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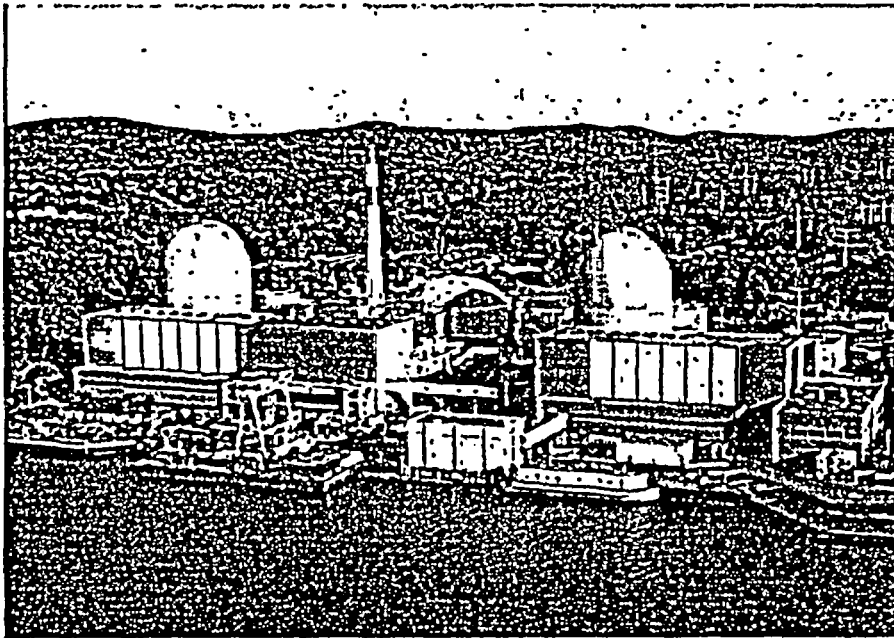
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# Indian Point Energy Center



## Emergency Plan

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# Indian Point Energy Center

## Emergency Plan

Prepared by: MARY ANN WILSON Mary Ann Wilson 8/14/02  
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Approval: Frank Inzillo [Signature] 8/27/02  
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Effective Date: 8/29/02

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# Indian Point Energy Center Emergency Plan

## Part 1: INTRODUCTION

### Section A: Purpose

As required by the licensing conditions set forth by the Nuclear Regulatory Commission (NRC) this document describes the emergency preparedness program for the Entergy Indian Point Units 1, 2 and 3 Generating Stations (Indian Point). 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 Indian Point units and the personnel who work at the plant.

The Emergency Plan for Indian Point outlines the basis for response actions that would be implemented in an emergency. This document is not intended to be used as a procedure. Detailed Emergency plan implementing procedures are maintained separately and used to guide those responsible for implementing emergency actions.

This plan documents the methods by which Entergy's Emergency Preparedness Programs meets the criteria set forth in Title 10 of the Code of Federal Regulation (CFR), Part 50, Section 47(b) and Appendix E.

The Emergency Plan for Indian Point is applicable to plant conditions that may cause or may threaten to cause radiological hazards at Units 1, 2 or 3 affecting the health and safety of workers or the public or resulting in damage to property. Unit 1 is defueled and only those areas of Unit 1 that either store or process radioactive materials (the Fuel Handling Building and waste storage/process areas in the Chemical Systems Building and the Integrated Liquid Radwaste Systems Building) were considered in evaluating radiological hazards.

This Emergency Plan is solely dedicated to Indian Point and includes details of how Entergy utilizes its resources to assist the plant operating staff during an emergency situation.

### Section B: Background

#### Description of the Indian Point Energy Center

Indian Point Energy Center is located on the east bank of the Hudson River about 24 miles north of the New York City boundary line, at Indian Point, Village of Buchanan, in upper Westchester County, New York State. The Station is about 2.5 miles southwest of the City of Peekskill; 8.3 miles south of West Point; 1.5 miles northeast of the Lovett generating station site; 4.6 miles north of the Bowline Point generating station site; and 2.3 miles north of Montrose Point. The Site is approximately 239 acres and contains three pressurized water reactors own by Entergy. Figures 1.B-1 and 1.B-2 are maps that show the general location of the Site and its environs within a 10-mile and 50-mile radius, respectively.

#### Exclusion Area

Entergy has the authority within the site boundary, called the Exclusion Area, to determine all activities including the exclusion or removal of personnel and property (see Figure 1.B-3).

There are no residences within the exclusion area nor are there any public highways or public railroads traversing the exclusion area.



## Indian Point Energy Center Emergency Plan

Two main access roads service the exclusion area. Several other roads interconnect with these two main roads. In the event of an evacuation, all vehicular traffic will be directed to the appropriate access road depending on the wind direction, and traffic would exit the site onto Broadway in Buchanan.

### Protected Area

A Security fence marks the perimeter of the protected area of the site. Access beyond the fence is restricted to badged employees or escorted visitors. Metal and bomb detectors are located at the protected area entrance. All buildings related to plant functions are within the protected area security fence.

### Population Distribution

Approximately 1,700 people live within one mile, approximately 80,000 people live within a five-mile radius and approximately 300,000 within a ten-mile radius of the site based on the 2000 population estimates in the New York State Emergency Plan. A more detailed summary of population distribution can be found in Appendix 5 and the station's Evacuation Time Estimate Study.

### Site Topography

The Indian Point Energy Center is surrounded on almost all sides by high ground with elevations ranging from 600 to 1000 feet above sea level. The general orientation of this mass of high ground is northeast to southwest. The Hudson River runs northeast to southwest at the Indian Point location but turns sharply northwest approximately two miles north of the plant.

Steep, heavily wooded slopes flank the west bank of the Hudson: the Dunderberg and West Mountains to the northwest (elevation 1086 feet and 1257 feet, respectively) and Buckberg Mountain to the west southwest (elevation 793 feet). Further west are slightly higher peaks.

To the east of the site, peaks are generally lower: Spitzenberg and Blue Mountains average about 600 feet in elevation, and a weak, poorly defined series of ridges run in a north-northeast direction. The River south of the plant makes another sharp bend to the southeast and then widens as it flows past the towns of Croton and Haverstraw.

## Indian Point Energy Center Emergency Plan

### Plant

Unit 1 (615 MWt, defueled), Unit 2 (3071 Mwt) and Unit 3 (3071Mwt). Figure 1.B-3 shows a general layout of the Site.

In a nuclear reactor system, containment is defined as the means of restricting, to sharply defined volumes, the distribution of radioactive materials that are in the process of nuclear fission. The IP-2 and IP-3 units have three containment barriers that exemplify the "Defense in Depth" philosophy.

The first or innermost of the barriers is the fuel rod. This encapsulates the fuel pellets that generate the heat energy and is designed to maintain its integrity for the anticipated core life.

The second containment barrier is the reactor pressure vessel. This pressure vessel contains the fuel rods, grouped into fuel assemblies, and the attached reactor coolant system which is comprised of four steam generators, four cooling pumps, pressurizer, and piping.

The third barrier, called the reactor containment structure, surrounds the reactor coolant system. The reactor containment is a steel-lined reinforced concrete cylinder with a hemispherical dome and a flat base. This outer containment is designed to withstand the internal pressure that accompanies a loss of coolant accident. The structure provides radiation shielding for both normal operations and accident conditions.

### Section C: Scope

The primary hazard consideration at Indian Point Units is the potential unplanned release of radioactive material resulting from an accident at the plant. The probability of such a release is considered very low due to plant design and strict operational guidelines enforced by the Nuclear Regulatory Commission (NRC). However, Federal regulations and common sense require that a solid emergency preparedness program exist for each commercial nuclear power station.

This Plan describes the response of Entergy personnel at the Indian Point Site during emergencies. It identifies an Emergency Organization(s), describes facilities and equipment, assigns responsibilities and authorities and identifies procedures for responding to all emergencies from minor injury to personnel to conditions having offsite radiological consequences. Emergency plan implementing procedures have been developed to implement this Plan. These procedures identify the elements of the Emergency Response Organization (ERO) and the interface with supporting offsite organizations. In addition to the implementing procedures, Emergency plan administrative procedures have been developed to ensure proper maintenance of the program. A listing of procedures, cross-referenced to sections of this plan, is contained in Appendix 3. Complete copies of the Emergency plan implementing procedures are maintained in the Control Rooms, Technical Support Centers, Emergency Operations Facility and Alternate Emergency Operations Facility. Additional copies of individual procedures are distributed as needed to support the ERO.

## Indian Point Energy Center Emergency Plan

Plant operating, radiological control and security procedures were considered in the development of this plan. Reference to these procedures is made where necessary. Plant operating and emergency procedures are available in the Control Room for use by the operating staff. Radiological control procedures are available for use by the Watch Health Physics personnel. Procedures that address security requirements during emergencies for the security forces are contained in the Security Procedures and Safeguards Documents.

This Plan includes agreements made with offsite organizations that furnish support during emergencies. Copies of these agreements are contained in Appendix 2. Specific notification and direction instructions are incorporated into the implementing procedures where necessary.

Elements of the offsite emergency response are specified in the emergency Plans of New York State, Westchester, Rockland, Putnam and Orange counties.

### Section D: Planning Basis

The E-Plan, in conjunction with the implementing and administrative procedures, documents the methods by which the Entergy Emergency Preparedness Program meets the planning standards set forth in 10-CFR-50.47 (b) and the requirements of 10-CFR-50 Appendix E. Other applicable regulations, publications, and guidance were used (see Appendix 1, "References") along with site-specific documents to ensure consistency in the planning effort.

This plan was developed in coordination with the New York State Emergency Management Office and local county Offices of Emergency Management. These organizations have complementary emergency response plans.

Indian Point Units 1&2 previously owned by Consolidated Edison and Indian Point Unit 3 previously owned by the New York Power Authority, were consolidated under one owner, Entergy Corp. in 2001. Much of the planning efforts prior to the consolidation were carried on as a joint venture between the previous owners. In order to further streamline processes, planning efforts and establish standard responses this single plan was developed.

This Plan was developed to respond to and minimize the onsite and offsite impact of an accident at Indian Point. The interrelationship between the Site, Corporate, Federal, State and local government organizations is discussed. Protective measures within the exclusion area (onsite) are the responsibility of Entergy. Protective measures outside the exclusion area (offsite) are the responsibility of state and local government authorities. The Indian Point Onsite and Offsite Emergency Organizations can respond to any incident or accident 24-hours every day. This emergency organization consists of many subgroups. The responsibilities, authorities and interactions between the subgroups are discussed in Part 2, Section B of this plan.

