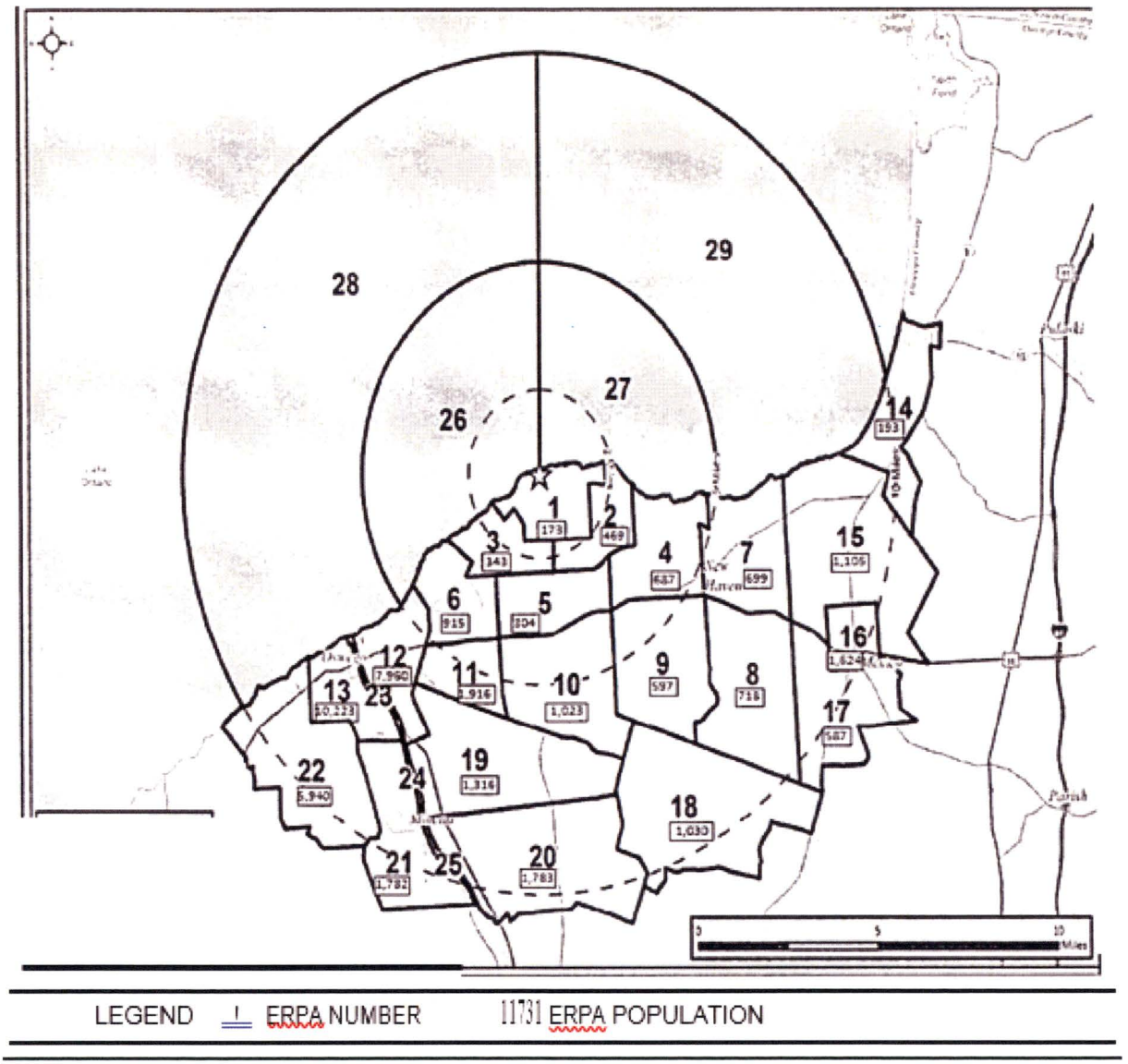
Doc Number - SECTION 6

Once EDMS Opens the List of Files

The PDF Name is: Section 6, Sheet 1, 20030527, Figure 6-2 EMERGENCY MEASURES

FIGURE 4-3

## 2010 POPULATION ESTIMATE ERPAS




2010 Population Estimates
Emergency Response
Planning Areas (ERPAs)

J.A. FitzPatrick/ Nine Mile Point
Radiological Emergency Response
Plan and Procedures

**FIGURE 4-4**
**MAP NUMBER 3**
**BUS ROUTES AND PICKUP POINT MAP**

This page is a large map and can be viewed in EDMS under:

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The PDF Name is: Section 6, Sheet 2, 20030176, Figure 6-4

EMERGENCY MEASURES

**FIGURE 4-5**
**MAP NUMBER 4**
**OFFSITE SURVEY LOCATIONS**

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Doc Number - SECTION 6

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The PDF Name is: Section 6, Sheet 3, 20030176, Figure 6-5 EMERGENCY MEASURES

**FIGURE 4-6**
**MAP NUMBER 5**
**SPECIAL FACILITIES**

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The PDF Name is: Section 6, Sheet 4, 20030176, Figure 6-6

EMERGENCY MEASURES

**FIGURE 4-7**
**MAP NUMBER 6**
**SIREN LOCATIONS**

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EMERGENCY MEASURES

**FIGURE 4-8**
**OFF-SITE ENVIRONMENTAL MONITORING STATION AND TLD LOCATIONS**
**PAGE 1 OF 1**

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Document Type - EMERGENCY PLANNING MAPS

Document ID - SECTION 6

**FIGURE 4-9**
**MAP NUMBER 8**
**PRIMARY EVACUATION ROUTES**

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Category - GENERAL RECORDS

Document Type - EMERGENCY PLANNING MAPS

Document ID - SECTION 6

## Section 5: Facilities and Equipment

Identified and described in this section of the Plan are the emergency response facilities; communications systems; assessment, protective, first aid, and decontamination facilities; and equipment which is available for the Exelon response to an emergency at JAFNPP. (Facility activation may be modified by the Emergency Director if the safety of incoming personnel may be jeopardized by a security event or other event hazardous to incoming personnel).

### 5.1 Emergency Response Facilities

The emergency response facilities are identified and described in this section.

#### 5.1.1 Control Room

The Control Room is the primary location in which plant conditions are monitored and controlled and mitigative actions are taken to mitigate emergency conditions. The room is equipped with instrumentation and controls for major plant systems. It is the facility in which initial accident assessment, emergency classification, and emergency response occurs. Meteorological and radiological instrumentation provide data for dose calculations. Emergency communications systems for in-plant and out-of-plant communications are also provided.

Initially, the on-duty Shift Manager will assume the role of Emergency Director and the Control Room will be the primary location for assessment and coordination of corrective and protective actions for essentially all emergency conditions. The Control Room is staffed as specified in the JAFNPP Emergency Plan.

Emergency response functions which are initially conducted in the Control Room will be transferred to the Technical Support Center or the Emergency Operations Facility, as soon as it is feasible to do so, for events which constitute an Alert, Site Area Emergency or a General Emergency. This transfer of emergency response functions may also be implemented for less severe events, at the discretion of the Shift Manager.

The primary consideration is to ensure that the activities and the number of personnel involved with the emergency in and around the Control Room shall not impair the safe and orderly shutdown of the reactor or the operation of plant safety systems.

#### 5.1.2 Technical Support Center (TSC)

Activation and the location of the TSC or OSC may be modified by the Shift Manager if the safety of incoming personnel is in question. Locations for consideration of ventilation include:

1. The JAFNPP Training Building

2. The JAFNPP Technical Library
3. The Emergency Operations Facility
4. The Backup OSC.

Other locations may also be considered.

The TSC is a facility external to the Main Control Room from which plant management and technical support personnel may operate during emergency situations. It is also the facility from which technical support is provided during recovery operations. The TSC will be operational within approximately sixty minutes of the notification of an ALERT, SITE AREA EMERGENCY, or GENERAL EMERGENCY. It may also be activated for an UNUSUAL EVENT at the discretion of the Shift Manager. The activation of the TSC is described in EP-AA-112-200, TSC Activation and Operation. The TSC is located in the old Administration Building on the second floor within a two-minute walk of the Main Control Room. The TSC is close to normal plant administrative offices which can provide additional documentation and equipment use in the TSC.

Assessment activities as well as coordination of corrective and protective actions for most emergency situations will be performed in this facility. These functions may include:

1. Providing guidance to the Control Room operating personnel.
2. Providing plant systems support for management personnel in the EOF during recovery operations.
3. Communication with other emergency response centers.
4. Providing direction to emergency coordinators.
5. Acting as the primary information source to the EOF and the NRC for plant operations.

This center provides an area outside of the Control Room in which to conduct the technical support functions necessary for the control of an emergency situation. These functions include:

1. Capability to display real-time plant status.
2. Capability to transmit plant status data.
3. Capability to communicate with the Control Room and the NRC.
4. Availability of plant systems drawings and other documents for decision making purposes.

The TSC is equipped with appropriate communications and other equipment to perform the above-mentioned functions.

5.1.3 Operations Support Center (OSC)

The OSC is located on the 272' elevation of the old Administration Building, and is the staging and dispatch area for all:

1. Maintenance and Instrument and Control technicians from which personnel will be selected and dispatched to emergency assignments.
2. Radiation Protection and Chemistry technicians who will be dispatched to obtain in-plant radiation measurements and samples.
3. Damage Control Teams.
4. Search and Rescue Teams.

The OSC is located near a Health Physics checkpoint. The issuance of personnel dosimetry, as well as monitoring and decontamination of personnel, may be accomplished in the OSC. Some specialized equipment is available for use in the OSC and is listed in the inventory procedure. The Operational Support Center has communications equipment, with which to control OSC related activities, either installed or readily available.

The OSC will be activated upon the declaration of an ALERT, SITE AREA EMERGENCY, or GENERAL EMERGENCY. It may also be activated for an UNUSUAL EVENT at the discretion of the Shift Manager. Activation and operation of the OSC will be in accordance with EP-AA-112-300, OSC Activation and Operation .

5.1.4 Backup Operational Support Center (BOSC)

The BOSC is located in a work area adjacent to the JAFNPP Control Room. If conditions warrant, and as directed by the JAFNPP Shift Manager or Station emergency director, OSC personnel shall move to and equip this facility. The BOSC is an area with same habitability design as the JAFNPP Control Room. (The 300 ft elevation outside the Control Room and within the TSC ventilation boundary may also be used if habitability conditions warrant. This area has the same habitability design as the TSC). Additional locations may be established as directed by the Shift Manager or Station emergency director, if needed. This facility could further be used to provide a TSC work area.

5.1.5 Emergency Operation Facility (EOF)

The Emergency Operation Facility is located near the Oswego County Airport on Rt. 176. This location is outside of JAFNPP security fence and the 10 mile EPZ and is within 30 minutes ground travel time from the TSC. The EOF will be the location where the following functions are to be performed.

1. Overall management of Exelon emergency response and recovery resources.
2. Evaluation, coordination, and communication of Exelon emergency response activities with Federal, State, and County emergency response organizations.
3. Determination/verification of the magnitude and effects of actual or potential radioactive releases from JAFNPP, as initially calculated in the

Control Room.
4. Receipt and coordination of field radiological survey data and sample media at the adjacent Environmental Lab.
5. Making recommendations to offsite agencies regarding protective actions.
6. Initial communications with Public Information Personnel.

The EOF will be activated following the declaration of an ALERT, SITE AREA EMERGENCY or GENERAL EMERGENCY. The EOF will be activated and/or take Command and Control within approximately one hour. It may also be activated for an Unusual Event at the discretion of the Shift Manager. The activation of the EOF is described in EP-AA-112-400, *Emergency Operations Facility Activation and Operation.*

The Emergency Operations Facility also services for Recovery. This area has sufficient space available for personnel and equipment necessary for planning and arranging recovery activities. Systems are provided for communications with other centers.

An emergency diesel generator is available for use at the EOF.

5.1.6 Joint Information Center (JIC)

The Joint Information Center is located next to the Oswego County Airport on Co. Rt. 176 in the Town of Volney. This facility will serve as the central location for release of all information from Exelon, as well as from local and State agencies to the news media.

The JIC is equipped to accommodate the news media for large briefings and conferences. Recording capability for briefings is included. Telephones are provided for the use of reporters. Off-air radio and television monitoring and recording capability is provided to alert Exelon and other representatives to incorrect information or rumors which may be broadcast. This information will then be corrected during briefings.

Rumor control will also be provided using a group of telephones at the JIC. Responses to media telephone inquiries will be handled by additional telephones at the JIC.

The Joint Information Center will be activated at the declaration of an ALERT, a SITE AREA EMERGENCY or GENERAL EMERGENCY. It may also be activated at a lesser emergency classification at the discretion of the Shift Manager.

An emergency diesel generator is available for use at the JIC.

5.1.7 Oswego County Emergency Operations Center (OCEOC)

The Oswego County Emergency Operations Center is located in the Emergency Management Office, County Branch Building, Fulton, NY. The County Warning

Point is located at the E-911 Center. Communication systems are manned 24-hours per day at this warning point. Upon activation by the Oswego County Emergency Management Office, communications, planning and coordination personnel will be available for emergency response.

A representative from JAFNPP will be dispatched to this facility to act as a liaison between the County and Exelon, when requested by County Officials.

5.1.8 State Emergency Operations Center

The State Emergency Operations Center is in the substructure of the Public Security Building No. 22, State Office Building Campus, Albany, NY. State Warning Point communication systems and the New York State Emergency Management Office are also located in this center. Communications systems operate on the around-the-clock basis. Upon activation, planning and coordination personnel will be available for emergency response.

5.1.9 Staging/Muster Area

A Staging/Muster Area with communication capabilities for contacting the Control Room and plant security is available to serve as a staging area for augmented emergency response staff if the site is under threat of or experiencing hostile action. The Staging/Muster area is the Remote Assembly Area located at the Oswego County Airport in Fulton, NY, approximately 12 miles from the JAF site. The Remote Assembly Area is adjacent to both the EOF and the Alternative TSC and Alternative OSC. Augmented emergency response staff can be staged at the Remote Assembly Area in a manner that provides rapid response to mitigate site damage as soon as the site is accessible.

5.1.10 Alternative Facilities

Should the primary TSC or OSC, or backup OSC not be available, an Alternative TSC (ATSC) and Alternative OSC (AOSC) are available. These two facilities are located in the EOF building and are positioned to take advantage of the EOF and Remote Assembly Area facilities which are in close proximity. The ATSC and AOSC have the following capabilities:

- communication with the emergency operations facility, control room, and plant security
- the capability to perform offsite notifications
- emergency assessment activities damage control team planning and preparation

The Alternative Facility maintains the capability for staging the TSC/OSC emergency response organization personnel in the event of a hostile action. The alternative facility has the capability for communications with the emergency operations facility, control room, and plant security and the capability for engineering assessment activities, including damage control team planning and preparation. Consistent with NRC EPFAQ No. 2013-005, the EOF will satisfy the offsite notification responsibilities for the Alternative Facility. The Alternative Facility is located at the Nine Mile/Fitzpatrick EOF on County Route 176, just outside

Fulton, NY, adjacent to the Oswego County Airport.

## 5.2 Communications System

The JAFNPP communication capabilities include multiple systems and redundancies, which ensure the performance of vital functions in transmitting and receiving information throughout the course of an emergency. Figure 5-1 shows the communication systems available and the primary communication links. As can be seen on the diagram, multiple communication modes and paths are available for emergency communications.

Following is a list of available communications systems along with a brief description of each:

### 5.2.1 Page/Party System (In-Plant)

- Control Room
- Technical Support Center
- Operational Support Center
- Office Area
- Other Plant Areas

The page/party system (Gaitronics) is comprised of a page channel connected to loudspeakers throughout the plant and three channels. System functions allow multiple personnel to participate in a conversation on each of the channels. The page system is also used for announcements and plant alarms.

The alarm mode must be initialized from the Control Room, but the conversation features are available in all emergency response facilities onsite and throughout the plant.

### 5.2.2 Sound Powered Phone System (In-Plant)

- Control Room
- Technical Support Center
- Other Plant Areas

The sound-powered phone system allows point-to-point Communications as well as multi-point communication without interference from cross-talk. This system is normally used for maintenance and testing but can be used for conversations between individuals performing specialized tasks (e.g., an individual in the Control Room and a technical specialist in the Technical Support Center). This system is operational from the relay room accessible from the TSC and Control Room.

### 5.2.3 Telephone System

- Control Room
- Operational Support Center (Primary, Backup, and Alternative)

- Technical Support Center (Primary and Alternative)
- Emergency Operations Facility
- Other Plant Areas
- Various Offsite Agencies

The plant telephone systems can be used for in-plant as well as outside communications. The system can be used for point-to-point or multi-point communications. Normal telephone lines are available at each emergency center.

The phone systems include many automated or programmable features that improve notification and allow communications flexibility. Cellular or satellite phones are also available at various locations.

5.2.4 Dedicated Telephone Links

5.2.4.1 Radiological Emergency Communications system (RECS)

The Radiological Emergency Communications System is a dedicated telephone network to be used for communications pertaining to nuclear emergencies at JAFNPP. The RECS system is available 24 hours per day, 7 days per week and is tested by New York State periodically.

The system consists of dedicated transmission telephones providing multi-party communication in a conferencing mode.