This Plan incorporates a classification system for emergencies and prescribes the actions which are to be taken to protect the safety of the public, plant personnel and property both onsite and offsite. These actions are contained in the Indian Point implementation procedures. The Plan addresses the responsibilities of personnel and the available resources.

The State and local government responses to plant-related emergencies outside the exclusion area are coordinated between the New York State Emergency Management

## Indian Point Energy Center Emergency Plan

Office and the County Offices of Emergency Management as described in their respective Emergency Plans.

The response to an emergency occurs in three phases.

1. The first phase (initial) includes immediate operator actions to maintain or bring the plant to a safe shutdown condition, initiate action to protect onsite personnel, classify the emergency and notify plant personnel and the appropriate offsite authorities. This phase is conducted by watch personnel (staffing level 1, refer to Part 2 section B) with the assistance of other in-house personnel.
2. The second phase (activation) includes actions to terminate the incident, monitor both onsite and offsite monitoring areas, assess the extent of any release of radioactivity, and disseminate the assessment (estimated exposure information) to offsite authorities. The second phase is performed under the direction of the Emergency Director at the EOF/AEOF. This phase includes augmenting the Onsite Emergency Organization with support from offsite.
3. The third phase (recovery) begins once the emergency is terminated and includes planned actions for reentry by workers to restore the station to normal operation, assist offsite authorities return the public evacuated from around the Site, and to implement post accident environmental sampling as needed. This phase is the responsibility of the Site Recovery Manager.

### **Section E: Governmental Emergency Planning**

Entergy works with Federal, State and Local government agencies to insure and integrated emergency response within the Emergency Planning Zones (Figures 1.B-1 and 1.B-2) located around the Indian Point Station.

### **Section F: Emergency Plan Guidance and Criteria**

The Indian Point Emergency Plan and related implementing procedures integrates guidance from several governmental and industry standards to provide the best protection of the health and safety of the public. See Appendix 1, References for a list of documents used in development of this plan.

### **Section G: Assistance to Non-Entergy Planning Efforts**

Entergy provides technical assistance and other assistance as required to State and Local Agencies who may be involved in the emergency planning effort for Indian Point.

### **Section H: Response Organization**

This Plan and its associated implementing procedures outline Entergy's responsibilities for the protection of onsite persons. Specific responsibilities, organizations and program implementation are outlined in other sections of this plan, its associated implementing procedures and supporting administrative procedures.

## Indian Point Energy Center Emergency Plan

### **Section I: Federal Response**

The Federal Government has an integrated response plan in the event of a radiological emergency at any facility. Provisions are made within this 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 Entergy emergency response facilities as well as support communications between utility and federal emergency facilities. NRC response as described in NUREG-1472, "Concept of Operations: NRC Incident Response", was used in the development of the E-Plan as guidance to ensure coordination between Entergy and NRC EROs.

### **Section J: Form and Content of Plan**

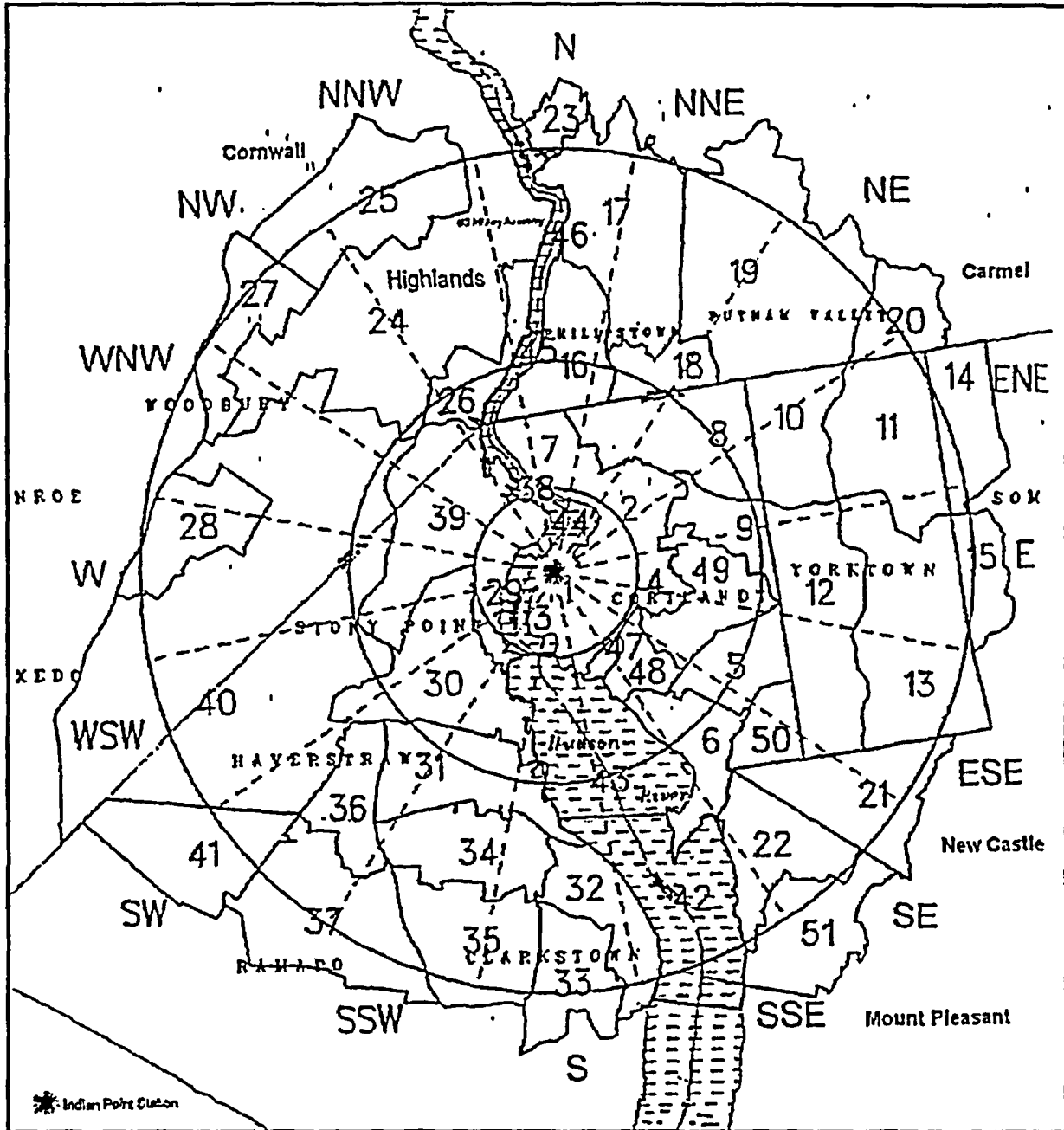
This Plan has been formatted similar to NUREG-0654, FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants", Revision 1.

Because this plan is formatted in the same manner as the guidance document, no section cross-reference is needed.

An appendix is provided to cross reference Implementing Procedures and Administrative Procedures to sections of the Emergency Plan.

# Indian Point Energy Center Emergency Plan

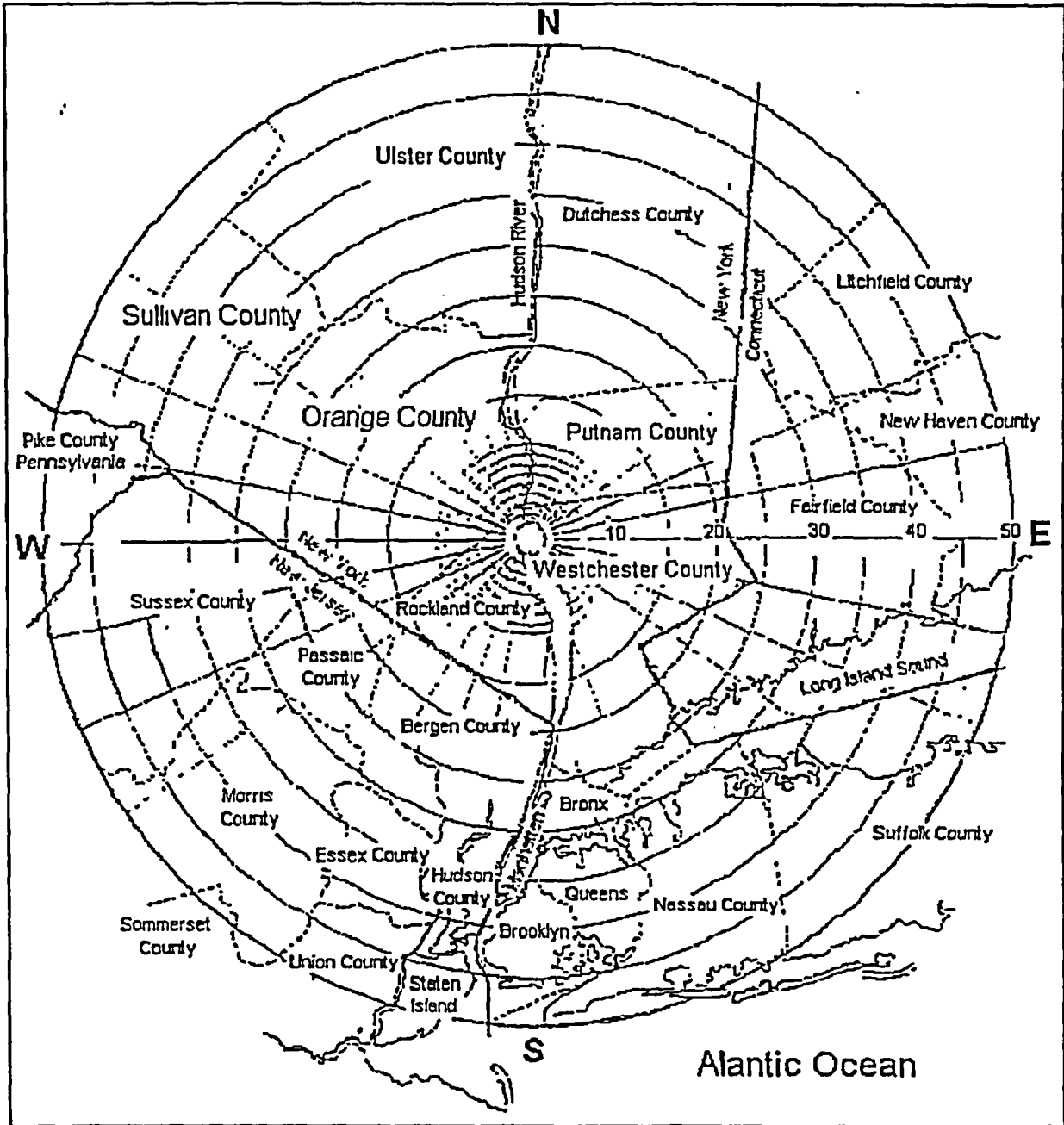
## Figure 1.B-1 10-Mile Emergency Planning Zone