A station set is normally located at each of the following locations:

1. New York State Emergency Operations Center
2. New York State Watch Center
3. Alternate State Watch Center
4. State Department of Health
5. NYSOEM Regional Office
6. Oswego County Emergency Operations Center
7. Oswego County E-911 Center (Warning Point)
8. Nine Mile Point Control Rooms
9. Nine Mile Point TSC and EOF
10. JAFNPP Control Room
11. JAFNPP Technical Support Center
12. JAFNPP Emergency Operations Facility/Alternative TSC
13. NYSOEM Technical Resources
14. Joint Information Center

5.2.4.2 Other Dedicated or Special Lines

In addition to the RECS system, the following dedicated or special telephone connections exist.

a. Control Room to:

NRC
Technical Support Center
NMPNS
EOF
OSC

b. Technical Support Center to:
NRC
Control Room
NMPNS
Emergency Operations Facility
Operational Support Center
Backup Operational Support Center

c. Emergency Operations Facility to:
NRC
Technical Support Center
Operational Support Center
JAFNPP Radiation Protection Manager
Control Room

5.2.4.3 NRC Health Physics Network (HPN), FTS2001 Phones

This telephone system is part of the FTS2001. It is used to transmit health physics (radiological) data or other data to the NRC during an emergency. JAFNPP facilities at which these telephones are located include:

- Technical Support Center
- Emergency Operations Facility
- Several FTS2001 telephones exist at the TSC and EOF

5.2.5 Radio System

The JAFNPP radio system utilizes various frequencies at the following locations:

- Control Room radio console
- Technical Support Center radio console
- Emergency Operations Facility/Alternative TSC radio console
- Oswego County radio console
- Security Force radio console
- Portable Units
- Mobile Units

The radio system is intended to serve as a redundant communications system to the telephone system for initial notification and relaying assessment information as necessary. It is also used, in conjunction with cellular phones, to communicate with radiological survey teams.

5.2.6 Data Links

Plant Data System to:

- Technical Support Center
- Emergency Operations Facility
- Joint Information Center
- New York State
- NRC Operations Center

5.2.7 Hard Copy Transceivers (Telecopy)

- Oswego County Emergency Management Office
- Exelon Headquarters
- Technical Support Center (Primary and Alternative TSC)
- Emergency Operations Facility
- Joint Information Center
- New York State Office of Emergency Management
- Other Services as necessary

5.2.8 Alert and Notification System

In order to provide prompt notification to the public of emergency conditions, an Alert and Notification System (ANS) has been installed in the plume exposure EPZ.

The ANS consists of:

- The Alerting portion of the system, which consists of fixed sirens within the 10 mile EPZ. Figure 5-4 depicts the approximate locations of the fixed sirens within the 10 mile EPZ. As a backup to the siren portion of the alerting system, a 911-based mass notification system is available.
- The Notification portion of the system utilizes the Emergency Alert System (EAS) which consists of pre-designated radio stations that will broadcast public protective actions and other emergency news. The 911-based mass notification system can also act as a backup to the EAS portion of the notification system.

The design objectives, construction, operation and maintenance of the ANS meets or exceeds all of the relevant criteria for ANS delineated in NUREG - 0654 and FEMA - REP - 10. The above ANS attributes are described in "Design Report, Nine Mile Point Nuclear Generating Station and James A. Fitzpatrick Nuclear Power Plant, Public Alert and Notification System, Revision 1, November 2015" which was approved by FEMA in February 2016.

In accordance with instructions provided during periodic public information programs (Section 6 of the Plan), the alerted population will turn to EAS radio stations for emergency information and instructions. Nine Mile Point Nuclear Station and James A. FitzPatrick shall provide the hardware for the ANS within the plume

exposure pathway EPZ.

The responsibility for activation of the public warning system rests with the Oswego County Emergency Management Office. This organization will activate the alert portion of the ANS and supply appropriate emergency messages to the EAS station serving the jurisdiction in accordance with the provisions of their emergency response plans.

Reportability criteria for the Alert and Notification System failure is consistent with NUREG-1022 and industry guidance.

## 5.3 Assessment Facilities and Systems

### 5.3.1 Onsite Assessment Facilities

Initially following an emergency, the primary onsite emergency assessment facility is the Control Room. This assessment function is transferred to the TSC after that facility has been activated. These facilities are described in Section 5.1.

Post-accident radiological samples may be analyzed in the JAFNPP radiochemistry laboratory if background radiation levels permit. This in-plant laboratory has full computer/HPGe gamma spectral, gross beta and gross alpha analysis capabilities.

### 5.3.2 Offsite Assessment Facilities

In addition to the in-plant radiochemistry laboratory, the services of an environmental laboratory are available, which can be used for post-accident radiological sample analysis. This environmental laboratory has full computer/HPGe gamma spectral and gross beta analysis capabilities. That service is listed as a Letter of Agreement in Appendix C.

Post-accident radiological samples can be sent to the Nine Mile Point Nuclear Power Station radiochemistry laboratory in the event that the JAFNPP in-plant and contracted environmental laboratories are unavailable for any reason, such as high background radiation levels, or operation at full capacity.

If the above facility cannot perform the analyses or cannot handle the number of analyses required, samples can be sent to the R.E. Ginna Nuclear Power Plant laboratory, located near Rochester, about an hour away by car.

### 5.3.3 Assessment System

#### 5.3.3.1 Plant Radiation Monitoring Systems

This system, consisting of process and area radiation monitors, provides for personnel protection and accident assessment by measuring and recording radiation levels and radioactivity concentrations at strategically selected locations throughout the plant. The systems are described in the following paragraphs.

- Post Accident Sampling System (PASS)

  The post-accident sampling system shall provide means of obtaining primary and secondary containment atmosphere samples for determination of gas composition by means of gas chromatography, and for performing radiochemical analysis of noble gas, iodine, and particulate activities. Liquid samples shall be taken from the suppression pool and from the reactor coolant system under design conditions of temperature and pressure.

  The system is designed in accordance with the criteria set forth in NUREG-0578 with regard to post-accident sampling system performance and scope of radiochemical analysis.

  An in-line conductivity cell is used as the primary indicator of liquid chemical concentrations and changing chemical conditions. For rapid characterization of samples, pH paper may be used to establish pH to within ±0.5 pH units at high conductivities. The post-accident laboratory will have the ability to perform accurate chloride and pH determinations. The use of an in-line conductivity cell adequately satisfies the immediate need for chemical information without detailed analysis and eliminates unnecessary personnel exposure and the risk of major laboratory contamination. The system has the capability to provide a 1 to 1000 dilution of liquid samples to permit handling using existing facilities. Specific provisions for boron analysis are not included in the system. The only time boron would be present in the reactor coolant system is when the injection of sodium pentaborate was manually initiated from the Control Room via the standby liquid control system. In this case, an increase in reactor coolant system conductivity would indicate injection of the sodium pentaborate solution.

  Liquid samples may be drawn from the reactor coolant system via instrument lines in the reactor water recirculation system and the shutdown cooling configuration of the residual heat removal system. The suppression pool may be sampled from the core spray pumps or via the suppression pool cooling mode of the residual heat removal system.

Provisions have been made to obtain gas samples from the drywell and suppression pool atmospheres and from the secondary containment (Reactor Building).

The gas sampling system is designed to operate at pressures from sub-atmospheric up to the design pressures of the primary and secondary containments. Heat-traced sample lines prevent precipitation and subsequent loss of iodine in the lines. Gas samples may be passed through a particulate filter and silver zeolite filter for the determination of particulate activity and total iodine by analysis of the samples in a gamma spectrometer system. The system provides for grab sampling to allow analysis of gaseous activity as well as the dilution of high activity samples.

- Main Steam Line Radiation Monitoring System

The objective of the main steam line monitoring system is to continuously monitor for the gross release of fission products from the fuel. Indication of such a failure will initiate an alarm condition. The monitoring system consists of four gamma sensitive ionization chambers, logarithmic radiation monitor and dual pen recorder.

- Off-Gas Radiation Monitoring System

The objective of the off-gas radiation monitoring system is to continuously monitor radioactive effluents from the main condenser to the environment via the off-gas treatment system. This radiation monitoring system initiates closure of the off-gas isolation valve after a time delay when off-gas radiation levels exceed a preset limit. This system consists of two identical channels each consisting of a gamma sensitive ionization chamber and logarithmic radiation monitor. Both channels provide input to a dual pen recorder. The off-gas system is also equipped with sampling sub-system to allow for periodic grab sampling for laboratory analysis.

- Main Stack (Off-Gas Vent Pipe) Radiation Monitor

This subsystem monitors the release of radioactive material the environment via the main stack, which receives inputs from the off-gas system and the standby gas treatment system. Isokinetic probes in the stack provide a representative sample of the effluent to the detection system. This system consists of a pair of gamma sensitive scintillation

detectors. The output of these detectors is displayed in the Control Room on logarithmic radiation monitors and multipen recorders.

The High Range Effluent Monitoring System consists of three noble gas monitoring units connected in line with existing effluent monitors. One unit each is connected upstream of the turbine building exhaust sampler, the radwaste building exhaust sampler, and main stack effluent monitor.

Each monitoring unit contains two redundant ion chamber detectors. Associated with each detector is a meter type readout module in the main Control Room panel 09-2, having a range of 1E-1 to 1E+7 mR/hr. In addition to meter readouts, these modules supply digital outputs for annunciation of failure, high radiation ("alert") and high-high radiation. They also supply analog outputs for trend recording and computer logging.

The monitoring units also supply analog and digital outputs to the plant process computer. Digital outputs indicate failure, high, or high-high radiation conditions.

- Service Water and Reactor Building Closed Loop Cooling Water System Monitors

Each of these systems provides cooling water to various heat exchangers for the cooling of systems which may contain radioactive material. These continuous monitoring systems are used to detect leakage and prevent an inadvertent release of radioactive material to the environment. Each of these monitors consists of a gamma-sensitive scintillation detector in a shielded sampling chamber. Activity above a preset level is annunciated in the Control Room.

- Radioactive Waste Effluent Radiation Monitor

This subsystem is used for the control of discharges of low activity liquids. It is similar in design to other water monitoring systems. In the event activity exceeds a predetermined level, the trip unit of this system sends an isolation signal to the discharge valve of the liquid radwaste system.

- Ventilation Monitoring Systems

Ventilation monitoring systems are used to continuously monitor releases from building ventilation systems, provide alarms when releases approach preset levels, isolate

ventilation systems to protect the environment, and maintain habitability of the Control Room. The monitors for the radwaste building, turbine building, and reactor building are similar. They consist of a sampling pump, sample chamber, GM radiation detector, and logarithmic display. The monitors also contain in-line particulate and activated charcoal filters which are analyzed to provide a precise determination of releases to the environment. Alarms for high activity and inoperable detectors are provided in the Control Room. The reactor building ventilation monitors have two channels.

If effluent activity exceeds a preset level on either channel, the normal reactor building ventilation system is isolated and the standby gas treatment system is initiated.

The Control Room air inlet is continuously monitored by an in-line GM-type radiation detector. Indication is provided in the Control Room and an alarm is received if activity in the Control Room ventilation intake approaches preset levels.

- Drywell Continuous Airborne Radioactivity Monitors

  The drywell continuous airborne radioactivity monitor consists of two redundant systems. Each of these contains a sampling pump, sample chamber, gamma sensitive scintillation detector and filter chambers. Each system provides continuous indication of particulate and noble gas activity. The system also provides for sampling and analysis of halogens/iodine.

- Iodine Monitoring

  Routine monitoring of ventilation exhausts for iodine is accomplished by the use of in-line activated charcoal filters. These filters are periodically changed and analyzed in a gamma spectrometer. Routine grab sampling is performed using portable sampling pumps fitted with particulate and activated charcoal filters and are similarly analyzed. Continuous air monitors are also located in various areas of the plant and monitor gross airborne activity, as well as halogen activity.

  Monitoring during off-normal conditions can be accomplished by the use of portable sampling pumps equipped with particulate filter and silver zeolite cartridge. The silver zeolite cartridge can be analyzed in a low background area using a count rate meter for immediate determination of total iodine.

  Cartridges can be analyzed using gamma spectrometry in

either the JAFNPP counting laboratory, an environmental laboratory, or the adjacent NMPNS laboratory. The silver zeolite cartridges have an iodine retention in excess of 99% while retaining only traces of noble gases. Particulates are removed using a pre-filter. Thus, gamma spectrometry is not necessarily required to make a rapid estimation of airborne radioiodine. The count rate obtained using the silver zeolite cartridge is then multiplied by a correction factor to determine the concentration of airborne radioiodine. Using this method, it is possible to attain the required minimum detectable activity of 1E-7 µCi/cc.

- Containment Radiation Monitors

  Monitoring of radiation levels within the primary containment (drywell) is accomplished using two redundant high-range (1E+8 rem/hr) ionization chambers. These detectors are located in approximately opposite locations in the drywell. Indications of radiation levels and alarms for high radiation conditions are provided in the Control Room.

  As an aid in assessing the extent of potential core damage, plots have been developed which can be used to correlate containment radiation monitor reading versus time to varying percentages of fuel inventory in containment. The plots in EAP-44, Core Damage Estimation, can be used to estimate core damage as an input to URI.

- Area Radiation Monitoring System

  The fixed area radiation monitoring system consists of thirty units located throughout the plant. Each unit consists of gamma-sensitive GM tube encased in a protective cylinder. Indication of radiation levels is provided in the Control Room on logarithmic radiation monitors and multi-point recorder. Local indication is provided at many locations. The most common ranges are 0.1 to 1000 mR/hr. Monitors in areas such as laboratories, offices and Control Room range from 0.01 to 100 mR/hr. A high range radiation monitor on the refueling floor ranges from 0.1 to 1000 R/hr.

- High Range Effluent Monitor (HREM)

  Three HREM systems have been installed at JAF. The systems were installed to monitor unusually high-level stack, turbine building and radwaste building noble gas releases. Each system consists of a large volume sample chamber and two independent gamma sensitive instrument channels. The instrument readouts and recorders are located on a back panel in the main control room. Computer and annunciator alarms alert plant operators of unusual noble gas releases. A detailed HREM interpretation is contained in SP-03.08 series of procedures.

5.3.3.2 Fire Protection Systems

Fire protection in the plant is provided by a complete network of fire suppression and extinguishing systems. These systems are associated with fire alarms and are activated by a variety of thermal and products of combustion fire detection devices located throughout the plant.

5.3.3.3 Geophysical Phenomena Monitoring System

Monitors are provided for detecting and recording natural phenomena events which could result in plant damage due to ground motion or structural vibration and stress.

Backup information can be obtained from the NMPNPS which also has seismic detectors or a local National Weather Service Station.

Hydrologic conditions (e.g., floods, low water, hurricanes) would be observed by the shift operating crew and / or information would be provided by the U.S. Coast Guard, or a local National Weather Service Station.

5.3.3.4 Environmental Radiological Monitoring Systems

There are 15 environmental radiological monitoring stations, as shown in Figure 5-2 and 5-3. The inner ring of monitoring stations, designated the onsite monitoring stations, surround the plant at a radius of approximately 2000 feet from the plant. The outer ring of monitoring stations, designated the offsite monitoring stations, surround the plant at a radius which varies from approximately 6 to 15 miles from the plant.

Each of the 15 monitoring stations continuously collects a particulate and iodine air sample. A continuously operating

sample pump draws air through a two-inch diameter glass fiber filter followed in the flow path by a two-inch diameter by one inch thick charcoal cartridge.

The Technical Specification Environmental Monitoring Stations located at the site boundary, (R1, R2, R3 and R4), and the offsite Environmental Station (R5) each have a direct radiation monitor. The radiation monitors are Eberline Model ERM-2 which consist of a GM detector with an associated power supply and provides a digital dose rate readout. Historical (prior month) monitor readings may be obtained using a computer (PC) interface to access the monitors internal storage ROM. Each radiation monitor has an operating range of 1 μR / hr to 100 mR / hr. The radiation monitors are used to detect and measure dose rates resulting from possible plume releases of radioactive material from the plant.

Each of the 15 monitoring stations has the capability for collecting precipitation samples, if required.

5.3.3.5 Environmental Dosimeter of Legal Record (TLD/DLR) Monitoring Systems

The environmental TLD/DLR monitoring system is comprised of TLD/DLR stations placed on and around the site as shown in Figures 5-2 and 5-3.

The first group of TLD/DLRs is located within the site boundary. This group consists of TLD/DLR stations ranging in distance from adjacent to the plant buildings to approximately 0.9 miles from the plant.

The second group of TLD/DLRs is located beyond the site boundary. This offsite set consists of TLD/DLR stations ranging in distance from approximately 0.6 to 12 miles from the plant.

The current placement of environmental TLD/DLRs is in accordance with the approved Technical Specifications for the site and conforms to the NRC Radiological Assessment Branch Technical Position.

Each environmental TLD/DLR station is comprised of TLD/DLRs sealed in a polyethylene package to ensure dosimeter integrity. The TLD/DLR packages are further protected by placement in plastic enclosures, or by tape sealing to supporting surfaces.

The TLD/DLRs are collected, replaced and evaluated quarterly.

5.3.3.6 Emergency TLD/DLR Monitoring System

In addition to the environmental TLD/DLR monitoring system, a second group of TLD/DLRs called emergency TLD/DLRs has been placed in various locations around the site (as described in procedure EAP-5.3. These TLD/DLRs are evaluated as necessary.

The TLD/DLR chips are renewed quarterly.

5.3.3.7 Meteorological Measuring System

Wind speed, wind direction and temperature sensors are installed on an isolated tower at elevations of approximately 30 feet, 100 feet and 200 feet above grade. The data collected by these sensors are telemetered to the JAFNPP Control Room and TSC and are continuously recorded on strip charts or digital recorders.

This data is also available in the CR, TSC and the EOF in digital form.

Joint frequency distributions of wind speed and direction by atmospheric stability class are maintained to aid in the evaluation of radiation doses which may result from the release of radioactive material from the plant.

As a backup to the primary meteorological measuring system, JAFNPP has an onsite atmospheric sensor with the ability to measure the wind speed and direction at the approximately 90-foot level. The recorders for the backup system are located on the same Control Room and TSC panel as the recorders for the primary system, thus permitting instantaneous, real time readings from two sources. A 30-foot inland tower is also an additional source of meteorological data. These sensors also have digital readouts in the CR, TSC and EOF.