# Indian Point Energy Center Emergency Plan

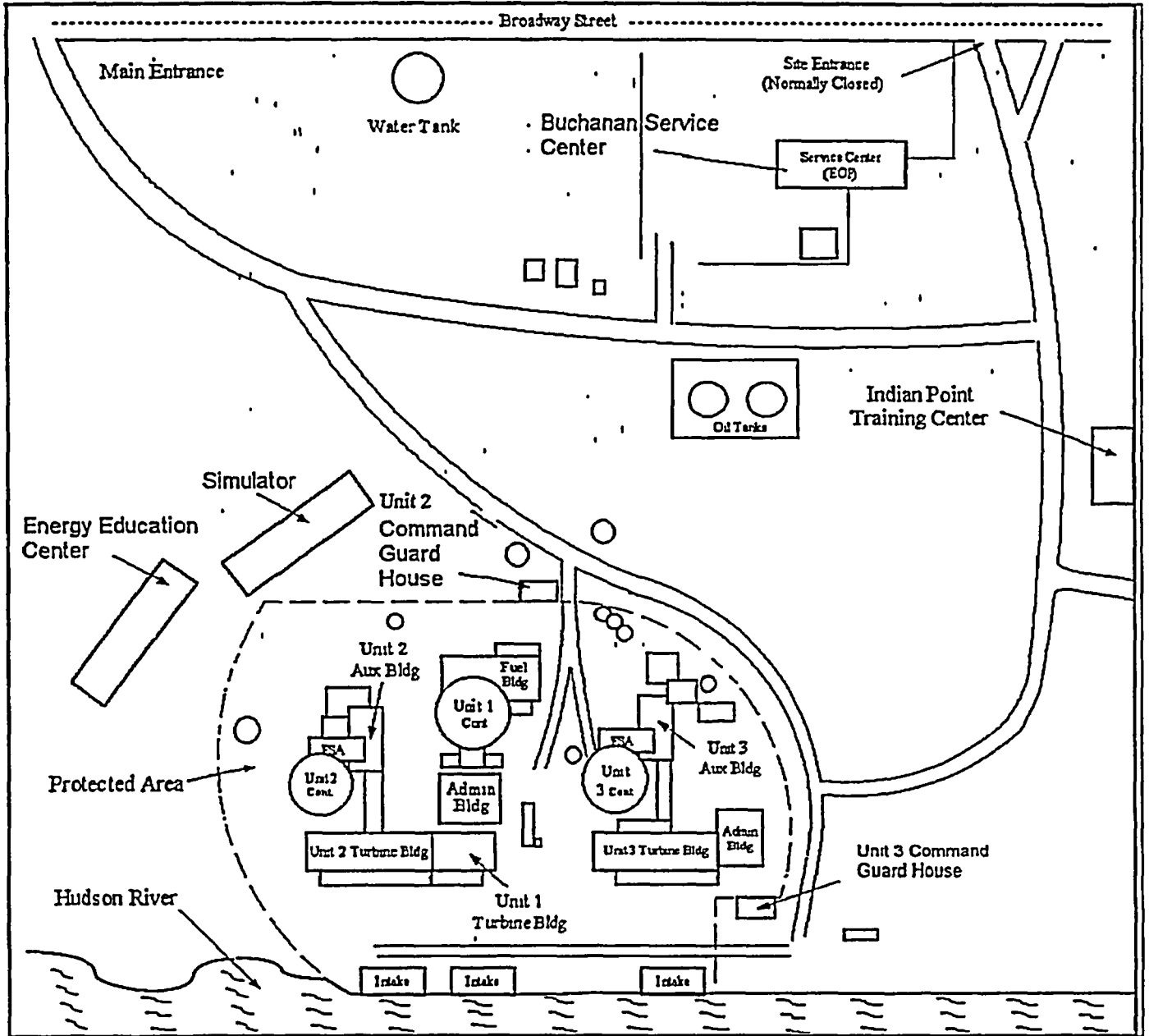
## Figure 1.B-2

### 50 Mile Emergency Planning Zone



# Indian Point Energy Center Emergency Plan

## Figure 1.B-3 Site Layout





# Indian Point Energy Center Emergency Plan

## Part 2: PLANNING STANDARDS AND CRITERIA

### Section A: Assignment of Responsibility

This section describes the primary responsibilities for emergency response by Emergency Federal, State, and local organizations within the Indian Point 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.

In the event of an emergency, as defined in Part 2, Section D, various Federal, State, and County organizations will be notified. This section identifies the principal State agency and other government agencies having planning and/or action responsibilities for emergencies, in the Westchester, Orange, Putnam and Rockland County areas of New York State.

1. Organizations: The relationships and the concept of operations for the organizations and agencies supporting a response in the Indian Point Emergency Planning Zones are as follows:

a. Identified below are Federal, State, local, and private organizations that are involved in a response to an emergency at Indian Point.

Federal Agencies: The Federal Radiological Emergency Response Plan (FRERP) outlines the statutory and regulatory responsibilities. The primary Federal response at Indian Point supporting an emergency include:

- Nuclear Regulatory Commission (NRC), who acts as technical/regulatory advisors to Indian Point during an emergency. They provide Federal communications capabilities, coordination of Federal assistance, and assessment of onsite radiological incidents and potential offsite consequences.
- The U.S. Department of Energy operates a Radiological Assistance Plan from its regional office at Brookhaven, Long Island. The Radiological Assistance Plan, which specializes in radiation safety and medicine, will provide assistance to the Nuclear Facility Operator, the State or the county at their request. This assistance, which includes monitoring of the environment surrounding the site, is available twenty-four (24) hours a day by calling the contact phone number. The expected time of arrival is approximately 3 hours. The Emergency Director is authorized to request this assistance in the event it is necessary. Westchester County Airport, located approximately 30 minutes by automobile from the site, can supply facilities for air transportation.
- Federal Emergency Management Agency (FEMA), who coordinates the overall offsite Federal response and provides Federal resources and assistance to state and local governments.
- Environmental Protection Agency (EPA), who assists with field radiological monitoring/sampling and non-plant, related recovery and reentry guidance.

## Indian Point Energy Center Emergency Plan

- During a radiation incident that could have offsite radiological consequences, the U.S. Coast Guard will assist by maintaining traffic control on the Hudson River. Coast Guard assistance is requested by and coordinated through New York State, the appropriate county, or FEMA.
- National Weather Service, who provides meteorological information to Indian Point in the event that the onsite meteorological tower or monitoring instrumentation becomes inoperative.

### New York State Agencies

- The agency responsible for emergency planning is the State Emergency Management Office. The Chairman of the Disaster Preparedness Commission will assume the direction and coordination of the State response activities. The specific tasks and responsibilities assigned to various departments and agencies of the State are delineated in New York State's Radiological Emergency Preparedness Plan. Notification to the State of emergency conditions would be as indicated in Part 2, Section E.
- During an emergency, New York State can utilize the facilities at the Emergency Management Office, Southern District which has an EOC equipped with statewide communications capability.

### County Offices of Disaster and Emergency Services/Emergency Management

The four (4) counties that are involved in emergency response activities at the Indian Point Site include:

- Westchester, the County in which the Indian Point is located;
- Rockland County on the west side of the Hudson River across from Indian Point;
- Orange County on the west side of the Hudson River north of the plant. The closest boundaries of which is approximately four (4) miles from Indian Point.
- Putnam County, on the East side of the Hudson River north of the plant. The closest boundaries of which is approximately four (4) miles from Indian Point.

Each county has an Office of Disaster and Emergency Services or Emergency Management. The Director of each of these offices, or their designee, will act as the County Emergency Operations Director in the County. Bergen County is a host county that assists Rockland County in the event of an evacuation of the general public. The city of Peekskill takes direction from Westchester County and has its own Warning Point and Emergency Operation Center.

Emergency Operations Centers are where county managers direct and coordinate the County's response, under the authority of the Chief Executive of the County, for natural and man-made disasters. Notifications to the Counties of an Unusual Event, Alert, Site Area or General Emergency at Indian Point would be as described in Part 2, Section E.