Offsite backup for meteorological data is available from the National Weather Service by telephone.

An additional source of meteorological information is available through online information services. The information services collect weather information comprised of surface and upper air reports, satellite and radar information and other meteorological data on a continuous basis from sources around the world.

Access to this data is available by JAF personnel through an internet computer link.

5.3.3.8 Emergency Radiological Survey Teams

Survey teams may be dispatched to provide immediate support for both onsite and offsite emergency condition assessment. Teams will be provided survey kits composed of adequate portable instrumentation and instruction packages to permit the monitoring of airborne gamma and radioiodine levels and the acquisition of environmental media samples. A listing of available equipment for use by the survey teams is contained in equipment inventory procedure.

The team's activities will be controlled by the Environmental Coordinator, or designee. Cellular phone and / or radio contact will be provided between the plant and survey teams.

Initial responsibilities for each team will include direct radiation measurements and the collection of airborne particulate and iodine samples. Following field evaluations, the collected samples will be individually packaged and identified to permit subsequent re-evaluation, if required. Monitoring locations for the initial surveys may be the locations identified in Figures 5.2, 5.3 and 5.5 and/or other locations as determined by the Emergency Directors and/or, Radiological Protection Managers, or designees.

The survey teams may participate in the collection of samples from the fixed assessment systems described in Sections 5.3.3.4, 5.3.3.5 and 5.3.3.6. The teams will also expand their sampling activities to include collection of environmental media as dictated by the Environmental Coordinator, or designee. Representative media referenced in the Site Radiological Environmental Monitoring Program will be sampled on an increased frequency commensurate with prevailing conditions. In addition to the airborne particulate samples, airborne iodine samples and the TLD/DLRs previously described, environmental media samples may include milk, soil, water and vegetation.

A full description of the radiological monitoring capabilities is described in Section 4, EMERGENCY MEASURES, 4.2.2 Field Radiological Assessment.

5.3.3.9 Process Monitors

Plant parameters such as reactor coolant system level and pressure, containment pressure and temperature and various system flow rates are indicated in the Control Room.

Such parameters are also available in the TSC and EOF via the Safety Parameter Display System(SPDS).

## 5.4 Protective Facilities

Facilities are provided which ensure adequate radiological protection for personnel assigned to emergency duties in the plant, and for the accommodation of other personnel evacuated from areas that may be affected by radiation and / or airborne radioactivity or other actions that may restrict access to the site.

### 5.4.1 Plant Control Room

In addition to serving as the initial control location for emergency situations, the plant Control Room has the following features which provide protection for personnel who may have emergency or operational duties throughout the course of any emergency:

1. Adequate shielding by concrete walls to permit continuous occupancy under severe accident conditions.

2. An independent emergency air supply system, equipped with absolute and activated charcoal filters.

3. Continuous monitoring of radiation levels in the Control Room and throughout the plant by the ARM system, with readout in the Control Room.

4. Emergency lighting and power supplied by a 125V dc system and battery packs.

5. Communications system, as described in Section 5.2.

Additional details regarding the design and inherent protective capabilities of the plant Control Room are discussed in the JAFNPP FSAR.

### 5.4.2 Technical Support Center (TSC)

The TSC serves as the long range emergency control facility. To allow for long-term human occupancy during an emergency situation, the following personnel protective features have been incorporated into design.

1. Adequate shielding by concrete walls to permit continuous long-term occupancy under severe accident conditions. (Certain areas of the TSC

may not be used under certain radiological conditions).

2. An air handling system equipped with HEPA filters to provide proper breathing air during a severe radiological accident.

3. Communications systems as described in Section 5.2.

4. Emergency lighting supplied by a 125V dc system and battery packs. Emergency power is supplied to some receptacles via a plant UPS.

5. Continuous monitoring of radiation and airborne activity levels in the TSC.

5.4.3 Primary Assembly Areas

Specific locations at the plant are designated for assembly of personnel in the event of a Protected Area Assembly. These areas provide space to accommodate personnel who may be at the plant. They are located on the basis of logical access routes and physical separation from likely areas of radiation and / or airborne radioactivity. See Procedure EP-CE-113-F-06, *JAF Assembly, Accountability, and Evacuation Guidelines,* for a listing of primary assembly areas.

5.4.4 Remote Assembly Area

The Oswego County Airport is designated as a remote assembly area, which provides the function of a staging/muster area.

This facility is located approximately 12 miles from the site on County Route 176 in the Town of Volney (Fulton, N.Y.). It is adjacent to the EOF/JIC and is away from the prevailing downwind direction.

Employee vehicles shall be used to transport employees to the Remote Assembly Area. Backup bus transportation is available from the Oswego County Emergency Management Office upon the Emergency Director's request. Evacuated personnel and vehicles can be decontaminated at this site if necessary.

## 5.5 Onsite First Aid and Medical Facilities

First aid treatment facilities, equipped with industrial first aid supplies, are located on the first floor of the Administration / Support Building.

## 5.6 Decontamination Facilities for Emergency Personnel

The personnel decontamination facilities at the JAFNPP and/or the EOF will be the primary facilities for decontaminating emergency personnel. If those facilities are unavailable for any reason, emergency personnel may be decontaminated at the NMPNPS facility.

The liquid waste from each of these decontamination facilities would be disposed of in the respective plant or facility liquid radwaste system. Solid waste would be disposed of in containers provided for this purpose.

A typical listing of personnel decontamination equipment is contained in the Radiation Protection Procedures.

## 5.7 Damage Control Equipment

Damage control equipment consists of normal and special purpose tools and devices used for maintenance functions throughout the plant. Personnel assigned to damage control teams are trained and participate in drills and exercises in accordance with the Drill and Exercise Program procedure. Guidance for damage control teams is contained in the Operations Support Center Activation and Operation Procedure.

## 5.8 Control of Emergency Equipment

A list of emergency equipment and kits is included in Appendix I, EMERGENCY EQUIPMENT KITS. The frequency of emergency equipment maintenance is specified in the inventory procedure.

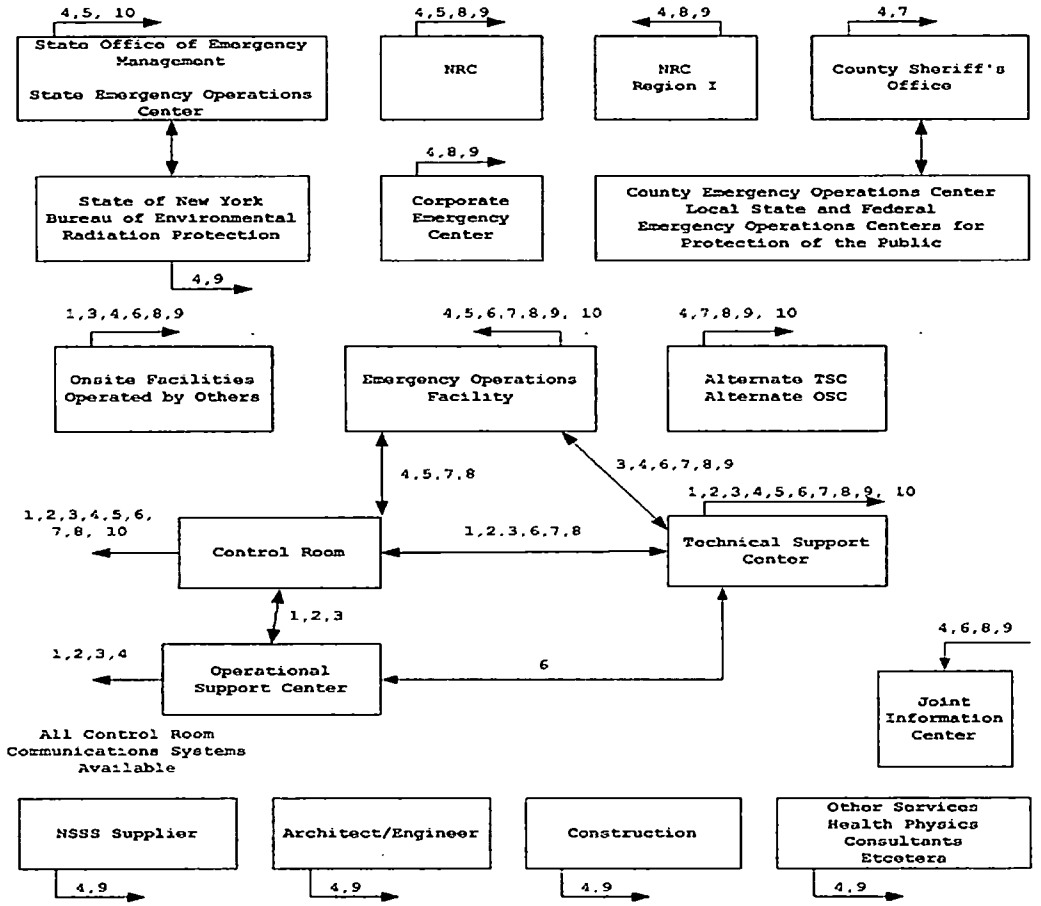
## 5.9 Federal Response Support

Information vital to Federal Response Support is contained in Appendix N, TYPICAL FEDERAL SUPPORT RESOURCES.

## 5.10 Figures, Forms, and Attachments

Figure 5.1 Emergency Communications Network
Figure 5.2 Onsite Environmental Station and TLD/DLR Locations
Figure 5.3 Offsite Environmental Station and TLD/DLR Locations
Figure 5.4 Siren Locations Map
Figure 5.5 Offsite Survey Locations Map

## FIGURE 5-1 Emergency Communications Network




Communications Systems
(Corresponding Numbers)

1. Page/Party System (In-Plant)
2. Sound-Powered Phone System (In-Plant)
3. Telephone - In-Plant
4. Telephone - Outside/Normal Line
5. Telephone - Auto Dial
6. Telephone - Dedicated Line
7. Radio
8. Data Link
9. Hardcopy Transceiver (Telecopy)
10. Satellite phone

J.A. FITZPATRICK NUCLEAR POWER PLANT
EMERGENCY PLAN
FIGURE 7.1
EMERGENCY COMMUNICATIONS NETWORK

**Figure 5-2, Onsite Environmental Station and TLD/DLR Locations**

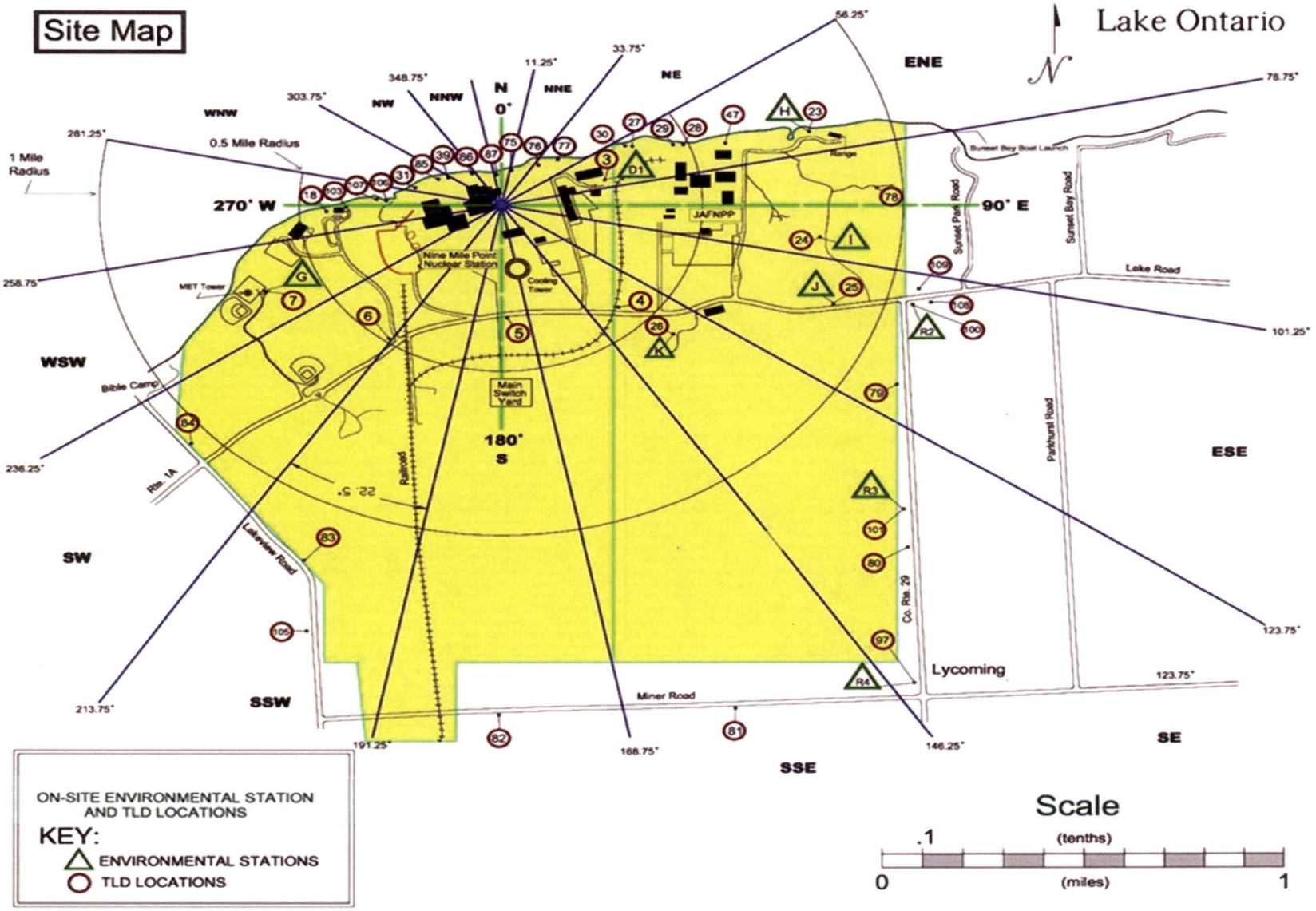


**Figure 5-3, Off-Site Environmental Station and TLD/DLR Locations**

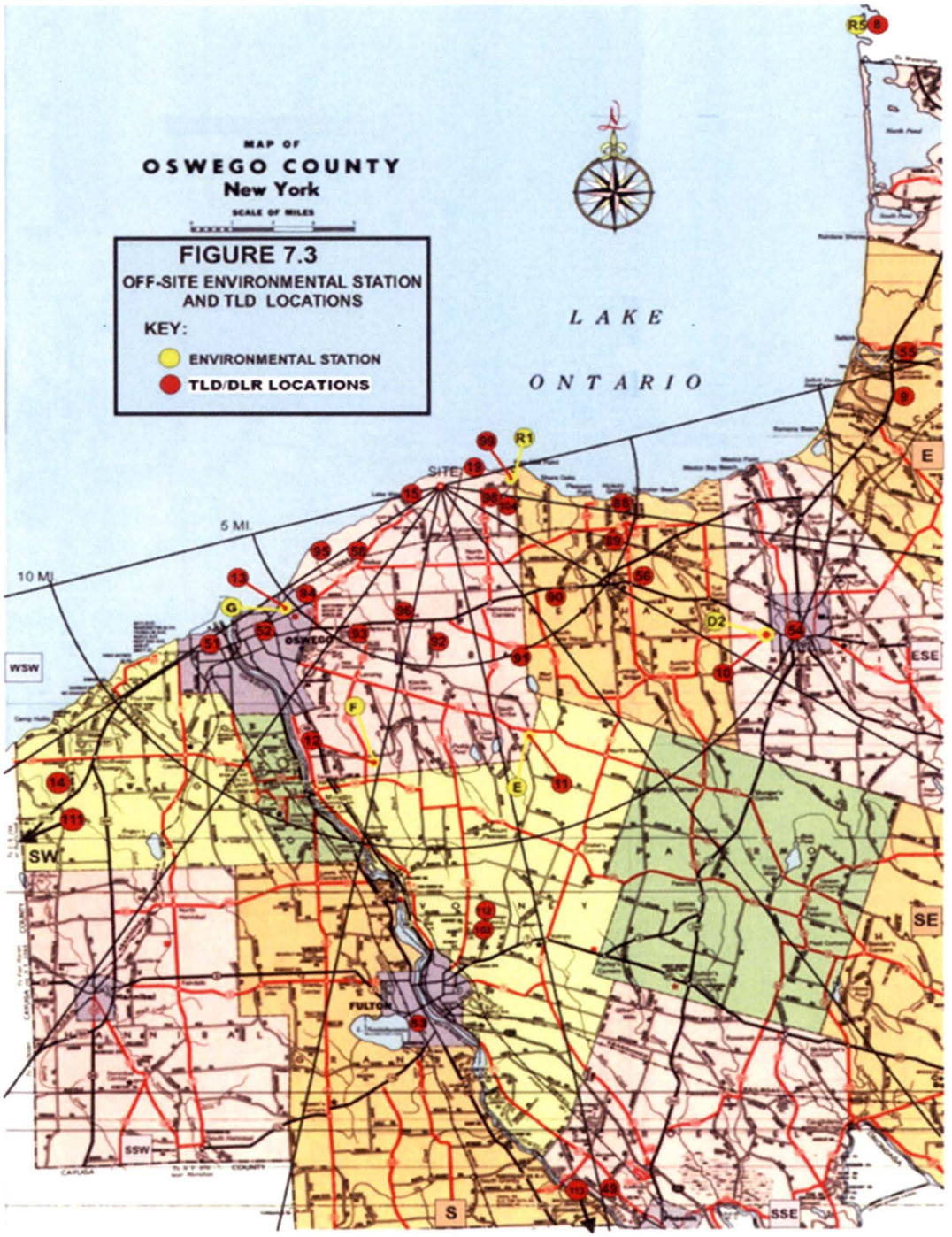
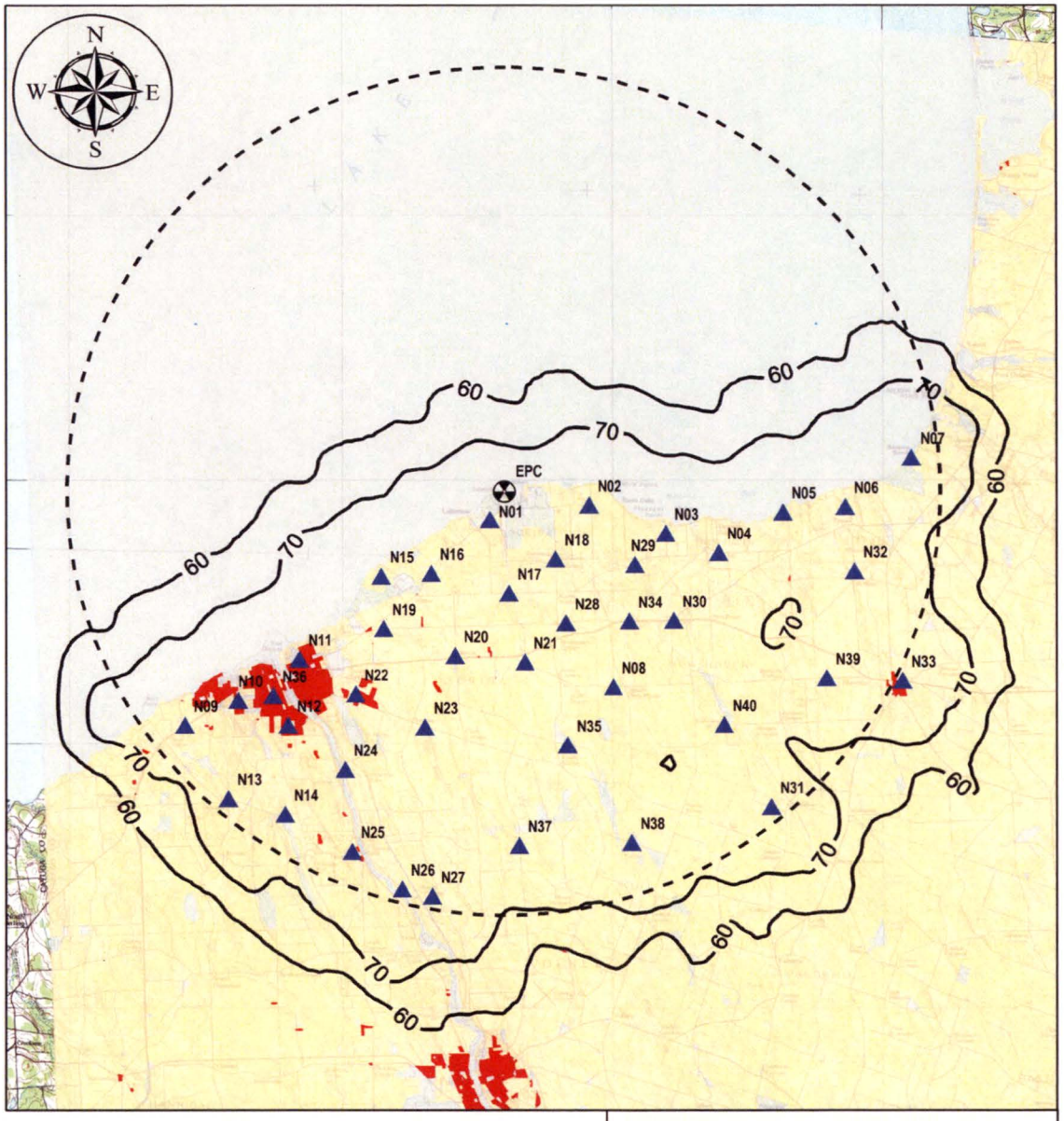


**Figure 5-4, Siren Locations Map**
Page 1 of 2




**Nine Mile Point/JA FitzPatrick ANS Sirens**

0 2 4 8 12 16 Kilometers
0 1 2 4 6 8 10 Miles

Population within the 10mile EPZ: 40,634
Source(s): US Census Bureau 2010
United States Geological Survey (USGS)

**Legend**

| | | |
|---|---|---|
| PLANT | **Population Density** | |
| T-128 | > 2000 | ppl/SqMi. |
| OVPM-dBC | < 2000 | ppl/SqMi. |
| 10Mi EPZ | 0 | ppl/SqMi. |

FIGURE 5.4 - SIREN LOCATIONS

MAP NUMBER 6

Page 2 of 2

To search for the map do the following in EDMS:

1.) Log onto EDMS Reference Library via the intranet
2.) Type in your user name, pass word, and group is general
3.) Click on general records
4.) In the Document ID area type in Section 7 and hit search
5.) Highlight the row that has title - "Figure 7-4 Emergency Facilities and Equipment"
6.) Select view from top
7.) Select preview
8.) The map should appear and you can resize it if you like
9.) The document is MAP NUMBER 6 - SIREN LOCATIONS
10.) Map may be printed on any size paper for expansion and ease of reading, depending on printer selected.

**Figure 5.5 Offsite Survey Locations Map**
Page 1 of 2

FIGURE 5.5 - OFFSITE SURVEY LOCATIONS
MAP NUMBER 4
Page 2 of 2

To search for the map, do the following in EDMS:

1.) Log onto EDMS Reference Library via the intranet
2.) Type in your user name, pass word, and group is general
3.) Click on general records
4.) In the Document ID area type in Section 7 and hit search
5.) Highlight the row that has title - "Figure 7-6 Emergency Facilities and Equipment"
6.) Select view from top
7.) Select preview
8.) The map should appear and you can resize it if you like
9.) The document is MAP NUMBER 4 - OFFSITE SURVEY LOCATIONS
10.) Map may be printed on any size paper for expansion and ease of reading, depending on printer selected.

## Section 6: Maintaining Nuclear Emergency Preparedness

Emergency preparedness is maintained at the JAFNPP through administrative controls designed to; (1) train and periodically retrain site personnel, and offsite emergency organization personnel, (2) evaluate onsite and offsite proficiency and provide hands on experience through drills and exercises, (3) ensure that plans and implementing procedures are in place and current through document control procedures, (4) maintain sufficient stores of functional emergency equipment and supplies through equipment inventory procedures, (5) and maintain public and news media awareness of emergency preparedness through annual information updates and meetings with members of the media.

### 6.1 Responsibility for Maintaining Emergency Preparedness

The Plant Manager has overall authority and responsibility for radiological emergency response planning. The Emergency Preparedness Manager is delegated the overall authority and responsibility for radiological emergency response planning and has the responsibility for developing and updating emergency plans and implementing procedures.

Primary duties of the Emergency Preparedness Manager or Emergency Planners include coordination of training with the Training Director for JAF personnel and with offsite organizations, scheduling and coordination of drills and exercises, maintenance of plans and implementing procedures, and maintenance and inventory of emergency equipment. The Emergency Preparedness Manager usually delegates the responsibilities for maintenance and inventory of emergency equipment to the Emergency Planners.

The JAFNPP Training Director is responsible for ensuring that all personnel who have emergency plan duties at the JAFNPP receive the appropriate emergency preparedness training.

The Training Director shall coordinate the scheduling of training of onsite personnel and provide for the training of all offsite fire support personnel.

The Emergency Preparedness Manager shall be responsible for coordinating, scheduling and administrating news organization training.

The Oswego County Director of Emergency Management is responsible for planning and conducting emergency preparedness training for emergency response personnel in Oswego County.

The Director Emergency Programs is responsible for ensuring that corporate personnel who have emergency plan duties supporting JAFNPP receive the appropriate emergency preparedness training.

Individuals responsible for Emergency Planning are trained in accordance with paragraphs 6.2 - Training of Emergency Personnel and 6.3 - Emergency Planning Staff Training. In addition, the Emergency Planning Staff receives training by:

attendance at Emergency Planning Workshops conducted with other utilities and attendance at NRC, FEMA and other government sponsored Emergency Planning seminars and, participation in JAFNPP specific training programs related to emergency preparedness.

## 6.2 Training of Emergency Personnel

Plant personnel, participating corporate personnel, and offsite response organization personnel that respond to onsite requests for assistance receive emergency response training in accordance with their roles in an emergency.

The JAFNPP Training Department shall maintain a centralized records program concerning Emergency Plan Training Documentation. Records will include classroom training for plant personnel, and records documenting drills and exercise participation.

The following curriculum shall be completed by individuals on the Authorized Access List.

a. Overview of the Emergency Plan, include planning objectives, emergency organizations and facilities, the existence of coordinated procedures and the ability of the Emergency Response Organization (ERO) to mitigate the consequences of emergencies.

b. Site alarms and general responses.

c. Onsite and offsite evacuation routes, assembly areas, and decontamination of personnel and vehicles.

d. Reporting of fires, injuries, spills and other emergency conditions.

e. Accountability procedures.

f. Emergency classifications.

g. Rumor control.

Personnel assigned to the JAFNPP with specific emergency preparedness duties and responsibilities shall receive specialized training for their respective assignments. The types of training given in conjunction with Emergency Preparedness are:

a. Training for directors, coordinators, and personnel responsible for accident assessment

b. Emergency Communications training

c. Training for Radiological Monitoring Teams and Radiological Assessment personnel

d. Emergency access control, evacuation and accountability

e. Search and rescue/first aid response

f. Emergency repair/mitigative actions

g. Training for onsite firefighting personnel

h. Medical support personnel

i. Offsite firefighting personnel

j. Severe Accident Management training

Figure 6.1 – Emergency Response Training presents a summary of the emergency response training program including type of training, personnel receiving training, frequency of training and retraining, applicable procedures, and objectives of the training. The emergency planning training program is described in the Standard Plan and TQ-AA-113, *ERO Training and Qualification.*

Training will include classroom training and where applicable practical training.

6.2.1 Annual Review of Emergency Action Levels

The Emergency Preparedness Manager, in accordance with 10 CFR 50, shall conduct an annual review of the JAFNPP Emergency Action Levels (or changes to those EALs from the prior review cycle) with appropriate representatives of New York State and Oswego County. Reviews will be documented by memorandum.

## 6.3 Emergency Planning Staff Training

Personnel responsible for the Fitzpatrick emergency preparedness effort receive appropriate training to maintain their level of competency. On an annual basis, site Emergency Planning staff may participate in any one of the following. The Site Emergency Preparedness Manager and staff attend relevant seminars and meetings on emergency preparedness issues, such as those held by the NRC/FEMA and Nuclear Energy Institute. In addition, appropriate technical literature (such as that received from NEI, FEMA, NRC, etc.) is reviewed to assist in maintaining this competency. Training requirements for FitzPatrick personnel responsible for the emergency planning effort are described in the Standard Plan and in the Emergency Plan Administration procedure.

## 6.4 Drills and Exercises

An exercise is an event that tests the integrated capability and a major portion of the basic elements existing within emergency preparedness plans and organizations.

Drills and Exercises are discussed in the Standard Plan and EP-AA-122-100, Drill and Exercise Planning and Scheduling. Drills and exercises provide the means to evaluate training effectiveness under simulated emergency conditions, skills developed during training, reinforce correct actions and identify and correct short-comings in training, equipment, or procedures.

6.4.1 Drills

A drill is a supervised instruction period aimed at testing, developing and maintaining skills in a particular operation. A drill is often a component of an exercise. A drill may also be tabletop supervised instruction or role-playing.

The Emergency Preparedness Manager is responsible for the conduct of drills listed in Figure 6.2 - Schedule of Drill Performance (except for Fire Fighting drills which are the responsibility of the Training Director).

Drills shall be conducted using the following guidelines:

a. Drills are planned in advance using formal scenarios (except communications drills which may be performed by a single individual).
b. Observers/evaluators, and/or controllers are designated and briefed in advance, as required.
c. Drill critiques are conducted as described in the Standard Plan and in accordance with the Drill and Exercise Evaluation procedure. The results of the critique along with observer, evaluator, controller and participant comments are utilized to evaluate and resolve any identified shortcomings.
d. Major elements of the JAFNPP Emergency Plan are tested within an eight-year period.
e. At least once per eight-year period a drill starts between 6:00 p.m. and 4:00 a.m.
f. Drills are conducted under various weather conditions.

6.4.2 Exercises

The Emergency Preparedness Manager is responsible for the coordination and conduct of exercises. Exercises are conducted at least once every two years in accordance with NRC and FEMA rules. The conduct of exercises is described in the Standard Plan and the Drill and Exercise Program procedure. In summary, the following criteria apply to exercises conducted at JAFNPP.

Exercises will be conducted using the same criteria as applied to drills and in accordance with the Figure 6.2 -Schedule of Drill Performance as summarized below:

a. The JAFNPP Exercise should include simulated off-site radiological releases.

b. Federal, State, and company observers/evaluators may be present.
c. Exercises are planned in advance using formal scenarios.

d. Scenarios shall be reviewed and approved in advance by the Emergency Preparedness Manager and a representative from the Plant Operations Safety Review Committee (PORC) or senior management reviewer. The reviewer should have plant experience and have participated in an SRO training program or have a current SRO license.

e. Observers, evaluators and controllers are designated and briefed in advance.

f. Unannounced exercises are controlled through input of initiating events by controllers.

g. Observers, evaluators, controllers and participants comments from the exercise documentation package.

h. The NRC/FEMA critique is factored into the exercise documentation package (when applicable).

i. The exercise documentation package is used as a basis to evaluate shortcomings and develop a plan to correct deficiencies through additional training or equipment or procedure revision.

j. Drill/Exercise report generation is discussed in the Standard Plan and EP-AA-122, *Drills and Exercise Program*.

6.4.3 Drill and Exercise Scenario Preparation Responsibilities

The development of drills and exercises for JAFNPP shall be coordinated by the JAFNPP Emergency Preparedness Manager. The JAFNPP Training Director shall have the responsibility for developing plant specific data. The JAFNPP Emergency Preparedness Manager shall have the responsibility for ensuring plant specific radiological data is provided. Exercise Scenario preparation shall be conducted by a committee and documented by the Emergency Preparedness Manager. Responsibilities are discussed in the Standard Plan and the Drill and Exercise Program procedure.

## 6.5 Document Maintenance

6.5.1 Plans and Procedures

The JAFNPP Emergency Plan and Procedures will be maintained in the format and by the method specified in the EP-AA-120, Emergency Plan Administration, and Exelon fleet Document Control Administrative procedures.

6.5.2 Letters of Agreement

The Emergency Preparedness Manager will ensure that letters of agreement from all participating organizations are reviewed and recertified. Recertification may include a written recertification, purchase order documentation, memo form, or a memo of a telephone conversation. The Plant Manager JAF is the individual with the authority and responsibility to make agreements with utility and non-utility organizations.

6.5.3 Reviews

An independent review of the JAFNPP Emergency Preparedness Program shall be conducted by Nuclear Oversight. The independent review shall be conducted in accordance with 10CFR50.54(t) as follows:

- At intervals not to exceed 12 months or,
- As necessary, based on an assessment by the licensee against performance indicators, and as soon as reasonably practicable after a change occurs in personnel, procedures, equipment, or facilities that potentially could adversely affect emergency preparedness, but no longer than 12 months after the change. In any case, all elements of the emergency preparedness program must be reviewed at least once every 24 months.

- The review must include an evaluation for adequacy of interfaces with State and local governments and of licensee drills, exercises, capabilities, and procedures. The results of the review, along with recommendations for improvements, must be documented, reported to the licensee's corporate and plant management. The part of the review involving the evaluation for adequacy of interface with State and local governments must be available to the appropriate State and local government.

6.5.5 Supporting Documents

A list of supporting documents is contained in Appendix J, Supporting Documents. Documents on this list will be maintained in the manner specified by the agency the supporting document is received from.

## 6.6 Maintenance and Inventory of Emergency Equipment and Supplies

Periodic testing, calibration and inventory of emergency equipment and supplies are conducted in accordance with Emergency Plan Implementing Procedure SAP-2, EMERGENCY EQUIPMENT INVENTORY. The Emergency Preparedness Manager or designated alternate shall conduct an annual review of this procedure to ensure the operational readiness of emergency equipment and supplies.

Emergency equipment and instrumentation shall be inventoried, inspected and operationally checked monthly, quarterly, or semiannually as indicated by the procedure and after each use. Sufficient reserves of equipment and instrumentation are stocked to replace emergency equipment and instrumentation removed from service for calibration and/or repair.

Appendix I, EMERGENCY EQUIPMENT KITS presents a list of emergency equipment and instrumentation and emergency equipment kits.

Records detailing the testing, calibration and inventory of emergency equipment and supplies shall be maintained for two years.

Communications checks and drills will be conducted in accordance with SAP-3,

EMERGENCY COMMUNICATIONS TESTING. This procedure specifies that certain emergency telephones and telephone numbers shall be verified at least quarterly.

## 6.7 Maintenance of Public and News Media Awareness

### 6.7.1 Public Awareness

JAF, in conjunction with the Nine Mile Point Site, New York State EMO, and the Oswego County EMO, has established an information program for the permanent residents and transient population within the Plume Exposure EPZ. The information provided emphasizes the means of notification and subsequent actions to be taken in the event of an emergency at the JAFNPP (or NMPNPS), and includes information on contacts for additional information and protective measures. Refer to Appendix H, PUBLIC INFORMATION PROGRAM for detailed information.

Information is distributed to permanent residents by various methods, including mailings to their residence or placement in local telephone books. Postings in public areas and places of business frequented by the transient population is the principal method for informing those individuals.