## Indian Point Energy Center Emergency Plan

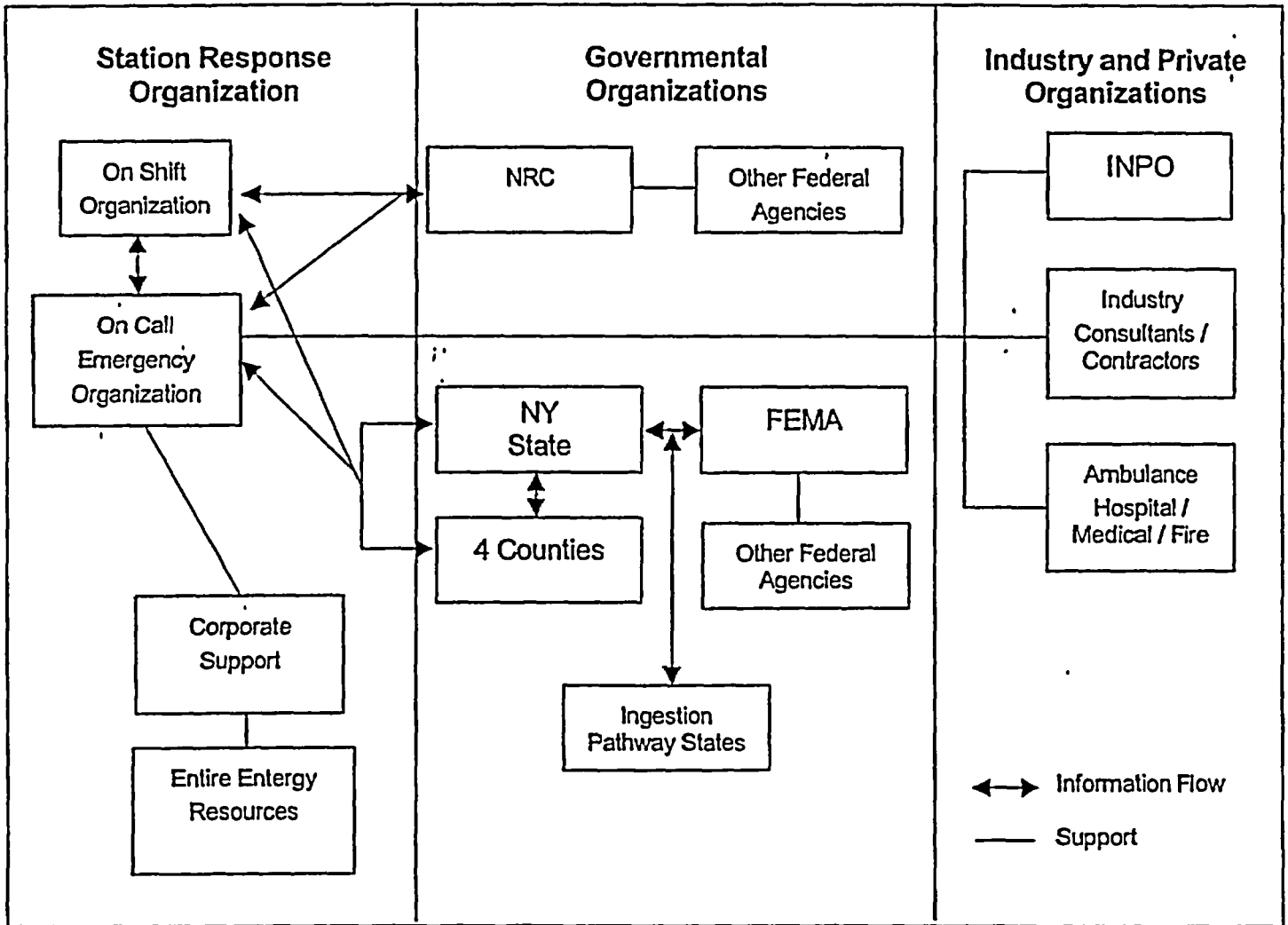
- b. During an emergency condition at an Alert, Site Area Emergency, or General Emergency level, the Indian Point Emergency Response Organization replaces the normal plant organization. Indian Point concept of operations is to utilize the entire station staff and if needed the entire company (Entergy) resources to protect the health and safety of the public and station personnel during an emergency at the site. Part 2, Section B outlines the organizations established.
  - c. Figure A-1 illustrates the interrelationships of the organizations involved with emergency planning for Indian Point.
  - d. The Shift Manager (or the Control Room Supervisor in his/her absence) is in charge of the Indian Point emergency response until relieved by another qualified Emergency Director who is then in charge of the entire Entergy emergency response organization.
  - e. **Continuous Coverage:** The Indian Point Emergency Response Organization has sufficient numbers of qualified, trained personnel to provide the capability of continuous (24-hour) operations. Continuously manned communication points have been identified for all agencies involved in the planning effort.
2. **State and Local Functions and Responsibilities:** The State, the local counties and reception center communities 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.

Along with the State of New York, the States of Connecticut, New Jersey and Pennsylvania are within the boundaries of the Emergency Planning Ingestion Pathway 50-mile radius. The specific response of these states is found in their respective Emergency Response Plans.
  3. **Agreements in Planning Effort:** Agreements establishing the concept of operations developed between Entergy and other support organizations having an emergency response role within the Indian Point Emergency Planning Zones (including hospitals and medical transportation) are provided in Appendix 2, "Copies of Letters of Agreement". These agreements identify the emergency measures to be provided and the mutually accepted criteria for implementation. Federal, State, and local agencies that have response functions covered by laws, regulations, or executive orders have developed plans to meet these functions. These approved Plans serve as written agreements for agencies response to an incident at Indian Point. A contract/purchase order with a private contractor/business is considered acceptable in lieu of a Letter of Agreement for the specified duration of the contract.
  4. **Continuous Coverage:** The Indian Point Emergency Response Organization has sufficient numbers of qualified, trained personnel to provide the capability of continuous (24-hour) operations. The Emergency Planning Department Manager administers programs to ensure availability of resources in the event of an emergency. The Emergency Director has the authority and is responsible for assuring continuity of resources (technical, administrative, and material) in the event of the activation of the Indian Point Emergency Response Organization.

# Indian Point Energy Center Emergency Plan

## Figure A-1

### Emergency Response Organizations Interrelationships



**Notes:**

1. Until the On-Call Emergency Response Organization is in place the Shift Manager (or Control Room Supervisor if Shift Manager is unavailable) has the responsibility and duty to notify Federal, State and Local governmental authorities and request any assistance needed to protect the public and station personnel.
2. Once the On Call ERO is in place, the Emergency Director, located in the EOF, has overall responsibility and authority to direct the Entergy emergency response and request outside assistance as needed.

**Part 2: PLANNING STANDARDS AND CRITERIA**

**Section B: Station Emergency Response Organization**

This section describes the Indian Point Generating Station Emergency Response Organizations, their 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 Indian Point response personnel and specifies offsite support available to respond to the site.

Table B-1, outlines the minimum staffing for emergency response required to be onshift and other key responders capable of responding within 60 minutes of a call to support the onshift organization.

1. Indian Point Emergency Response Organization Assignments: Figure B-1.1 illustrates the staffing for the normal on-shift 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 initial emergency response actions. Figures B-1.2a-e illustrates the full Emergency Response Organization (ERO). The full ERO will be activated at an Alert, Site Area Emergency or General Emergency.

- a. Normal Plant Organization

The normal Indian Point staff and operational organization is detailed in Site Administrative Procedures. Figure B-1.3 shows an overview of the normal station organization at Indian Point.

Each Unit's normal watch organization (Figure B-1.1) functions twenty four (24) hours per day, seven (7) days per week and consists of the following qualified individuals:

One (1) Shift Manager, who holds a Senior Reactor Operator's license and is in charge of operating personnel during his/her shift and is responsible for assuring that all operations are conducted in accordance with approved procedures and the limitations set forth in Unit Technical Specifications;

One (1) Control Room Supervisor, who holds a Senior Reactor Operator's license and is responsible for safe operation of the unit within the requirements of the Technical Specifications.

Two (2) Control Room Operators, who hold a Reactor Operator's license, are responsible for manipulating controls in the Control Room including taking the immediate operator action required as stipulated by written procedures necessary to maintain or bring the plant to a safe condition during abnormal and/or emergency conditions;

One (1) Field Support Supervisor or Shift Technical Advisor who performs in an advisory capacity to the Shift Manager. This position is not always required during cold shutdown;

## Indian Point Energy Center Emergency Plan

Two (2) Nuclear Plant Operators who perform plant operations, minor maintenance and monitoring under the direction of the Control Room Supervisor. One Nuclear Plant Operator is assigned to the conventional, the other to the nuclear portion of the plant.

Two (2) additional Nuclear Plant Operators function as rovers;

One (1) Health Physics Technicians and one (1) Chemistry Technician perform radiation monitoring; surveillance, decontamination, water chemistry as necessary; The Health Physics Technicians can perform emergency duties at Unit 2 and/or Unit 3 during emergencies.

The watch organization is augmented during normal working hours Monday through Friday by the Indian Point Management and Operations Staff (shown in Figure B.1-3) which is organized to lend expertise to the watch force.

The Security organization maintains site security and guards access to the plant and controlled areas at all times working under the direction of the Shift Manager and the Security Shift Supervisor.

The Shift Manager (Control Room Supervisor in the absence of the Shift Manager) has the responsibility and authority to declare an emergency, initiate the appropriate immediate action in accordance with written procedures, mitigate the consequences of the emergency, activate the full Emergency Response Organization and notify offsite support and government agencies.

### b. Oncall Emergency Response Organization

The Emergency Response Organization (ERO) is established to assure that a sufficient number of appropriately qualified personnel are available each day, 24 hours a day to deal with any emergency situation.

During an event or emergency at Indian Point, the initial phase of the response is conducted by the normal shift complement onsite. The Watch Force, depicted in Figure B-1.1, satisfies the NUREG-0654 requirements for on-shift personnel.

Table B-1 presents, in tabular form, the minimum staffing requirements of NUREG-0654 on-shift personnel and the additional personnel capable of augmenting the onshift organization within 60 minutes.

Those personnel identified to augment the Watch Force within 60 minutes of the declaration of an Alert are part of the on call ERO. These personnel are immediately available during normal working hours or are contacted by a pager / phone callout system during non-working hours. The pager system is backed up with an automated telephone notification system.

For security events that would prevent emergency responders from reaching the site, EOF Staff would be sent to activate the Alternate EOF. TSC, OSC and CR Staffs will be notified to report to a designated offsite location. TSC/OSC/CR staffs will provide any possible assistance from this offsite staging area until such time as site access is restored.

## Indian Point Energy Center Emergency Plan

The activation phase consists of the Emergency Response Organization (ERO) activation. This includes the normal watch and personnel needed to staff the Emergency Operations Facility (EOF), the Technical Support Center (TSC), the Operations Support Center (OSC) and the Joint News Center (JNC) that will occur at an Alert classification or higher.

The ERO is capable of performing those activities necessary to:

- (1) Maintain control of the plant and mitigate the consequences of the emergency,
- (2) Conduct accident assessment and analysis to determine the full scope and impact of the situation,
- (3) Establish and maintain communications with authorities responsible for implementing offsite emergency measures,
- (4) Conduct of a coordinated emergency public information program, and
- (5) Conduct of long term emergency response activities.

Activation of the ERO gives the Emergency Director full access to the resources of Entergy. In addition to the above listed facilities corporate resources are made available as needed to support the onsite ERO.

Figures B-1.2a-e illustrates the Indian Point ERO. (Unit specific implementing procedures may vary the ERO slightly from that shown in the Figures.) Personnel who will fill the positions identified are listed in an emergency phone list.

### 2. Authority Over Indian Point Emergency Response Organization:

The Shift Manager (or the Control Room Supervisor in the event that the Shift Manager is unavailable), acting as the Emergency Director, has the authority to declare an emergency, immediately takes charge of the emergency response effort and is responsible for offsite dose assessment until relieved by another qualified Emergency Director. In the event of an Alert, Site Area or General Emergency, he/she activates the Emergency Response Organization (ERO) and continues to direct the emergency response until relieved by another qualified Emergency Director. The relieving Emergency Director takes charge of the overall emergency response, thus freeing the Shift Manager to direct his/her attention towards the mitigation of the accident using the emergency operating procedures. The Emergency Plant Manager/Plant Operations Manager or the EOF Emergency Director will conduct this. Until the arrival of the oncall Emergency Director (located in the EOF), overall control of the Onsite Emergency Organization will be exercised by the relieving Emergency Director in the Control Room. After command and control is transferred it will remain with the Emergency Director in the EOF/AEOF until the event is terminated.