Public postings are updated as necessary and public distribution shall be conducted at least annually, or a frequency to coincide with telephone book distribution.

### 6.7.2 Residents Who May Require Special Care

Information for residents who may require special care (e.g. handicapped, elderly) is included with the annual mailing sent to the resident population. Along with this information is a card that is requested to be returned if an individual requires special care. A list of these individuals is maintained by the OCEMO for their use.

### 6.7.3 Rumor Control

Rumor control is conducted by a telephone answering system that may include both mechanical or electronic devices as well as operators for the answering of calls from the public.

### 6.7.4 News Media Awareness

News media awareness is completed by meeting with representatives annually in conjunction with Oswego County, Nine Mile Point, and New York State, or other means, as necessary. These meetings provide information concerning radiation, emergency planning, and the means established for the release of information to the news media during an emergency. In addition, media manuals are distributed to media organizations, as necessary.

## 6.8 Figures, Forms and Attachments

Figure 6.1 - Emergency Response Training

Figure 6.2 - Schedule of Drill Performance

## Figure 6.1 - Emergency Response Training

| TITLE/FUNCTION | ASSIGNED PERSONNEL | FREQUENCY | TRAINING OBJECTIVE |
|---|---|---|---|
| Emergency Plan Indoctrination for Non-Essential Personnel | Personnel requiring regular access to the site. | Per General Employee Training | Emergency Plan content and implementation; specifically:<br>• personal actions<br>• warnings<br>• assembly areas<br>• use of station communications<br>• personnel accountability<br>• evacuation to an offsite assembly area |
| Emergency Plan Indoctrination for Essential Personnel | Essential personnel who may be assigned to specific response functions in JAFNPP Emergency Plan. | Before assuming position,<br><br>Once per calendar year not to exceed 18 months between training sessions thereafter. | The objective of Emergency Plan Indoctrination for Essential Personnel shall be to provide Emergency Response Personnel a more detailed knowledge of the plant Emergency Plan and Procedures to ensure these personnel are familiar with their scope, applicability, and implementation. |
| Personnel responsible for accident assessment and/or Accident management<br><br>*Licensed Operator training may be substituted for Emergency Director training. | SM/Emergency Director and the Emergency Director at EOF, TSC, OSC and, EOF Managers; and Alternates | Before assuming position,<br><br>Once per calendar year not to exceed 18 months between training sessions thereafter. | Instruction on the JAFNPP Emergency Plan and Implementing Procedures and Technical Support Guidelines germane to their particular assessment/management function, including Incident Command System (ICS) concepts, position titles and terminology. |

## Figure 6.1 - Emergency Response Training (continued)

| TITLE/FUNCTION | ASSIGNED PERSONNEL | FREQUENCY | TRAINING OBJECTIVE |
|---|---|---|---|
| Emergency Plan Training for Licensed Operators and Shift Technical Advisors | Any personnel not listed above who are assigned to a position that requires a valid USNRC Operator License, or who are designated as STAs. | Before assuming position,<br><br>Once per calendar year not to exceed 18 months between training sessions thereafter. | The objective of Emergency Plan training for Licensed Operators and STAs shall be to ensure the capability for immediate response, assessment, and the implementation of measures to prevent or mitigate the consequences of emergencies. |
| Severe Accident Management Training | Designated Staff | Before assuming position,<br><br>Once per calendar year not to exceed 18 months between training sessions thereafter. | The objective of SAM training shall be to ensure the capabilities for coordination, and assumption of responsibilities of actions associated with Severe Accident Operations Guidelines. |
| Emergency Plan Training for Non-Licensed Operators | Non-Licensed Operators | Before assuming position,<br><br>Once per calendar year not to exceed 18 months between training sessions thereafter. | The objective of Emergency Plan training for Non-Licensed Operators shall be to ensure the capability for immediate response by conducting measures to prevent or mitigate accident conditions. |
| Emergency Communications | Designated Primary and Alternates:<br><br>a. ENS Communicator<br>b. Offsite Communicators (EOF)<br>c. EOF Communicators | Before assuming position,<br><br>Once per calendar year not to exceed 18 months between training sessions thereafter. | The objective of training for emergency communicators shall be to review appropriate Implementing Procedures, communications equipment and messages, including Incident Command System (ICS) concepts, position titles and terminology. |

**Figure 6.1 - Emergency Response Training (continued)**

| TITLE/FUNCTION | ASSIGNED PERSONNEL | FREQUENCY | TRAINING OBJECTIVE |
|---|---|---|---|
| Radiological Assessment | Designated Primary and Alternates:<br><br>a. Radiological Protection Manager (EOF)<br>b. Environmental Coordinator (EOF)<br>c. Dose Assessor (EOF) | Before assuming position,<br><br>Once per calendar year not to exceed 18 months between training sessions thereafter. | The objective of training for personnel performing radiation monitoring and analysis duties will include downwind and/or in plant radiation monitoring and sampling Implementing procedures, including Incident Command System (ICS) concepts, position titles and terminology. |
| Radiological Controls and Surveys during Emergencies | Designated Primary and Alternates:<br><br>a) In-Plant Radiological Controls and Downwind Survey Teams<br>b) RP Technicians<br>c) Chemistry Technicians<br>d) Radiation Protection / Chemistry Coordinator<br>e) Offsite Monitoring Team | Before assuming position,<br><br>Once per calendar year not to exceed 18 months between training sessions thereafter. | The objective of training for personnel performing radiation monitoring and analysis duties will include downwind and/or in plant radiation monitoring and sampling Implementing Procedures, including Incident Command System (ICS) concepts, position titles and terminology. |
| Emergency Access Control, Evacuation and Accountability | Security personnel assigned responsibilities for Emergency Plan function, and Local Law Enforcement Officials. | Before assuming position,<br><br>Once per calendar year not to exceed 18 months between training sessions thereafter. | Training and retraining requirements are outlined in the Exelon Fleet Nuclear Security Training and Qualification Plan, including Incident Command System (ICS) concepts, position titles and terminology. |

**Figure 6.1 - Emergency Response Training (continued)**

| TITLE/FUNCTION | ASSIGNED PERSONNEL | FREQUENCY | TRAINING OBJECTIVE |
|---|---|---|---|
| Search and Rescue/First Aid Response | Plant Fire Brigade members. | Before assuming position,<br><br>Once per calendar year not to exceed 18 months between training sessions thereafter. | Designated members will receive training as appropriate in basic patient care and treatment. Members will also be instructed on the availability of onsite medical treatment supplies and equipment; communication systems; access controls radiological hazards; and roles, interfaces and responsibilities with local fire/medical support personnel, including Incident Command System (ICS) concepts, position titles and terminology. and to provide effective search and rescue capabilities for missing, trapped or injured personnel in an emergency. |
| Damage Control / Repair Teams personnel | Designated Primary and Alternates:<br><br>a. TSC Maintenance Manager<br>b. OSC Director<br>c. Mechanics<br>d. Electricians<br>e. Instrument and Control Technicians<br>f. Electrical/I & C Lead<br>g. Mechanical Lead | Before assuming position,<br><br>Once per calendar year not to exceed 18 months between training sessions thereafter. | Position-related training provides the qualification for job functions of the listed personnel and, as such, special training in these functions, other than appropriate emergency plan and procedures training, is not required. |

**Figure 6.1 - Emergency Response Training (continued)**

| TITLE/FUNCTION | ASSIGNED PERSONNEL | FREQUENCY | TRAINING OBJECTIVE |
|---|---|---|---|
| Onsite Fire Fighting Personnel | a. Fire Brigade members and Supervisors as specified in the Fire Protection Procedures Manual | Once per calendar year not to exceed 18 months between training sessions. | Develop well-trained fire brigade whose actions minimize injuries, property loss and damage and lost generation time. |
| Medical Support Personnel and Offsite Fire Fighting Personnel | Offsite Fire Departments, Ambulance and Hospital Personnel. | Annually | Designated members will receive training as appropriate in basic patient care and treatment. Members will also be instructed on the availability of onsite medical treatment supplies and equipment; communication systems; access controls radiological hazards; and roles, interfaces and responsibilities with local fire/medical support personnel, including Incident Command System (ICS) concepts, position titles and terminology. |
| COMMUNICATION | Function of Communications link to State and Local Governments | Monthly | Plant<br>NY State<br>Oswego Co. |

**Figure 6.1 - Emergency Response Training (continued)**

| TITLE/FUNCTION | ASSIGNED PERSONNEL | FREQUENCY | TRAINING OBJECTIVE |
|---|---|---|---|
| Communication | Function of Communications link to Federal Emergency Response Organization | Monthly | Plant<br>ENS<br>HPN<br>NRC |
| Communication | Function of Communications network out to field assessment personnel | Annually | Plant<br>NY State<br>Oswego Co.<br>Plant Field Monitoring Teams |
| Fire Fighting | Fire Brigade Response | Refer to FPPs | Plant -<br>Operations<br>Fire Brigade<br>Misc. Personnel<br>Offsite -<br>Scriba FD<br>(Mutual Aid) |

**FIGURE 6.2**
**SCHEDULE OF DRILL PERFORMANCE**

| TITLE/FUNCTION | ASSIGNED PERSONNEL | FREQUENCY | ORGANIZATION(S) /PERSONNEL | TRAINING OBJECTIVE |
|---|---|---|---|---|
| COMMUNICATION | Function of Communications link to State and Local Governments | Monthly | Plant<br>NY State<br>Oswego Co. | Test in Accordance with SAP-3, EP-AA-122 |
| MEDICAL EMERGENCY | Treatment of Contaminated, injured person | Annually | Plant -<br>Operations<br>First Aid Team<br>Misc. Personnel<br>Offsite -<br>Ambulance Personnel<br>Hospital Personnel | In Accordance with written scenario per EP-AA-122, EP-AA-122, EN-EP-308 |
| Radiological Monitoring | Dispatching and directing survey teams to perform radiation surveys and collect environmental samples (air, soil, water, etc.). | Annually | Plant -<br>Radiological Assessment Coordinator<br>Radiological Coordinator<br>Radiological Monitors<br>Other Support personnel | In accordance with written scenario per EP-AA-122, EP-AA-122, EN-EP-308 |

# SECTION 7: DEFINITIONS AND ACRONYMS

## 7.1 Definitions

This section contains the definition of terms for the James A. FitzPatrick Nuclear Power Plant.

Accountability - The process by which the onsite emergency organization determines the location of personnel in order to identify missing and/or injured personnel.

Activated - Status of an emergency facility declared by the appropriate facility manager upon determining that the facility is adequately staffed and equipment is setup and available to assume/perform the emergency functions assigned to that facility.

Alert - Events are in process or have occurred which involve a potential or actual 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 a hostile act. Any releases are expected to be limited to small fractions of the EPA Protective Action Guides exposure levels beyond the site boundary.

Alternate NY State Watch Center (Alternate SWC) - The Alternate NY SWC is located in the New York State Police Communications Center in Public Security Building No. 22, State Office Building Campus, Albany, New York. This facility is manned 24 hours per day to receive Radiological Emergency Communication System (RECS) or alternate notifications during off-hours.

Area Radiation Monitor (ARM) – Instruments (some of which are fixed) which typically measures gross gamma radiation levels in a local area and alarms when the radiation exposure rate reaches the preset alarm level.

Assessment Actions - Those actions taken during or after an accident to obtain and process information necessary to make decisions to implement specific emergency measures.

Augmented Dose Assessment - Dose Assessment from the Emergency Offsite Facility (EOF) or Technical Support Center (TSC) utilizing dose assessment staff.

Command and Control – This is the function where the current Emergency Director resides (Control Room, TSC, or EOF).

Committed Dose Equivalent (CDE) - The dose equivalent to organs or tissues of reference that will be received from an intake of radioactive material by an individual during the 50-year period following the intake (organ dose) (per EPA-400 definition).

Committed Effective Dose Equivalent (CEDE) - The sum of the products of the weighing factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to these organs or tissues.

Corporate Emergency Director (CED) – The designated individual who has the authority, management ability, and technical knowledge to manage Exelon Nuclear' s Emergency Response Activities.

Mitigative actions - Those emergency measures taken to mitigate or terminate an emergency situation at or near the source of the problem in order to prevent an uncontrolled release of radioactive material or to reduce the magnitude of a release.

County Warning Point - The E-911 Center at the Oswego County Public Safety Building in Oswego. This serves as a notification point for messages from the utilities to appropriate officials in Oswego County.

Deep Dose Equivalent (DDE) - Applies to external whole body exposure, is the dose equivalent at tissue depth of 1 cm (1,000 $mg/cm^2$) [external whole body dose].

Dose Equivalent (DE) - The product of the absorbed dose in tissue, quality factor, and all other necessary modifying factors at the location of interest; measured in rem or seivert.

Dose Projection - A calculated estimate of the potential dose to individuals at a given location, usually off site.

Emergency Actions - A collective term which encompasses the assessment, corrective and protective actions taken during the course of an emergency.

Emergency Action Levels (EAL) - Plant instrumentation readings, survey measurements or off normal plant conditions that are used to classify an emergency. (See Emergency Classification System.)

Emergency Action Procedure (EAP) - The procedures which provide a detailed list of responsibilities and actions to be implemented by personnel staffing emergency facilities.

Emergency Alert System (EAS) [formerly Emergency Broadcast System (EBS)] - A network of radio stations organized to permit designated government officials a means of timely and efficient issuance of emergency information and instructions to the public.

Emergency Classification System - A system that categorizes certain abnormal plant conditions into one of the following classes:
- Unusual Event
- Alert
- Site Area Emergency
- General Emergency

Emergency Operations Center (EOC) - Designated state and county facilities used for the assessment of emergency information and coordination and control of local and state emergency response personnel.

Emergency Operations Facility (EOF) - The designated and equipped facility that is used to provide continuous coordination with local, state, and federal agencies, and provide

evaluation of FitzPatrick activities during an emergency having or potentially having environmental consequences. The EOF is located on County Route 176, approximately 12 miles south of the JAF plant.

Emergency Plan Implementing Procedures - The procedures, which detail the specific course of action for implementing the emergency plan at the JAF Facility.

Emergency Preparedness Manager - The individual responsible for the coordination of emergency planning efforts.

Emergency Plant Manager (EPM) – Individual normally assigned to the TSC who normally oversees the onsite and plant aspects of the emergency. The EPM reports to the Emergency Director.

Emergency Planning Zone (EPZ) - There are two Emergency Planning Zones. The first is an area, approximately 10 miles in radius around the JAFNPP, for which detailed emergency planning consideration of the Plume Exposure Pathway has been given to ensure prompt and effective protective actions for the public. The second is an area, approximately 50 miles in radius around the JAFNPP, for which emergency planning consideration of the Ingestion Exposure Pathway has been given to ensure effective preventative measures for the public.

Emergency and Plant Information Computer (EPIC) - Computer providing display of plant data to the Control Room, TSC, and EOF. EPIC includes Safety Parameter Display System (SPDS) information.

Emergency Response Data System (ERDS) - A computerized link between JAF EPIC data system and the NRC Operations Center.

Emergency Response Facility (ERF) - ERF is a generic term referring to a facility that is used for emergency purposes. These facilities include the Control Room, Technical Support Center, Emergency Operations Facility, Operational Support Center, Alternate Operational Support Center, Joint Information Center, Oswego County Emergency Operations Center.

Emergency Response Planning Area (ERPA) – Pre-designated sub-areas within the 10-Mile Emergency Planning Zone used to more specifically target the recommendation of off site protective actions.

Emergency Response/Recovery Organization – The organizational structure within the James A. FitzPatrick Nuclear Power Plant Emergency Response Organization, which is responsible for coordinating response and recovery from emergency conditions at the plant. EP-CE-115, Termination and Recovery, specifies the Recovery Organization.

Emergency Telecommunications System (ETS) - Part of the Federal Telecommunications system used by the NRC for emergency communications.

Exclusion Area - The property of the James A. FitzPatrick Nuclear Power Plant and Nine

Mile Point stations surrounding the Protected Area in which the licensee has the authority to determine all activities including exclusion or removal of personnel and property from the area.

Federal Radiological Monitoring and Assessment Plan - An arrangement whereby the Department of Energy and other federal agencies provide teams to assist JAFNPP, Oswego County and New York State with an in-depth capability during a radiological emergency.

Final Safety Analysis Report (FSAR) - Multi-volume report describing a nuclear power plant's site, design features, safety features and the utility's intended methods of operation.

General Emergency - Events, which are in process or have occurred which involve imminent or actual substantial core degradation or melting with the potential for loss of containment integrity, or Security events that result in an actual loss of physical control of the facility.

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

Ingestion Exposure Pathway - A pathway by which individuals can be exposed to radiation from ingestion of contaminated water or foods such as milk, fresh vegetables, and fish.

Initial Dose Assessment - Dose assessment using a pre-calculated dose assessment value tree, to be conducted before augmented dose assessment.

Joint Information Center - Located next to the Oswego County Airport on Co. Rt. 176 in the Town of Volney. The Joint Information Center provides a central facility for the release of information to the public. The facility includes participants from JAFNPP, Nine Mile Point, Oswego County, New York State, and Federal Agencies.

Joint Information Center Manager - ERO position whose primary responsibility is direction of all activities at the Joint Information Center and coordination of information.

Meteorological Monitoring System - A computer and software that accesses the main, backup and inland tower data. Data is accessible via designated computers.

National Warning System (NAWAS) - A nationwide warning system used to warn of actual or impending natural or man-made disasters. NAWAS warning points are strategically located and are manned on a 24-hour-a-day basis.

New York State Emergency Operations Center (NYSEOC) - The New York State EOC is located in the substructure of the Public Safety Building No. 22, State Office Building Campus, Albany, New York. It is the State Command Post from which emergency operations will be directed and coordinated.