Although the ERO described in this section of the Emergency Plan fulfills the regulatory requirements for emergency response, it may be altered by the Emergency Director. This alteration would be based on the needs within the ERO during an actual event.

## Indian Point Energy Center Emergency Plan

### 3. Succession to Emergency Director:

Initially, the Shift Manager, or in his/her absence from the Control Room the Control Room Supervisor assumes the duties and responsibilities as the Emergency Director. When augmentation of the on-shift complement occurs, the oncall Emergency Director (normally filled by high level station management personnel) reports to the EOF and, once briefed, relieves the Shift Manager of all Emergency Director responsibilities. Once the on-call Emergency Director assumes the Emergency Director responsibilities, overall command and control of the emergency transfers from the Control Room to the EOF. The Emergency Plant Manager (EPM) / Plant Operations Manager (POM) will relieve the on-shift Emergency Director unless the Emergency Director in the EOF is ready to take command and control until such time as the oncall Emergency Director arrives, however he/she must report and remain in the Control Room until relieved of Emergency Director duties by the oncall Emergency Director in the EOF.

### 4. Emergency Director Responsibilities:

The Emergency Director is responsible for directing and coordinating the integrated emergency response effort of all Company activities during the emergency including those which originate from Corporate Headquarters. Personnel trained in accordance with this plan and qualified as Emergency Directors are designated in an emergency phone list. The Emergency Director is stationed in the Emergency Operations Facility during an Alert, Site Area Emergency or General Emergency and is the interface between the onsite and offsite authorities. He/she has the responsibility and authority to provide Protective Action Recommendations (PARs) to the authorities responsible for implementing offsite emergency measures.

Specific responsibilities of the Emergency Director include:

- Declares and upgrades the emergency as warranted and initiates recovery phase when appropriate (non-delegable);
- Reviews and approves notifications to the State and Local authorities (non-delegable);
- Recommend protective actions for the general public to offsite authorities (non-delegable);
- Authorization of Emergency Exposures and issuance of KI to Entergy personnel outside the Protected Area;
- Establish communications with the emergency response facilities and obtain information on the diagnosis and prognosis of the accident condition;
- Review all radiological, meteorological and operational data and update the offsite authorities and the Joint News Center (JNC);
- Receive designated responding representatives from offsite emergency agencies and assist in their information and communication needs;
- Arrange for and dispatch any special assistance or service requested (e.g., radiological measurement or protection equipment, onsite medical treatment);
- Coordinate offsite radiological evaluations with the State and Counties;



## Indian Point Energy Center Emergency Plan

- Relate all of these actions to the remainder of the emergency response organizations;
- Release of non-essential personnel from the site; and
- Approves information to the public prior to the JNC activation.

The Emergency Director is assisted in these activities by the entire ERO. Although the Emergency Director may delegate some of these responsibilities, he/she may not delegate the responsibility to classifying events or for the decision to notify authorities and recommend offsite protective actions.

### 5. Key Position Responsibilities and Emergency Functions

In addition to the key positions and functions listed below, Table B-5, Emergency Response Organization Functions, gives an overview of the ERO position functions.

#### a. Emergency Plant Manager (EPM) / Plant Operations Manager (POM)

The EPM / POM reports directly to the Emergency Director. He/she directs and coordinates the operational aspects of the In-Plant Emergency Organization. He/she assures proper coordination and direction of the efforts of each element of the In-Plant Emergency Organization in returning the plant to and maintaining it in a safe and stable condition. The EPM / POM is normally located in either the Technical Support Center or the Control Room. Specific responsibilities include:

- Directing actions to mitigate the accident;
- Directing the in-plant radiological monitoring;
- Authorization of emergency exposure limits and issuance of KI to Entergy personnel inside the Protected Area;
- Authorizing the mobilization of search and rescue teams;
- Directing and maintaining accountability within the protected area fence;
- Assuring that all emergency personnel within the protected area fence take adequate protective measures, and
- Fulfilling the functions of the Emergency Director in the Control Room until such time as that position is manned by the oncall Emergency Director.

#### b. Emergency Operations Facility (EOF) Manager

The EOF Manager reports directly to the Emergency Director. Specific Responsibilities of the EOF Manager include:

- Coordination of Entergy's emergency response efforts outside the Protected Area Fence,
- Assist the Emergency Director in the interpretation of offsite radiological assessments for emergency classifications and Protective Action Recommendations in terms of both real-time measurements and projected radiological exposures;

## Indian Point Energy Center Emergency Plan

- Ensure proper communications between the Indian Point ERO and offsite response organizations, and
- Assist offsite authorities responding to Entergy facilities.

### Company Spokesperson

The Company Spokesperson reports directly to the Emergency Director. Specific Responsibilities of the Company Spokesperson include:

- With assistance from the JNC Director, coordination of Entergy's public information response efforts,
- Act as the official Entergy representative to the media, and
- Interface with other response agencies' Public Information Officers.

### c. Summary of ERO Functions

In addition to the direction and coordination of the emergency response effort just discussed, other major functional areas of responsibility are identified as necessary to deal with emergency situations. Assignments made for these functional areas are discussed below.

#### 1) Technical Support

Technical support is performed in the Technical Support Center under the direction of the Technical Support Center Manager. It is the central facility for the accumulation and re-transmittal of plant parameters;

Specific functions of the Technical Support Center include;

- Analyzing and developing plans and procedure in direct support of Plant Operations personnel;
- Analyzing and resolving core physics, thermodynamic, hydraulic, mechanical, electrical and instrument problems;
- Designing and coordinating short-term modification to plant systems;
- Keeping the Emergency Director apprised of plant conditions; and
- Interfacing with NRC personnel in the Technical Support Center.

Personnel from the plant's engineering departments are assigned to these functions. In addition personnel with operational experience are assigned to perform operational accident assessment activities in support of the watch personnel handling the in-plant accident conditions.

#### 2) Plant Operations and Assessment of Operational Aspects

While overall direction of in-plant operations is the responsibility of the Emergency Plant Manager / Plant Operations Manager responsibility for plant systems operations remains with the Control Room Operators and the Nuclear Plant Operators under the direction of the Shift Manager and Control Room Supervisor.

## Indian Point Energy Center Emergency Plan

### 3) Notification/Communication

The Control Room communication links with offsite authorities are available each day 24-hours a day. The initial notification of offsite authorities and emergency response organization personnel is initiated by the Shift Manager and/or Control Room communicator. Communications with offsite authorities are maintained from the Control Room until the Emergency Director takes over the responsibility at the Emergency Operations Facility. A "Communicator" is designated at the Emergency Operations Facility to establish/maintain communication links.

### 4) Radiological Accident Assessment (In-Plant)

In-plant radiological monitoring and chemical/radiochemical analysis is provided by the Watch Health Physics Technician and Chemistry Technician, respectively, under the direction of the Shift Manager and by other responding personnel under the direction of the EPM / POM.

### 5) Radiological Accident Assessment (Out-of-Plant and Offsite)

The expertise for evaluating the radiological consequence of the accident is provided by the Dose Assessors and the field team communicator who function directly under authority of the Offsite Radiological Assessment Director (ORAD) / Radiological Assessment Team Leader (RATL). These individuals assure that sufficient monitoring activities are instituted, evaluate and assess the results, and apprise the ORAD/RATL of all activities, results and recommendations. Onsite, outside of the Protected Area, and Offsite radiological monitoring will be provided for by responding Radiation Protection Personnel and individuals trained as Field Monitoring Team members.

### 6) Repair and Corrective Actions

The Shift Manager and Nuclear Plant Operators perform emergency repairs if necessary, within the first 60 minutes.

Maintenance mechanics, I&C Technicians and operations personnel (NPOs) who respond to the Operations Support Center perform repair and corrective actions directed by the Operations Support Center Manager.

### 7) Protective Actions (In-Plant)

The Watch Health Physics Technician is normally responsible for radiation protection in-plant. They are immediately available under the direction of the Shift Manager during the first 60 minutes. Later, Health Physics personnel are directed by other responding personnel, under the direction of the EPM / POM and are responsible for radiation protection.

## Indian Point Energy Center Emergency Plan

8) Firefighting

Firefighting is the responsibility of the Fire Brigade as defined in the Indian Point Station Fire Protection Program Plan. The Fire Brigade consists of members who are trained in firefighting techniques and are on duty 24 hours a day. A local fire department may be called if necessary.

9) Rescue Operations and First Aid

Search and rescue jurisdiction during an emergency is divided between the in-plant area (inside the protected area fence), which is handled by the Shift Manager or EPM / POM, and the rest of the onsite area which is handled by the Emergency Director. The Shift Manager using available personnel onsite until the other emergency response facilities are activated, if required, would initially direct search and rescue operations.

There is at least one individual on duty 24 hours a day who is trained in first-aid techniques. Additional medical support can be called as necessary.

10) Site Access Control and Personnel Accountability

Plant security and site access control are the responsibility of the Security Shift Supervisor and the Security Force, with backup assistance available from the Local Law Enforcement Agency (LLEA) as the situation demands.

Personnel accountability during an Alert, Site Area Emergency or a General Emergency is the responsibility of the Lead Accountability Officer. Emergency Plan Implementing Procedures outline the steps that are used to account for all personnel including employees having emergency assignments, visitors and contractors who may be within the exclusion area but outside the Protected Area.

11) Information Dissemination

To assure that only factual and consistent information is released, statements concerning the emergency are the responsibility of Indian Point communications personnel and/or individuals assigned to the Joint News Center. A communications representative is available on call 24 hours a day and is responsible for interfacing with the news media for release of any public statements concerning Notification of Unusual Events or Alerts. For events classified as an Alert or higher, a Joint News Center Director responds to the pre-designated Joint News Center.

## Indian Point Energy Center Emergency Plan

The Joint News Center Director will be responsible for providing accurate and timely information to the public through the news media and coordinating with Federal, State and local public information officials to assure timely exchange and release of information. Both the Communications Department Representative and the Joint News Center Director have access to all necessary information, either directly available to them or available through the onsite emergency organization. An Information Liaison at the Emergency Operation Facility reports to the plant with the initial augmentation of the watch force to facilitate information flow between the plant personnel and the Indian Point Communications Representative and/or the Joint News Center Director. The Emergency Director prior to the activation of the Joint News Center approves information that is used to notify the public. Once the Joint News Center is activated, the Company Spokesperson will approve the information being released following the Emergency Director's technical review.

### 6. Indian Point Emergency Response Organization Block Diagram:

Figures B-1.1, B-1.2a thru B-1.2e illustrates the positions of the Indian Point Emergency Response Organization and supporting positions. Positions are assigned to interface with Federal, State, and local authorities. Section B.4 & B.5 discusses specific responsibilities and the interrelationships for key positions. Table B-5 gives a brief description of the functions performed by most ERO positions. Implementing procedures provide details on ERO activities and may identify additional assignments. Also, ERO Managers are responsible for ensuring adequate personnel are available to carry out emergency functions.

### 7. Entergy Corporate Emergency Response:

Company personnel augment, as necessary the onsite staff in the performance of certain functions required to cope with an emergency. The Admin & Logistic Manager and/or the Recovery Support Group Manager coordinates corporate support into the Emergency Response Organization once the on call ERO is activated. With the full activation of Emergency Response Organization, Entergy is capable of continuous (24 hour) operations for a protracted period. The Emergency Director will assure the continuity of resources (technical, administrative and logistics) to support the emergency response.

### 8. Private Industry Support:

#### a. Laboratory Services

The availability of laboratory/analytical services has been ascertained and an agreement letter is contained in Appendix 2.

## Indian Point Energy Center Emergency Plan

### b. Additional Technical Assistance

If the need for additional technical assistance is identified, this may be obtained by the Technical Support Center Manager and the Emergency Director. Assistance of this type could include that from the NSSS Supplier (Westinghouse), architect engineer and consultants. A copy of the letter of agreement with Westinghouse is contained in Appendix 2. Other assistance is also available using existing contracts, i.e.: Health Physics support.

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 assistance to the affected utility in locating sources of emergency personnel, equipment and operational analysis.

American Nuclear Insurers (ANI): In the event of an extraordinary nuclear occurrence (as defined in the Price-Anderson Law) ANI have plans prepared to provide prompt emergency funding to affected members of the public. ANI emergency assistance arrangements contemplate the mobilization and dispatch of emergency claims teams to directly dispense emergency assistance funds to affected members of the public.

9. Offsite Emergency Assistance: The availability of local services support to assist the emergency forces has been ascertained and agreement letters from each organization in this section have been solicited. These letters are contained in Appendix 2.

#### a. Ambulance Service

Twenty-four (24) hour ambulance service is provided by the Verplanck Fire Department Ambulance with mutual aid backup from other ambulance services. Onsite procedures contain instructions which cover the call for assistance and the handling of the ambulance service personnel. Radio communication exists between the ambulance and local hospitals.

#### b. Medical

The onsite procedures contain instructions which cover the request for medical assistance and the handling of patients. In the event that a patient should receive a massive radiation exposure, an expert medical consultant on the management of radiation injuries would be available. A written agreement is contained in Appendix 2.

#### c. Hospital

The Hudson Valley Hospital Center at Peekskill / Cortlandt has agreed to accept patients from the Indian Point Site who have been injured, contaminated or irradiated. The hospital provides facilities such as an emergency room, a laboratory, a radiology department and a nuclear medicine department.

The Phelps Memorial Hospital Center, Tarrytown, New York has agreed to serve as the backup hospital. Written agreements are contained in Appendix 2.

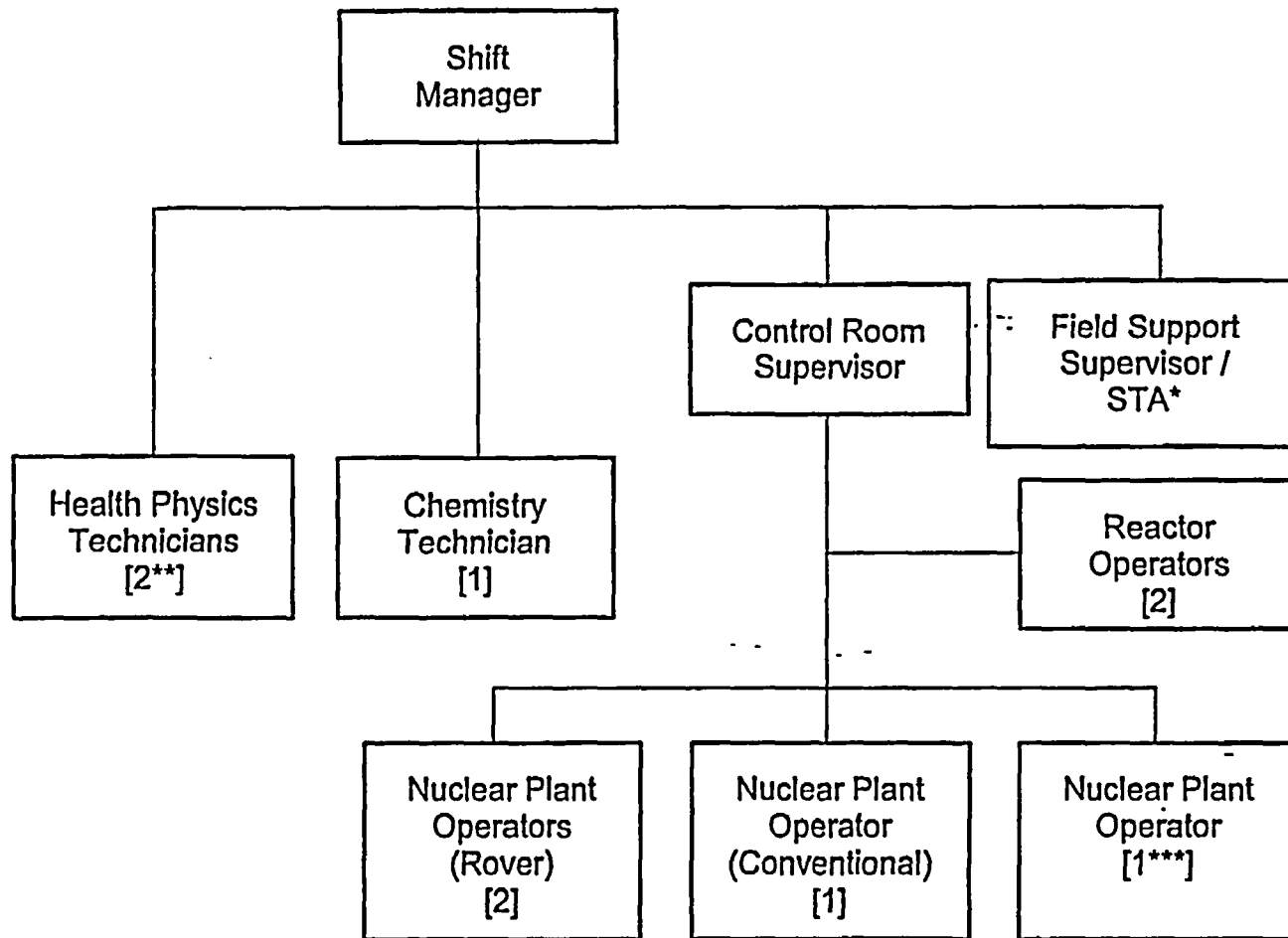
## Indian Point Energy Center Emergency Plan

### d. Police

When notified that assistance is required, Security will notify the Local Law Enforcement Agency (LLEA). Supporting police departments in accordance with the Westchester County Critical Incident Response Team (WCCIRT) as the situation demands will provide timely reinforcement. The handling of security matters for the Indian Point site is covered in the Security Plan and the Safeguards Contingency Plan.

Indian Point Energy Center Emergency Plan

Figure B-1.1 Indian Point Station Watch Organization



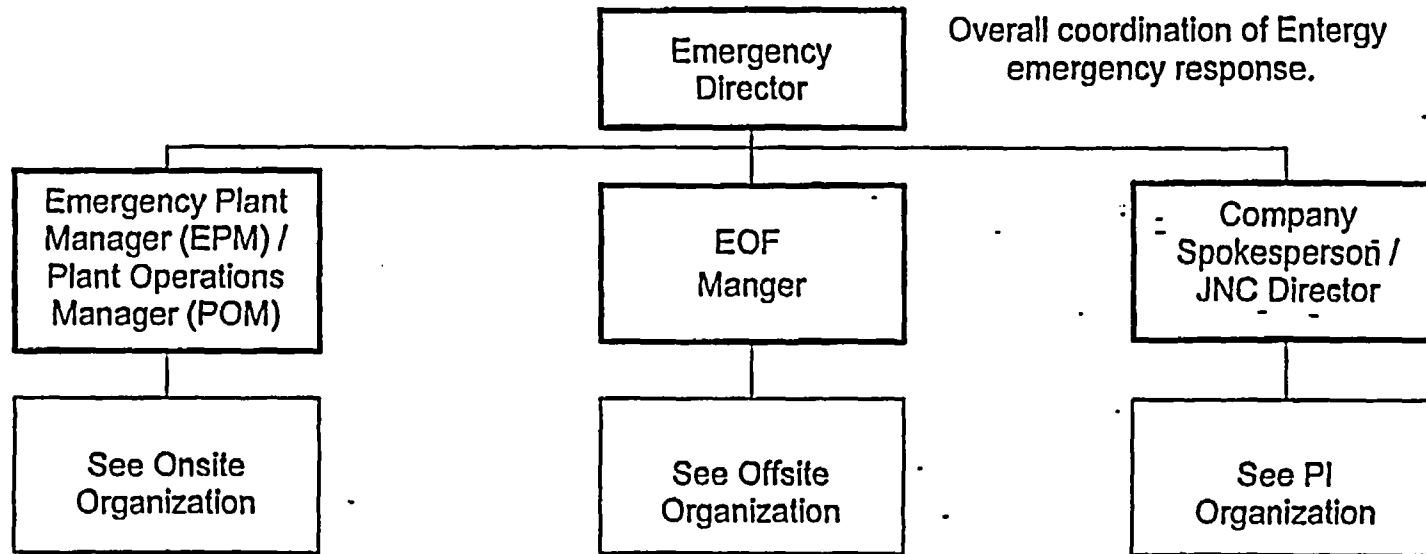
\* Consistent with NUREG-0737 and Technical Specifications, the Field Support Supervisor / Shift Technical Assistant are not required on shift during cold shutdown conditions.