NSSS Supplier - Nuclear Steam Supply System Supplier, General Electric Company, San Jose, California.

Offsite - The area outside the Exclusion Area. Offsite surveys include the area inside the exclusion area, but outside the protected area.

Onsite - The area within the Exclusion Area.

Operational Support Center (OSC) - The area on the 272' level of the old administration building that serves as an onsite assembly and dispatch area for plant survey, fire, rescue, and maintenance teams.

Oswego County Emergency Management Office (OCEMO) - The lead local government agency responsible for off site emergency response within the 10 mile EPZ surrounding the James A. FitzPatrick Nuclear Power Plant.

Oswego County Emergency Operations Center (OCEOC) -Located in the Emergency Management Office in the basement of the Oswego County Branch Building, Fulton, New York; serves as a command post from which emergency operations will be directed and coordinated.

Oswego County Warning Point (OCWP) - The dispatch center at Oswego E-911 Center in Oswego. This serves as a notification point for messages from the utilities to appropriate officials in the County.

Plant Data Acquisition System - A computer link making plant data available for onsite and offsite emergency facilities.

Plant Operator - Any member of the plant staff who, by virtue of training and experience, is qualified to assess the indications or reports for validity and to compare the same to the EALs in the licensee's emergency classification scheme.

Plume Exposure Pathway - The principal exposure sources from this pathway are: a) external exposure to gamma radiation from the plume and from deposited material; and b) inhalation exposure from the passing radioactive plume. This pathway is commonly identified as the 10 mile EPZ.

Population at Risk - Those persons for whom protective actions are being or would be taken.

Primary Assembly Areas - Specific locations at the plant designated for the assembly of personnel in the event of a Protected Area Assembly.

Projected Dose - The estimated radiation dose that would be received by individuals following a release of radiation.

Protected Area - The area within the plant security fence designated to implement the

security requirements of 10 CFR 73.

Protected Area Assembly – Assembly of individuals from the Protected Area at designated primary assembly areas.

Protective Actions - Actions taken in anticipation of / or after a release of radioactive material, for the purpose of preventing or minimizing radiological exposures to persons that would otherwise be likely to occur if the actions were not taken. Some of the protective actions are:
- Protected Area Assembly
- Site Evacuation
- Sheltering off site population
- Evacuation of the off site population
- Isolation of ingestion pathways and sources

Protective Action Guides (PAG) - Guidance developed by the Environmental Protection Agency regarding projected radiological dose or dose commitment values to individuals in the general population that warrant protective action following a release of radioactive material.

Radiologically Controlled Area (RCA) – Any area, access to which is limited for the purpose of protecting individuals against undue risks from exposure to radiation and radioactive materials. The RCA is posted with a sign bearing the radiation caution symbol in magenta, purple or black on a yellow background. Examples of radiologically controlled areas are:
- Reactor Building
- Turbine Building
- Radwaste Building
- Main Stack

Examples of other postings within an RCA include:
- RADIOACTIVE MATERIALS
- CONTAMINATED AREA
- AIRBORNE RADIOACTIVITY AREA
- HIGHLY CONTAMINATED AREA
- RADIATION AREA
- HIGH RADIATION
- VERY HIGH RADIATION AREA

Radiological Emergency Communications System (RECS) -System used to provide initial notification of an emergency, and continuing emergency information, to the State, Oswego County and Nine Mile Point Stations.
Recovery Activities - Those actions taken after the emergency to restore the plant as nearly as possible to its pre-emergency condition.

Remote Assembly Area - Specific locations outside the JAFNPP exclusion area for the assembly of personnel in the event of a Site Evacuation. The primary Remote Assembly Area is the Oswego County Airport on Co. Rt. 176 in the Town of Volney.

Restricted Area – An area, access to which is limited by the licensee, for the purpose of protecting individuals against undue risks from exposure to radiation and radioactive materials. Separate rooms or areas in any building may be set apart as a restricted area. The restricted area is that area inside of the protected area fence and any other area within the site boundary that is appropriately identified and restricted from unauthorized entry.

Severe Accident Operating Guidelines (SAOG's) – Guidelines to assist in dealing with a Severe Accident.

Safety Parameter Display System (SPDS) - System providing a display of plant data from which the safety status of plant operations may be assessed in the Control Room, Technical Support Center and Emergency Operations Facility.

Site Area Emergency - Events which are in process, or have occurred, which involve potential or actual major failure of plant functions needed for protection of the public, or Security events that result in intentional damage or because of intentional malicious dedicated efforts of hostile action: toward site personnel or equipment that could lead to the likely failure of, or: prevents effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guide exposure levels beyond the site boundary.

Site Evacuation - Evacuation of all people, except NMPNS personnel, from the exclusion area and evacuation of all nonessential personnel from the JAFNPP protected area via the security gate to the designated Remote Assembly Area or home.

Site Recovery Director – The Site Recovery Director is responsible for the management of recovery operations and other support functions. The Recovery Director is the senior company official who has the requisite authority, management ability and technical know-how to manage the nuclear power plant recovery operations. He has full authority to make required decisions regarding plant recovery without consulting higher management.

Spokesperson - ERO position whose primary responsibility is to act as the individual to coordinate all outgoing information to public officials, the news media and to the public.

State Emergency Operations Center - The New York State EOC is located in the substructure of the Public Safety Building No. 22, State Office Building Campus, Albany, New York. It is the State Command Post from which emergency operations will be directed and coordinated.

State Watch Center (SWC) - A center for receipt and dissemination of warnings of an attack upon the United States as well as for actual or impending natural or man-made disasters.

Station Emergency Director (SED) - The position designated in the emergency response organization that has the authority and responsibility to implement and administer the Emergency Plan at the station.

Technical Support Center (TSC) - The emergency facility activated and staffed by plant management and other personnel during an emergency to utilize technical data and

displays to provide direction for implementation of emergency procedures, and in-depth technical support to Control Room activities. Located on the second floor of the old administration building.

Technical Support Guidelines (TSG's) – Guidelines providing information for use in implementing SAOGs.

Thyroid Dose and Thyroid Dose Rate - These terms have been replaced with Committed Dose Equivalent-Thyroid (CDE-Thyroid). CDE-Thyroid is defined as the internal dose that will be received by the thyroid over 50 years following an intake of radioactive materials plus the deep dose equivalent to the thyroid. For application offsite, dose to the child thyroid has been agreed upon by the New York State Dose Assessment Task Force. For application onsite to JAFNPP emergency workers, an adult thyroid dose is used.

Total Effective Dose Equivalent (TEDE) - The sum of the Deep Dose Equivalent (DDE) plus Committed Effective Dose Equivalent (CEDE) from inhalation components.

Unified Rascal Interface (URI) - Dose assessment software that is operated from a PC or the network that utilizes real-time met data inputs to project dose to members of the public for use in determining PARs. URI uses the NRC's RASCAL dose model and has a user plant specific front end and output format. URI has two modes – the first is a rapid assessment mode that is utilized by the Control Room, and the second is a detailed dose assessment mode that is utilized by the EOF.

Unrestricted Area - An area, access to which is neither limited nor controlled by the licensee.

Unusual Event (UE) - 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. No releases of radioactive material requiring offsite response or monitoring are expected, unless further degradation of safety systems occurs.

Web-based Emergency Operations Center (WebEOC) – A crisis information management software tool.

Whole Body Dose and Whole Body Dose Rate - These terms have been replaced with Total Effective Dose Equivalent (TEDE). TEDE is defined as the sum of the deep dose equivalent (DDE) (external dose) and the inhalation components. The New York State Utilities Dose Assessment Task Force agrees with the recommendation of NUMARC in defining TEDE (previously external dose) as the DDE and any measurable thyroid CEDE components during the early phase of the emergency. The early phase is defined up to the first four days after an emergency. In this usage, the TEDE rate may be considered equivalent to a gamma dose rate reading on a fixed or portable survey instrument. Actual iodine, particulate and ground shine dose components should be factored in to the TEDE as soon as possible, although this is not required for initial TEDE determination. Default iodine to noble gas ratios may be used until actual data becomes available. Since the iodine contribution to TEDE is very small using the default ratio of approximately 1E-4, it can be omitted from the determination of TEDE.

## 7.2 Acronyms

| | |
|---|---|
| AE | Architect/Engineer |
| ALARA | As Low As Reasonably Achievable |
| ANSI | American National Standards Institute |
| AOP | Abnormal Operating Procedures |
| ARM | Area Radiation Monitor |
| BRH | New York State Bureau of Environmental Radiation Protection |
| CDE | Committed Dose Equivalent |
| CEDE | Committed Effective Dose Equivalent |
| CWP | County Warning Point |
| DDE | Deep Dose Equivalent |
| DE | Dose Equivalent |
| DHS | Department of Homeland Security |
| DLR | Dosimeter Legal Record |
| DO | Duty Officer |
| DOE | US Department of Energy |
| EAL | Emergency Action Level |
| EAP | JAFNPP Emergency Action Procedure |
| EAS | Emergency Alert System |
| ECCS | Emergency Core Cooling System |
| ED | Emergency Director |
| EMS | Emergency Medical Service |
| ENS | Emergency Notification System |
| EOC | Emergency Operations Center |
| EOF | Emergency Operations Facility |
| EOP | Emergency Operating Procedures |
| EP | EOP Support Procedure |
| EPA | Environmental Protection Agency |
| EPM | Emergency Plant Manager |
| EPIP | NMPNS Emergency Plan Implementing Procedure |
| EPZ | Emergency Planning Zone |
| ERDS | Emergency Response Data System |
| ERON | Emergency Response Organization Notification |

| | |
|---|---|
| | System |
| ERPA | Emergency Response Planning Area |
| ETS | Emergency Telecommunications System |
| FEMA | Federal Emergency Management Agency |
| FRMAP | Federal Radiological Monitoring and Assessment Program |
| FSAR | Final Safety Analysis Report |
| IAP | JAFFNPP Emergency Plan Immediate Action Procedure |
| JAFNPP | James A. FitzPatrick Nuclear Power Plant |
| JIC | Joint Information Center |
| KI | Potassium Iodide |
| LCO | Limiting Condition of Operation |
| LOCA | Loss of Coolant Accident |
| MSIV | Main Steam Isolation Valve |
| NAWAS | National Warning System |
| NFPA | Fire Prevention Association |
| NFO | Nuclear Facility Operator |
| NMPNS | Nine Mile Point Nuclear Station |
| NRC | Nuclear Regulatory Commission |
| NSSS | Nuclear Steam Supply System |
| NWS | National Weather Service |
| NYSDOH | New York State Department of Health |
| NYSEOC | New York State Emergency Operations Center |
| NYSOEM | New York State Office of Emergency Management |
| NYSPIO | New York State Public Information Officer |
| NYSWC | New York State Watch Center |
| OCEMO | Oswego County Emergency Management Office |
| OCEOC | Oswego County Emergency Operations Center |
| OCNFLO | Oswego County Nuclear Facility Liaison Officer |
| OP | Operating Procedures |
| OSC | Operational Support Center |
| OSCR | Onsite Safety Review Committee |
| PA | Public Address |
| PAG | Protective Action Guidelines |
| PAR | Protective Action Recommendation |

| | |
|---|---|
| PASS | Post Accident Sampling System |
| PNS | Prompt Notification System |
| RCA | Radiologically Controlled Area |
| RECS | Radiological Emergency Communications System |
| RERP | Radiological Emergency Response Plan |
| SAOG | Severe Accident Operating Guideline |
| SAP | JAFNPP Emergency Plan Supplemental Action Procedure |
| SBGT | Standby Gas Treatment |
| SEMO | State Emergency Management Office |
| SEOC | State Emergency Operations Center |
| SGTS | Standby Gas Treatment System |
| SM | Shift Manager |
| SOCA | Security Owner Controlled Area |
| SUNY | State University of New York |
| SWC | State Watch Center |
| TEDE | Total Effective Dose Equivalent |
| TLD | Thermoluminscent Dosimeter |
| TSC | Technical Support Center |
| TSG | Technical Support Guidelines |
| URI | Unified Rascal Interface |

# APPENDIX A
## Emergency Plan Implementing Procedures

| EMERGENCY PLAN IMPLEMENTING PROCEDURES (EAP) | | |
|---|---|---|
| **PROCEDURE NUMBER** | **PROCEDURE TITLE** | **CORRESPONDING SECTION / APPENDIX** |
| EP-AA-114<br>EP-CE-114-100 | Notifications<br>Emergency Notifications | 4.1.2<br>4.1.2 |
| FFP-1.4 | Medical Emergencies | 4.5.2<br>4.5.3<br>4.5.4<br>5.5 |
| CC-AA-211 | Fire Protection Program | 5.3.3.2 |
| EP-AA-110-201 | On Shift Dose Assessment | 4.2.3.1<br>5.3.1<br>5.3.2<br>5.3.3.1<br>5.3.3.7 |
| EP-AA-110-200 | Dose Assessment | 5.3.3<br>4.2.2.2<br>4.2.3<br>4.4.2<br>5.3.1<br>5.3.2<br>5.3.3.1<br>5.3.3.7 |
| EP-CE-111 | Emergency Classification and Protective Action Recommendations | 5.3.3.9<br>4.2.3<br>4.4.2 |
| EP-AA-114-F-08 | JAF Release In Progress Determination Guidance | 3.1<br>3.2<br>2.3.9<br>4.2.3<br>5.3.3.1<br>5.3.3.7 |
| EP-AA-112-500 | Emergency Environmental Monitoring | 4.2.2.2<br>4.2.3.3<br>5.3.3.4<br>5.3.3.5<br>5.3.3.6<br>5.3.3.7<br>5.3.3.8 |
| EP-AA-112-200-F-60 | TSC Radiation Protection Manager Checklist | 4.2.2.1<br>Appendix I |
| EP-CE-113 | Personnel Protective Actions | 2.3.11<br>4.4.1.3 |
| EP-AA-112-100-F-50 | Shift Emergency Director Checklist | 4.4.1.3 |
| EP-CE-113 | Personnel Protective Actions | 3.2<br>6.4.1.1<br>6.4.1.2<br>7.4.3 |
| EP-AA-113-F-06 | JAF Assembly, Accountability, and Evacuation Guidelines | 1.3.6<br>4.4.1.2 |
| SP-01-05 | Waste Water Sampling and Analysis | 4.2.3.3 |
| EP-AA-112-300 | Operations Support Center Activation and Operation | 4.3<br>5.1.3<br>5.7 |
| EP-CE-113 | Personnel Protective Actions | 5.1.4<br>5.4.1<br>5.4.2 |

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## Emergency Plan Implementing Procedures

| EMERGENCY PLAN IMPLEMENTING PROCEDURES (EAP) | | |
|---|---|---|
| **PROCEDURE NUMBER** | **PROCEDURE TITLE** | **CORRESPONDING VOLUME 1 SECTION / APPENDIX** |
| EP-CE-113-F-06<br>EP-CE-113-F-07 | JAF Assembly, Accountability, and Evacuation Guidelines<br>Remote Assembly Area Activation Operations Checklist | 5.4.4 |
| EP-AA-112-700 | Alternative Facility Operation | 4.4.1.2 |
| EP-CE-113 | Personnel Protective Actions | 2.3.1<br>2.3.9<br>4.4.1.4<br>4.5.1<br>Figure 4 .1 |
| EP-AA-112-600 | Public Information Organization Activation and Operation | 2.3.12<br>2.4.1<br>4.4.2<br>5.1.2<br>5.1.6<br>5.1.7<br>5.1.8<br>5.2.8<br>6.7<br>3.7.1<br>Appendix H |
| EP-AA-112-600 | Public Information Organization Activation and Operation | 2.3.12<br>2.5.1<br>5.1.6<br>6.7<br>3.7.1<br>3.7.2<br>3.7.3<br>Appendix H |
| EP-AA-112-100F-57 | ERONS Notification Details | 2.2<br>2.3<br>Figure 2-2<br>Figure 3 -3<br>Table 2-1<br>4.1.1 |
| EP-CE-113 | Personnel Protective Actions | 5.3.1<br>4.4.1.4<br>4.4.2.3 |
| EAP-20 | Post Accident Sample, Offsite Shipment and Analysis | 4.2.1<br>4.2.2.1<br>5.3.1<br>5.3.2<br>5.3.3.1<br>Figure 6.2 |
| EP-AA-112-200-F-61 | Security Coordinator Checklist | 2.3.11<br>4.4.1<br>5.9<br>6.2 |
| EAP-24 | EOF Vehicle and Personnel Decontamination | .4.1.2<br>.5.2<br>.4.4<br>.6 |
| EP-CE-115<br>EP-AA-112-400-F-58 | Termination and Recovery<br>EOF Radiation Protection Manager Checklist (CNG) | 3.7 |

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## Emergency Plan Implementing Procedures

| EMERGENCY PLAN IMPLEMENTING PROCEDURES (EAP) | | |
|---|---|---|
| **PROCEDURE NUMBER** | **PROCEDURE TITLE** | **CORRESPONDING VOLUME 1 SECTION / APPENDIX** |
| EP-CE-115<br>EP-CE-111-F-01 | Termination and Recovery<br>Event Termination Checklist | 3.7 |
| EAP-34 | Acceptance of Environmental Samples at the EOF/EL During an Emergency | 5.1.5<br>5.3.2 |
| EAP-35 | EOF TLD Issuance During an Emergency | 2.3.1<br>2.3.9<br>4.4.1.4<br>4.5.1 |
| EP-AA-110-200<br>EP-AA-110-201 | Dose Assessment<br>On Shift Dose Assessment | 5.3.3.7 |
| EAP-44 | Core Damage Estimation | .1<br>.2<br>.2.1<br>.3.3.1 |
| EP-AA-112 and T&RMs by facility | Emergency Response Organization (ERO) Emergency Response Facility (ERF) Activation and Operation | None Applicable |
| EP-AA-122 | Drills and Exercises | 6.4 |
| EP-AA-122 | Drill and Exercise Program | 6.4 |
| EP-AA-112-100 | Control Room Operations | None Applicable |
| EP-AA- 112-400 | Emergency Operations Facility(EOF) Operations | 5.1.5 |
| EP-AA-112-200 | Technical Support Center(TSC) Operations | 5.1.2<br>5.4.2 |
| EP-AA-112-300 | Operational Support Center (OSC) Operations | 5.1.3 |
| EP-AA-112 | Emergency Response Organization (ERO) Emergency Response Facility (ERF) Activation and Opaertion | 2.2<br>2.3 |

## Appendix B – JAFNPP Policy Statement

Immediate response, assessment, and the implementation of protective and corrective measure pertaining to an emergency condition at the James A. FitzPatrick Nuclear Power Plant (JAFNPP) shall be the responsibility of the JAFNPP Emergency Director (SM/CED/SED). The individual who shall act in the capacity of Emergency Director is determined as follows:

Immediately upon the occurrence of an emergency, the Shift Manager on duty at the plant shall assume the role of Emergency Director. The Shift Manager shall continue to perform the functions of the Emergency Director as described in the Emergency Plan, until relieved of that responsibility by a designated Corporate and Station Emergency Director.

The Emergency Director (Shift Manager/ED, Corporate Emergency Director and Station Emergency Director) shall implement applicable portions of the Emergency Plan to prevent or mitigate the consequences of emergencies at the JAFNPP. They shall have the authority to act on the behalf of the company in all matters concerning an emergency, at least until such time as the scope, severity and potential radiological consequences have been assessed, and the appropriate protective and mitigative actions have been implemented. Following that critical period, but still with complete regard for health and safety, major decisions and commitments are the responsibility of corporate management.

Throughout the course of an emergency condition, all expertise and support available within the corporation shall be provided at the request of the JAFNPP Corporate Emergency Director

## Appendix C
## LETTERS OF AGREEMENT

| | | Page No. |
|---|---|---|
| 1. | SUNY Upstate Medical University<br>University Hospital<br>750 East Adams Street<br>Syracuse, NY 13210 | on file in JAF<br>EP Dept. |
| 2. | Oswego County<br>Sheriff's Department<br>39 Churchill Road<br>Oswego, NY 13126 | on file in JAF<br>EP Dept. |
| 3. | Oswego County Airport<br>40 Airport Drive<br>Fulton, NY 13069 | on file in JAF<br>EP Dept. |
| 4. | Allied Power Resources<br>Baton Rouge, LA 70802 | on file in JAF<br>EP Dept. |
| 5. | Sargent & Lundy, LLC<br>Agreement 10321404<br>(Engineerof Choice) | on file in JAF<br>MP&C Dept. |
| 6. | EA Engineering, PC<br>EA Science and Technology<br>6712 Brooklawn Parkway<br>Suite 104<br>Syracuse, NY 13211 | on file in JAF<br>EP Dept. |
| 7. | Energy Solutions<br>Suite 100, Center Point II<br>100 Center Point Dr.<br>Columbia, SC 29210 | on file in JAF<br>EP Dept. |

| | | |
|---|---|---|
| 8. | Oswego Hospital<br>110 West 6th Street<br>Oswego, NY 13126 | on file in JAF EP Dept. |
| 9. | New York State Office of Emergency Management<br>1220 Washington Avenue<br>Building 22, Suite 101<br>Albany, NY 12226-2251 | on file in JAF<br>EP Dept. |
| 10. | Framatome Inc.<br>3315 Old Forest Road<br>P.O. Box 10935<br>Lynchburg, VA 24506-0935<br>24x7 AREVA NP Inc. | on file in JAF<br>EP Dept. |
| 11. | Oswego County Fire Coordinator<br>720 East Seneca Street<br>Oswego, NY 13126 | on file in JAF<br>EP Dept. |
| 12. | Institute of Nuclear Power Operations (INPO) Suite 100<br>700 Galleria Parkway, SE<br>Atlanta, GA 30339-5943 | on file in JAF<br>EP Dept. |
| 13. | Teledyne Brown Engineering (P.O.)<br>Bioassay Analysis Radiochemical Analysis | Corporate EP |
| 14. | City of Oswego Fire Department<br>City Hall - C/0 The Mayor<br>13 West Oneida Street<br>Oswego, NY 13126 | on file in JAF<br>EP Dept. |
| 15. | Pooled Equipment Inventory Co. (PEICo) Bldg<br>925C, 1701 Dunn Ave.<br>Memphis, Tenn 38106 | on file in JAF<br>EP Dept |

16. Oswego County Emergency Management Office
    200 North Second Street
    Fulton, NY 13069

    on file in JAF
    EP Dept

17. Department of Energy
    Oak Ridge Office
    P.O. Box 2008
    Oak Ridge, Tennessee 37831

18. Scriba Volunteer Fire Department
    PO Box 69
    Lycoming, NY 13093

19. Oswego County Ambulance Service
    404 Ontario Street
    Fulton, New York 13069

# APPENDIX D
# NEW YORK STATE PLAN AND PROCEDURES

The New York State Plan and Procedures are maintained in the JAFNPP Emergency Planning Offices and the JAFNPP Emergency Operations Facility.

The New York State Emergency Preparedness Plan and Procedures received Federal approval on February 1, 1985. Attached is a FEMA Fact Sheet listing the chronology of events prior to approval.

FEDERAL EMERGENCY MANAGEMENT AGENCY
Region II I 26 Federal Plaza I New York, NY 10278 2/5/85
55-5

(For further information contact Marinne C. Jackson or Nancy Kelly
(212) 264-8980)

# FACT SHEET

Off-Site Emergency Planning Chronology for Nine Mile Point

Federal Emergency Management Agency - Region II

Following the accident at Three Mile Island, the Federal Emergency Management Agency (FEMA) was assigned responsibility for reviewing and approving state and local emergency plans for nuclear power plants. Frank P. Petrone heads.FEMA Region II which covers New York, New Jersey, Puerto Rico and the Virgin Islands. Commercial nuclear power plants are operating in New York State at Ginna, Indian Point and Nine Mile Point. The Nuclear Regulatory Commission (NRC), the licensing authority, reviews and approves the utilities' on-site emergency plans.

July 15, 1981: The State of New York submits off-site emergency plans for Nine Mile Point to the Director of FEMA Region II for review and approval. The plans consist of Oswego County's plan for the Emergency Planning Zone, (the area within a ten mile radius of the plant) and the state's site specific plan for assisting the county in the event of an accident. The Committee comprised of representatives from 8 federal agencies.

September 15, 1981: The first full scale radiological emergency exercise in New York State is conducted to assess the adequacy of the response plans for New York State and Oswego County. 22 federal observers evaluate the response of county and state personnel to a simulated accident at the plant. On September 30, FEMA issues a post exercise assessment of the exercise. The assessment identifies deficiencies which state and county officials target for improvement.

November 4, 1981: A public meeting is held in Oswego to answer questions about the off-site plans and receive recommendations for changes.

August 11, 1982: A 24 member federal observer team observes the second full scale exercise of off-site emergency response by New York State and Oswego County. On October 29, the post exercise assessment is issued for the exercise.

September 28, 1983: A 22 member off-site team observes a third full scale exercise. On October 12, federal observers evaluate a medical drill. The post exercise assessment evaluating both the full scale exercise and the medical drill is issued in December 1983.

(more)

September 28, 1984: FEMA Region II Director Petrone forwards the evaluation of the New York State and Oswego plans to FEMA National Office. The submission includes an

evaluation of the plans, the full-scale exercises and issues raised at the public meeting.

November 16, 1984: The alert and Notification System is activated and successfully tested.

February 1, 1985: Based on the evaluation by FEMA Region II Director Petrone and the review by FEMA headquarters staff, FEMA Associate Director Samuel W. Speck certifies to the Nuclear Regulatory Commission that the State and Oswego plans and preparedness and adequate to protect the health and safety of the public in the vicinity of Nine Mile Point. This is both the first approval for radiological plans and the first approval of an alert and notification system in the New York
State.

# APPENDIX E
# OSWEGO COUNTY PLANS AND PROCEDURES

The Oswego County Plans and Procedures are maintained in the JAFNPP Emergency Planning Office and at the JAFNPP Emergency Operations Facility.

The Oswego County Radiological Emergency Preparedness Plan and Procedures received Federal approval on February 1, 1985. Attached is a FEMA Fact sheet listing the chronology of events prior to approval.

FEDERAL EMERGENCY MANAGEMENT AGENCY
Region II I 26 Federal Plaza I New York, NY 10278 2/5/85 55-5
For further information contact Marinne C. Jackson or Nancy Kelly
(212) 264-8980)

# FACT SHEET

Off-Site Emergency Planning Chronology for Nine Mile Point

Federal Emergency Management Agency - Region II

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# APPENDIX F
# TYPICAL SUPPORT COMPANIES AND ORGANIZATIONS

| NAME | SERVICE |
|---|---|
| DZ ATLANTIC | Health Physics support personnel |
| Energy Solutions | Solidification of liquid waste, shipping cask rental, waste burial, tool and equipment decontamination |
| Chicago Bridge & Iron (CB&I) | A/E Engineering support |
| General Electric Company | Nuclear maintenance support |
| EA Science and Technology | Evaluation of environmental samples |
| GEL Laboratories, LLC | Liquid and gas sample analysis |

# APPENDIX H
# PUBLIC INFORMATION PROGRAM

1. GENERAL

In order to maintain the awareness of the public and the news media, JAFNPP has instituted a program of public information prior to and during an emergency.

2. PRE-EMERGENCY INFORMATION

JAFNPP in conjunction with the NMPNS Staff, the NYSOEM, and OCEMO has established a public information program for the permanent and transient population within the plume exposure EPZ. Information is provided in several forms: brochure, signs, and telephone book insert.

a. Information Brochure/Calendar

An information brochure/calendar containing radiological emergency response information and instructions has been prepared and mailed to all residents of the plume exposure EPZ. It presents the following information:

1. General Information
2. Radiological health
3. Public notification systems
4. Courses of action
5. General preparedness
6. Sheltering
7. General evacuation
8. Relocation to a public shelter or someone's home
9. Bus information (including pick-up points) for transit-dependent people
10. Obtaining special assistance
11. School evacuation
12. Maps describing ERPAs, evacuation routes, location of reception centers and bus pickup locations
13. Phone numbers for further information
14. KI Information

Brochures/calendar shall be updated and mailed to all residences in the plume exposure EPZ annually.

# APPENDIX H
# PUBLIC INFORMATION PROGRAM

b. Signs

In order to provide information to people visiting the area who may not have seen the public information brochure, emergency information signs have been prepared for posting in public places. Areas to be posted have been selected by the OCEMO. The signs present a summary of the key information contained in the brochure described above. These signs shall be updated annually.

c. Telephone Book Information Inserts

Emergency information is also provided to the resident and transient population through inserts in telephone books covering the plume exposure EPZ. The information provided is the same as that provided on the sign and shall be updated annually, or as updated by the phone book publication. Inserts are provided in many of the local telephone books.

3. PUBLIC INFORMATION DURING EMERGENCIES

During an emergency, the Spokesperson shall provide information to the news media and the public.

The designated location for the dissemination of coordinated information regarding JAFNPP, State and County emergency response to the news media is the Joint Information Center located on Co. Rt. 176 in the Town of Volney. It shall be activated during an Alert, a Site Area Emergency and General Emergency arid may be activated during an Unusual Event.

The Joint Information Center provides working space and communications for State, County, Federal, and company media relations staff and the news media. It is equipped for large briefings and has the capability for the recording of those briefings.

The Joint Information Center is also the location where public inquiry is provided through off-air monitoring of radio and television broadcasts and the use of staffed telephones which the public can call. Response to media inquiries shall be handled through telephones at the Joint Information Center.

## APPENDIX I
## EMERGENCY EQUIPMENT KITS

| TYPE | DESCRIPTION | NUMBER |
|---|---|---|
| Fire Cabinet | Fire Brigade equipment | 4 |
| Ambulance Kit | Equipment for handling contaminated persons | 1 |
| Rescue Kit | Rescue Equipment | 1 |
| Downwind Survey Kit (OSC) | Offsite radiological monitoring equipment | 2 |
| Emergency Operations Facility Survey/Reentry Kit | Supplies for operation of EOF and offsite monitoring | 1 |
| JAF Decontamination Kit | Supplies for personnel decontamination | 1 |
| OSC Emergency Kit | Emergency Equipment | 1 |
| Emergency Survey Kit | Offsite and onsite radiological monitoring equipment | 1 |
| Medical Trauma Kit | First Aid Team supplies | 5 |
| Security Building Kit | Protective equipment | 1 |
| Control Room Inventory | Emergency plans and dose assessment material | 1 |
| Technical Support Center Inventory | Supplies for operation of TSC | 1 |
| PASS Cabinet | Entry equipment for obtaining PASS sample | 1 |
| Oswego Hospital Emergency Cabinet | Equipment for handling contaminated persons | 1 |
| EOF Decontamination Kit | Supplies for personnel decontamination | 1 |
| EOF Inventory | Supplies for operation of EOF | 1 |

## APPENDIX J
## SUPPORTING DOCUMENTS

1. James A. FitzPatrick Nuclear Power Plant
   a. JAFNPP Emergency Plan and Implementing Procedures
   b. JAFNPP Final Safety Analysis Report (FSAR)
   c. Radiation Protection Department Procedures and Programs
   d. Administrative Procedures
   e. Fire Protection and Prevention Procedures
   f. Security / Safeguards Implementing Procedures
   g. Technical Specifications
   h. Operating and Special Procedures
   i. Chemistry Department Procedures
   j. Nuclear Management Manual Policies & Procedures
2. State of New York
   a. New York State Radiological Emergency Preparedness Plan and Procedures
3. Oswego County
   a. Oswego County Radiological Emergency Preparedness Plan and Procedures
   b. Oswego Hospital Plan: Decontamination and Treatment of the Radioactively Contaminated Patient at Oswego Hospital
4. Nine Mile Point Nuclear Station
   a. Nine Mile Point Nuclear Station Emergency Plan and Procedures
   b. Exelon Alert and Notification System Maintenance and Operations Procedures
5. Onondaga County
   a. University Hospital Procedures
   b. Onondaga County Radiological Emergency Response Host Plan

## APPENDIX L
## NUREG-0654 / FEMA-REP-1 CROSS REFERENCE

PURPOSE: Appendix L provides a cross reference for locating NUREG-0654 planning standards within the James A. FitzPatrick Emergency Plan. This cross reference will facilitate timeliness in reviewing which sections of the JAF Emergency Plan satisfy applicable planning standards established in NUREG-0654.

| NUREG-0654 Section | Evaluation Criteria | JAFNPP EMERGENCY PLAN |
|---|---|---|
| A.1.a | Overall response organization identification<br>- State, Local, Federal and Private Organizations | Section 2.4.2<br>Section 2.4.3<br>Section 2.5.1<br>Section 2.5.2<br>Section 2.6<br>Appendix N |
| A.1.b | Organizational concept of operations | Section 2.2<br>Section 2.3<br>Section 2.4<br>Section 2.5<br>Section 2.6 |
| A.1.c | Organizational interrelationships<br>- block diagram | Figure 2-1<br>Figure 2-2<br>Figure 3-3 |
| A.1.d | Identification of individual in charge | Section 2.3.1<br>Section 2.4.1<br>Appendix B |
| A.1.e | 24-hour response capability (including communications) | Section 2.1<br>Section 2.2<br>Section 2.3<br>Section 2.4.1<br>Section 4.5<br>Section 5.2.4 |
| A.2.a | Specification of functions and responsibilities of key individuals | N/A* |
| A.2.b | Legal basis for authority | N/A* |