\*\* Credit is given for HP Technician from other unit. This HP would assist at effected unit if needed.

\*\*\*Unit 2 has additional NPO who maintains watch on Unit 1 systems



Figure B-1.2a Emergency Response Organization – Major Areas



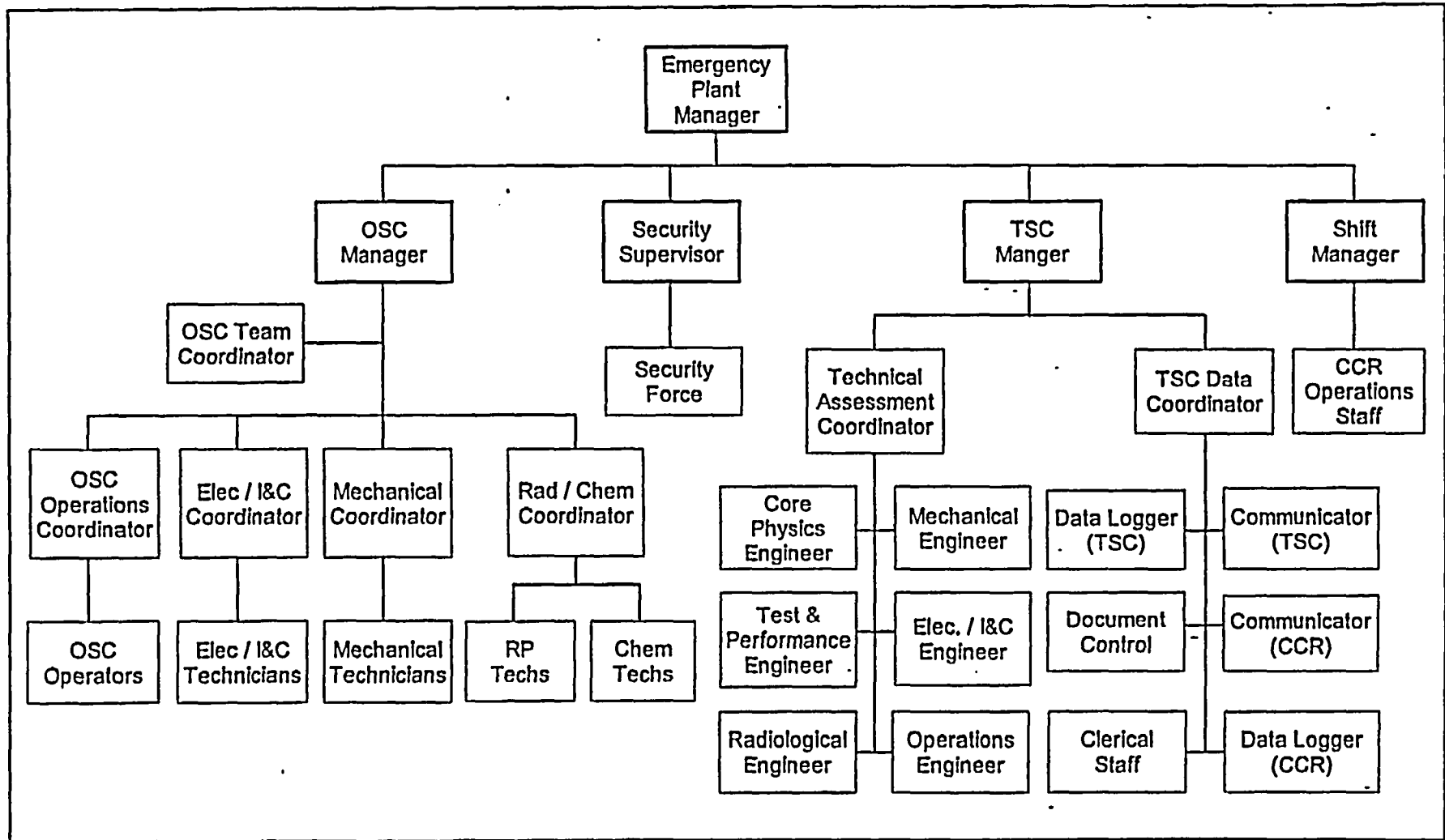
- Overall coordination of onsite response.
- Safety of onsite personnel
- Advise ED on plant status, radiological conditions and plant related EALs
- Security Interface

- Coordination of Entergy offsite response.
- Safety of offsite Entergy personnel
- Advise ED on offsite radiological conditions and related EALs
- Assist ED in interfacing with offsite authorities

- Overall coordination of Entergy Public Information response.
- Act as representative to the media
- Keep ED informed of any PI concerns.

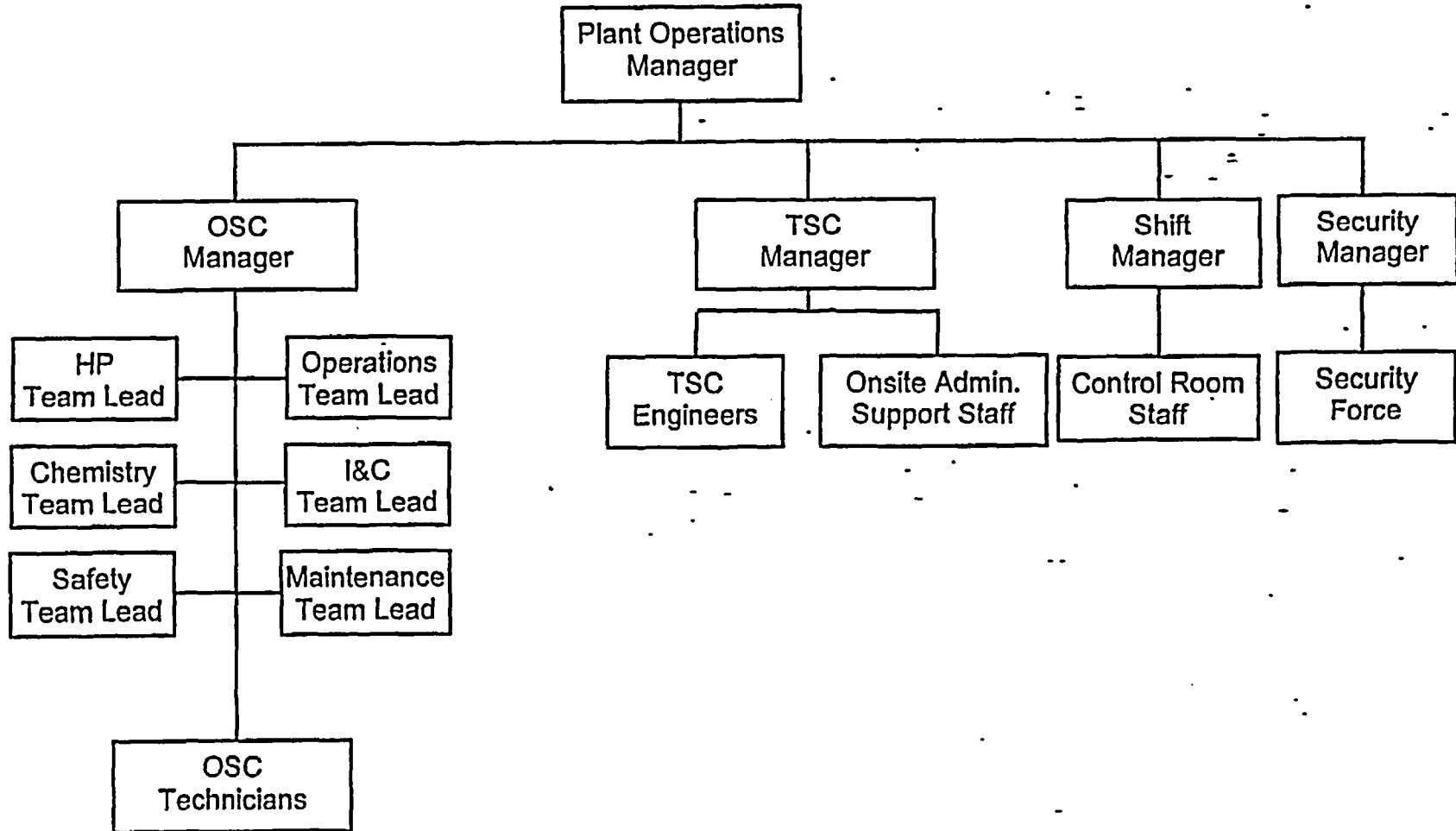
Indian Point Energy Center Emergency Plan

Figure B.1-2b Emergency Response Organization – Unit 2 Onsite



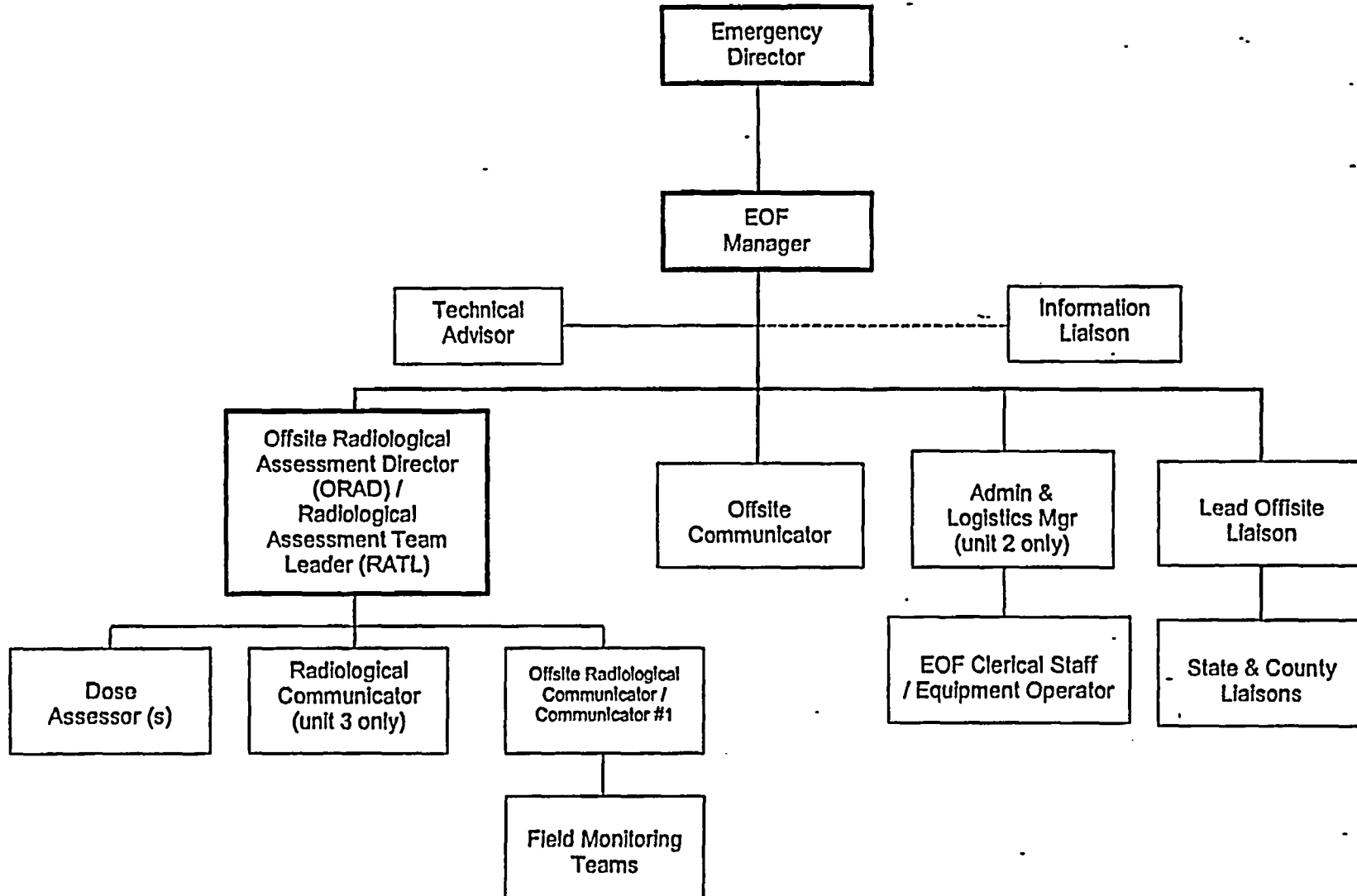
Indian Point Energy Center Emergency Plan

Figure B-1.2c Emergency Response Organization – Unit 3 Onsite



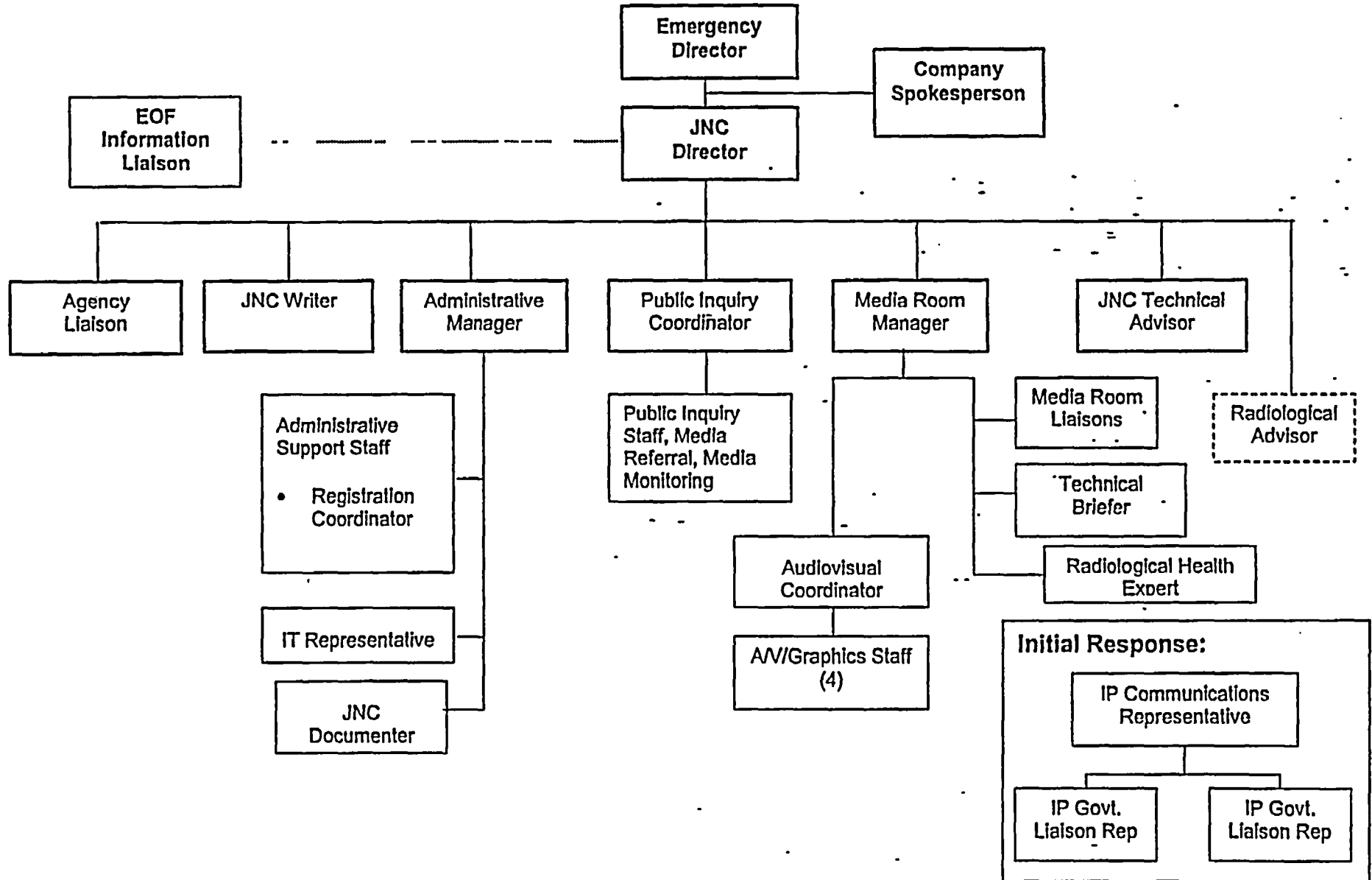
Indian Point Energy Center Emergency Plan

Figure B-1.2d Emergency Response Organization – Offsite



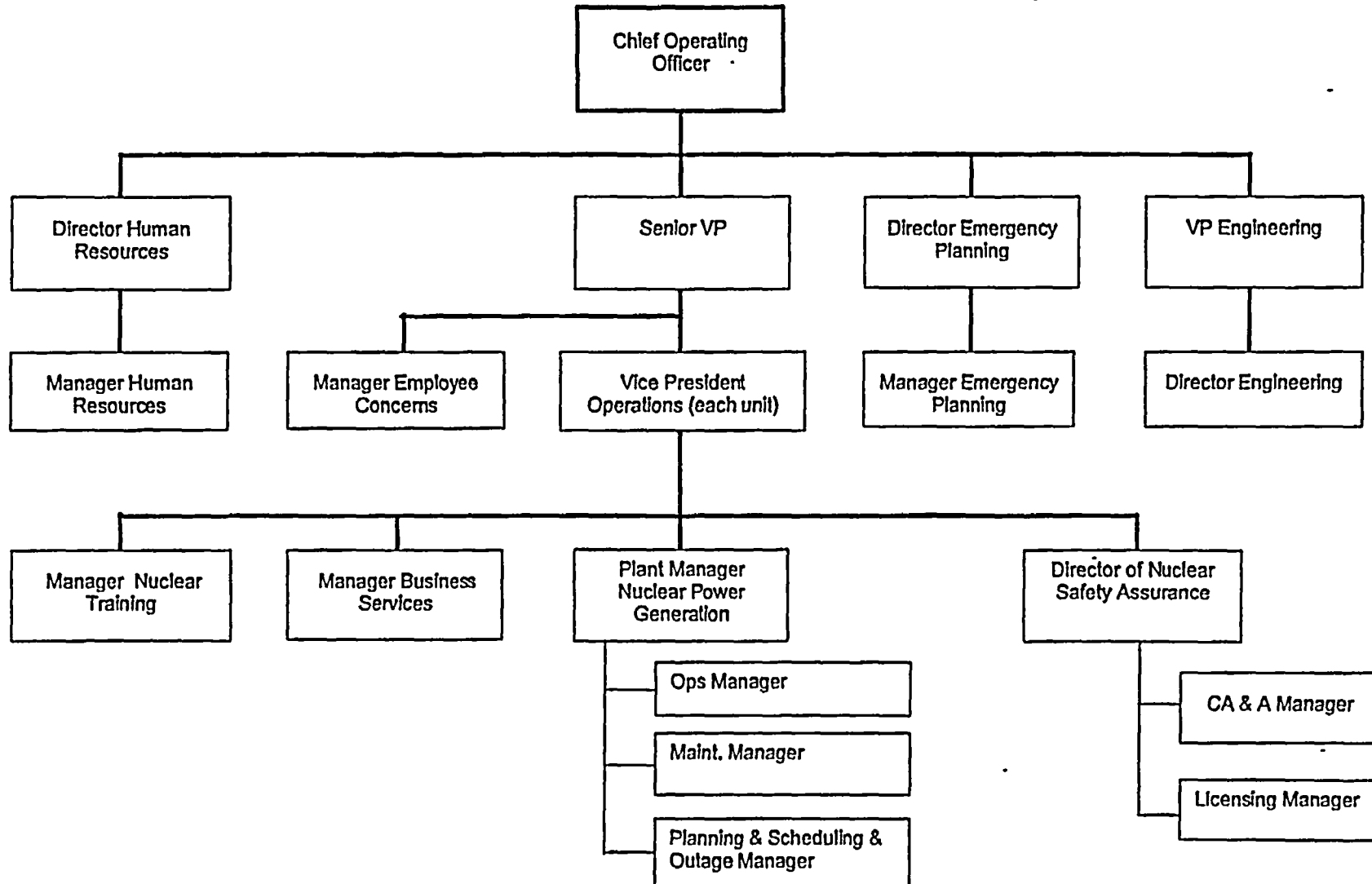
Indian Point Energy Center Emergency Plan

Figure B-1.2e Emergency Response Organization – Public Information



Indian Point Energy Center Emergency Plan

Normal Figure B-1.3 Station Organization



Indian Point Energy Center Emergency Plan

Table B-1

On Shift Staffing & Augmentation

Major Functional Area	Location	Major Tasks	Position