* N/A – Not applicable applies throughout Appendix L

| NUREG-0654 Section | Evaluation Criteria | JAFNPP EMERGENCY PLAN |
|---|---|---|
| A.3 | Written agreements referring to concept of operations | Section 2.4<br>Section 4.1.2<br>Section 4.5.3<br>Section 4.5.4<br>Section 6.5.2 |
| A.4 | Provisions for 24-hour operations/continuity of resources | Section 2.3<br>Section 2.4<br>Section 2.6 |
| B.1 | Onsite Emergency Organization | Section 2.2<br>Figure 2-2<br>Section 2.3<br>Table 2-1 |
| B.2 | Designation of Emergency Coordinator | Section 2.3.1<br>Appendix D |
| B.3 | Emergency Coordinator - line of succession | Section 2.3.1<br>Section 3.7.1<br>Appendix D |
| B.4 | Functional responsibilities of Emergency Coordinator | Section 2.3.1 |
| B.5 | Titles and major tasks of emergency positions | Section 2.1<br>Table 2-1<br>Section 2.2<br>Section 2.3<br>Section 2.4 |
| B.6 | Interfaces between and among emergency organizations - block diagram | Figure 2-1 |
| B.7 | Augmentation of plant staff | Section 2.3<br>Appendix F |
| B.7.a | Logistics support | Section 2.6<br>Section 3.7 |
| B.7.b | Technical support | Section 3.7<br>Figure 3-3 |
| B.7.c | Management interface with governmental authorities | Section 2.4<br>Section 2.5 |
| B.7.d | Release of information to news media | Section 2.3.12<br>Section 3.7<br>Appendix H |

| NUREG-0654 Section | Evaluation Criteria | JAFNPP EMERGENCY PLAN |
|---|---|---|
| B.8 | Contractor and private organization assistance / staff augmentation | Section 2.4.2<br>Section 2.4.3<br>Appendix C<br>Appendix F |
| B.9 | Emergency services provided by local agencies | Section 2.4.2<br>Section 4.5<br>Appendix C |
| C.1.a | Incorporation of Federal response capability into Plan - request for | Section 2.3.1<br>Section 2.5.2<br>Section 4.1.2 |
| C.1.b | Federal resources expected | Section 2.5.2<br>Appendix C |
| C.1.c | Resources to support Federal response | Appendix N |
| C.2.a | Offsite EOF representative | N/A* |
| C.2.b | Licensee representative at offsite locations | Section 2.3.13 |
| C.3 | Identification of radiological laboratories | Section 2.4.3<br>Section 4.2.2.2<br>Section 5.3.1<br>Section 5.3.2 |
| C.4 | Identification of organizations to provide assistance | Section 2.4.3<br>Appendix C<br>Appendix F |
| D.1 | Establishment of emergency classification/emergency action | Section 3.1 |
| D.2 | Initiating conditions for postulated accidents in FSAR | Section 3.1<br>Section 3.2 |
| D.3 | State/local emergency | N/A* |
| D.4 | Offsite procedures providing emergency actions | N/A* |

| NUREG-0654 Section | Evaluation Criteria | JAFNPP EMERGENCY PLAN |
|---|---|---|
| E.1 | Procedures to describe notification of response organizations | Section 4.1 |
| E.2 | Establishment of personnel alerting, notifying, and mobilizing procedures | Section 4.1.1 |
| E.3 | Contents of initial emergency messages from Licensee | Section 4.1.2 |
| E.4.a-n | Contents of follow-up messages from Licensee | Section 4.1.2 |
| E.5 | Offsite system to disseminate message | N/A |
| E.6 | Establishment of means to notify public in EPZ | Section 5.2.8 |
| E.7 | Provisions for written messages to notify the public | Section 7.3.12<br>Appendix H |
| F.1.a | 24-hour primary and backup provision for notification and activation of local emergency network | Section 5.2.3<br>Section 5.2.4.1<br>Section 5.2.5 |
| F.1.b | Primary and backup communications with contiguous State/local governments | Section 4.1.2<br>Section 5.2.3<br>Section 5.2.4.1 |
| F.1.c | Primary and backup communications with Federal organizations | Section 4.1.2<br>Section 5.2.3<br>Section 5.2.4.2<br>Section 5.2.4.3 |
| F.1.d | Primary and backup communications between nuclear facility, State/local EOCs and radiological monitoring teams | Section 5.2.3<br>Section 5.2.4.1<br>Section 5.2.5 |
| F.1.e | Primary and backup alerting of emergency personnel | Section 4.1.1<br>Section 4.1.2 |

| NUREG-0654 Section | Evaluation Criteria | JAFNPP EMERGENCY PLAN |
|---|---|---|
| F.1.f | Provision for communication by Licensee to NRC, EOF, and radiation monitoring team | Section 4.1.2<br>Section 5.2.3<br>Section 5.2.4.2<br>Section 5.2.4.3<br>Section 5.2.5 |
| F.2 | Primary and backup communications link to medical support facilities | Section 4.5.3<br>Section 4.5.4<br>Section 5.2.3<br>Section 5.2.5 |
| F.3 | Periodic testing of communications system | Section 6.4<br>Section 6.6<br>Figure 6.2 |
| G.l.a-d | Coordinated periodic dissemination of information to the public | Section 6.7.1<br>Section 6.7.2<br>Appendix H |
| G.2 | Provisions for public information program | Section 6.7.1<br>Section 6.7.4<br>Appendix H |
| G.3.a | Physical location for use by news media | Section 5.1.6<br>Appendix H |
| G.3.b SUPP 1, G.3 | Space for news media at EOF | Section 5.1.6 |
| G.4.a SUPP 1, G.4.a | Designation of spokesperson | Section 5.1.6<br>Section 3.7.1 |
| G.4.b SUPP 1, G.4.b | Exchange of information among spokespersons | Section 5.1.6<br>Appendix H |
| G.4.c SUPP 1, G.4.c | Coordinated arrangements for dealing with rumors | Section 7.1.6<br>Section 6.7.3 |
| G.5 SUPP 1, G.5 | Annual coordinated programs for the news media | Section 6.7.4<br>Appendix H |
| H.1 | Establishment of TSC and osc | Section 5.1. 2<br>Section 51. 3<br>Section 5.1.4<br>Section 5.1.10 |
| H.2 | Establishment of EOF for Licensee Emergency activities | Section 5.1.5 |

| NUREG-0654 Section | Evaluation Criteria | JAFNPP EMERGENCY PLAN |
|---|---|---|
| H.3 | Establishment of EOC for response functions | N/A* |
| H.4 | Provisions for timely activation and staffing of facilities | Section 2.2<br>Section 2.3<br>Section 4.1.1<br>Section 5.1 |
| H.5.a | Identification of geophysical phenomena monitors | Section 5.3.3.3<br>Section 5.3.3.7 |
| H.5.b | Identification of radiological monitors | Section 4.5.1<br>Section 4.5.2<br>Section 5.3.3.1<br>Section 5.3.3.8 |
| H.5.c | Identification of process monitors | Section 5.3.3.9 |
| H.5.d | Identification of fire detectors | Section 5.3.3.2 |
| H.6.a | Acquisition of data from geophysical phenomena monitors | Section 5.3.3.3<br>Section 5.3.3.7 |
| H.6.b | Acquisition of data from radiological monitors | Section 4.5.1<br>Section 5.3.3.1<br>Section 5.3.3.4<br>Section 5.3.3.5<br>Section 5.3.3.6 |
| H.6.c | Acquisition of data from laboratory facilities | Section 5.3.1<br>Section 5.3.2 |
| H.7 | Provisions for offsite monitoring equipment | Section 4.2.2.2<br>Section 5.3.3.8 |
| H.8 | Provisions for meteorological instrumentation and procedures | Section 5.3.3.7 |
| H.9 | Provisions for onsite Operations Support Center | Section 5.1.3 |
| H.10 | Provisions to inspect, inventory, and operationally check equipment | Section 6.6 |
| H.11 | Identification of emergency equipment | Appendix I |

| NUREG-0654 Section | Evaluation Criteria | JAFNPP EMERGENCY PLAN |
|---|---|---|
| H.12 | Establishment of central point for receipt/analysis of field monitoring data | Section 5.1. 5<br>Section 5.3.2 |
| I.1 | Identification of plant system and effluent values characteristic of off-normal conditions | Section 3.1 |
| I.2 | Onsite capability to provide initial values and assessment throughout accident | Section 5.3.3.1 |
| I.3.a | Establishment of methods and techniques to determine source term of releases | Section 5.3.3.1 |
| I.3.b | Establishment of methods and techniques to determine magnitude of releases | Section 4.2.3 |
| I.4 | Establishment of relationship between effluent monitor readings and exposures | Section 5.3.3.1 |
| I.5 | Capability to acquire and evaluate meteorological information | Section 5.3.3.7 |
| I.6 | Methodology for determining release rate/projected doses | Section 4.2.3 |
| I.7 | Capability and resources for field monitoring within EPZ | Section 4.2.2.2<br>Section 4.2.3.3<br>Section 5.3.3.4<br>Section 5.3.3.5<br>Section 5.3.3.6<br>Section 5.3.3.8 |
| I.8 | Provisions for methods, equipment and expertise to make rapid assessments of radiological hazards | Section 4.2.2<br>Section 4.2.3<br>Section 5.3.3.8 |
| I.9 | Capability to detect and measure radioiodine concentration in EPZ as low as lE-7 µCi/cc | Section 4.2.2.2 |

| NUREG-0654 Section | Evaluation Criteria | JAFNPP EMERGENCY PLAN |
|---|---|---|
| I.10 | Establishment of means for relating measured parameters to dose rates | Section 4.2.3 |
| I.11 | Arrangements to track airborne plume using Federal and State resources | N/A* |
| J.1. a-d | Means to warn onsite individuals in controlled areas | Section 4.4.1 |
| J.2 | Provisions for evacuation routes and transportation for onsite individuals | Section 4.4.1.2 |
| J.3 | Provisions for radiological monitoring of people evacuated from site | Section 4.4.1.2<br>Section 5.4.4<br>Section 5.6 |
| J.4 | Provisions for decontamination facility for onsite personnel | Section 5.4.1.2<br>Section 5.4.4<br>Section 5.6 |
| J.5 | Provisions for onsite accountability | Section 4.4.1.3 |
| J.6.a | Provisions for respiratory protection | Section 4.4.1.4.d |
| J.6.b | Provisions for protective clothing | Section 4.4.1.4.a |
| J.6.c | Provisions for radioprotective drugs | Section 4.4.1.4.c<br>Section 4.4.2.3 |
| J.7 | Mechanism for recommending protective actions to State and local authorities | Section 3.1<br>Section 2.3.1<br>Section 4.4.2<br>Figure 3.1 |
| J.8 | Inclusion of evacuation time estimates in Licensee's plan | Appendix K |
| J.9 | State/local capability for implementing protective measures | N/A* |

| NUREG-0654 Section | Evaluation Criteria | JAFNPP EMERGENCY PLAN |
|---|---|---|
| J.10.a | Inclusion of maps showing evacuation routes, monitoring locations, and relocation centers | Figure 4.2<br>Figure 4.9<br>Figure 5.2<br>Figure 5.3<br>Figure 5.4<br>Figure 5.6<br>Appendix H |
| J.10.b | Inclusion of maps showing population distribution around the facility | Figure 1.4<br>Figure 4.3<br>Appendix K |
| J.10.c | Means for notifying all segments of the population | Section 5.2.8<br>Appendix H |
| J.10.d-l | State/local plans to implement various protective measures | N/A* |
| J.10.m | Basis for choice of recommended protective actions | Section 4.4.2 |
| J.11 | State protective measures for ingestion pathway | N/A* |
| J.12 | State/local plans for registration and monitoring of evacuees | N/A* |
| K.1.a-g | Establishment of onsite exposure guidelines consistent | Section 4.4.1<br>Section 4.5.1<br>Figure 4.1 |
| K.2 | Onsite radiation protection program to be implemented during emergencies | Section 2.3.1<br>Section 2.3.9<br>Section 4.4.1.4<br>Section 4.5.1 |
| K.3.a-b | Provisions for 24-hour capability to determine emergency personnel doses | Section 4.5.1 |
| K.4 | State/local decision chain for authorizing exposures in excess of EPA PAGs | N/A* |
| K.5.a | Specification of action levels for decontamination | Section 4.5.2 |
| K.5.b | Means for radiological decontamination of emergency personnel | Section 4.5.2<br>Section 5.6 |

| NUREG-0654 Section | Evaluation Criteria | JAFNPP EMERGENCY PLAN |
|---|---|---|
| K.6.a | Provisions for area access control | Section 4.4.1 |
| K.6.b | Provisions for drinking water and food contamination control | Section 4.4.1.4.a and b |
| K.6c | Criteria for permitting return of areas to normal use | Section 4.4.1.4.a |
| K.7 | Provisions for decontaminating relocated onsite personnel. | Section 4.4.1.2<br>Section 5.4.4<br>Section 5.6 |
| L.1 | Arrangements for local and backup hospital and medical services | Section 4.5.3<br>Section 4.5.4<br>Appendix C |
| L.2 | Provision for onsite first aid capability | Section 5.5 |
| L3 | State listing of medical support facilities | N/A* |
| L.4 | Arrangements for transport of victims of radiological accidents | Section 4.5.3 |
| M.1 | Development of plans for reentry and recovery | Section 3.7.4 |
| M.2 | Listing of individuals filling positions in recovery organization | Section 3.7.1<br>Section 3.7.2<br>Figure 3-3 |
| M.3 | Means to inform organization that recovery is initiated | Section 3.7<br>Section 3.7.1 |
| M.4 | Establishment of method to estimate total population exposure | Section 3.7.2 |
| N.1.a | Provisions for periodic exercises | Section 6.4<br>Figure 6.2 |
| N.1.b | Provisions for exercise critique/varied scenarios | Section 6.4 |
| N2.a-e | Provisions for drills | Section 6.4<br>Figure 6.2 |

| NUREG-0654 Section | Evaluation Criteria | JAFNPP EMERGENCY PLAN |
|---|---|---|
| N.3.a-f | Description of components of drills and exercises | Section 6.4<br>Figure 6.2 |
| N.4 | Provisions for observers/ | Section 6.4<br>Figure 6.2 |
| N. 5 | Provisions for exercise corrective actions | Section 6.4 |
| 0.1.a | Provisions for site specific training for offsite emergency organizations | Section 6.2<br>Figure 6.1. |
| 0.1.b | Provisions for training mutual aid organizations | N/A* |
| 0.2 | Onsite training program/ practical drills | Section 6.2<br>Figure 6.1 |
| 0.3 | Training for Licensee first aid teams | Section 6.2<br>Figure 6.1 |
| 0.4.a-j | Training and retraining programs for personnel implementing | Section 6.2<br>Figure 6.1 |
| 0.5 | Initial training and retraining of personnel | Figure 6.1 |
| P.1 | Training of individuals responsible for the planning effort | Section 6.1<br>Section 6.2<br>Section 6.3<br>Figure 6.1 |
| P.2 | Identification of individual responsible for planning | Section 6.1 |
| P.3 | Designation of Emergency Planning Coordinator | Section 6.1 |
| P.4 | Annual update of plan and agreements | Section 8.5.1<br>Section 6.5.2 |
| P.5 | Distribution of approved plans | Section 6.5 |
| P.6 | Detailed listing of support plans | Appendix J |
| P.7 | Procedures required to implement the plan | Appendix A |

| NUREG-0654 Section | Evaluation Criteria | JAFNPP EMERGENCY PLAN |
|---|---|---|
| P.8 | Plan table of contents/ cross reference | Appendix L Table of Contents |
| P.9 | Annual independent review of emergency preparedness program | Section 6.5.3 |
| P.10 | Quarterly update of telephone numbers | Section 6.6 |
| EALs were revised in accordance with NEI 99-01 Rev. 5, Methodology for Development of Emergency Action Levels. The EALs are not included in the NUREG-0654 Cross Reference. | | |

## APPENDIX N
## TYPICAL FEDERAL SUPPORT RESOURCES

1. AIRFIELDS

| |
|---|
| a. Greater Rochester International Airport<br>1200 Brooks Avenue<br>Rochester, NY 14624<br>Tel. 585/753-7001 |
| b. Oswego County Airport<br>40 Airport Drive<br>Fulton, NY 13069<br>Tel. 315/591-9130 |
| c. Griffiss International Airport<br>592 Hanger Road<br>Suite 200<br>Rome, NY 13441<br>Tel. 315/736-4171 |
| d. Syracuse Hancock International Airport<br>1000 Colonel Eileen Collins Boulevard<br>Syracuse, NY 13212<br>Tel. 315/454-3263 (Commissioner of Aviation)<br>Tel. 315/455-3800 (Air Traffic Control) |
| e. Watertown International Airport<br>22564 Airport Drive<br>Dexter, NY 13634<br>Tel. 315/786-6000<br>Fax: 315/639-3990 |

2. COMMAND POSTS

| |
|---|
| a. JAFNPP Emergency Operations Facility<br>2262 State Route 176<br>Fulton, NY 13069<br>Tel. 315/593-5700 |
| b. JAFNPP Technical Support Center<br>JAFNPP<br>268 Lake Road East<br>Lycoming, NY 13093<br>Tel. 315/349-6710 |
| c. Joint Information Center<br>10 Airport Drive<br>Fulton, NY 13069<br>Tel. 315-592-3700 |
| d. New York State Emergency Operations Center<br>New York State Office of Emergency Management<br>Public Security Building, State Campus<br>Albany, NY 12226<br>Tel. 518/292-2200<br>FAX. 518/322-4982 |
| e. Oswego County Emergency Operations Center<br>Oswego County Office Building Annex<br>200 North Second Street<br>Fulton, NY 13069<br>Tel. 315/591-9150 |

3. TELEPHONE SYSTEMS IN PLANT VICINITY

| |
|---|
| a. WINDSTREAM COMMUNICATIONS Tel. 866/990-3282 (Repair)<br>and<br>EARTHLINK BUSINESS (JAF Intermediate Provider) Tel. 800/883-9177 (Repair) |
| b. VERIZON Tel. 800/837-4966 (Repair) |
| c. AT&T Tel 800/222-0400 (Repair)<br>800/222-3000 (Repair) |

4. RADIO FREQUENCIES

| ORGANIZATION/FUNCTION | FREQUENCY-MHz |
|---|---|
| a. JAFNPP Security Force | 153.635 |
| b. JAFNPP Radiological Survey Teams | 153.560 |
| c. Law Enforcement - Oswego County<br>Oswego County Sheriff I Police agencies<br>39 Churchill Road, Oswego, NY<br><br>Oswego Police Department<br>Fulton Police Department | 155.370<br><br><br><br>460 *<br>460 * |
| d. E-911 Center<br>Trunk Radio 460 MHz System<br>Plus all other frequencies listed for<br>Oswego County Dept's<br>39 Churchill Road, Oswego, NY | 460 *<br>45.88 |
| e. Oswego County Highway Department<br>Airport Road, Town of Scriba, NY | 460 * |
| f. Nine Mile Point Nuclear Stations Rad and<br>Offsite Administration B/U Rad | 456.575<br>457.750 |
| g. Oswego County Agencies<br>Oswego County Emergency Management Organization<br><br>Oswego County Health<br>Oswego County Fire Control | <br>460 *<br>458.650<br>460 *<br>460 *<br>46.220 |
| * The 460 MHz radio system utilizes a digital trunked radio system maintained by Oswego County. All County, City and Village Public Safety Agencies utilize a 460 MHz trunked land mobile radio system. | |

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Notes 1:

Notes 2:

Instructions: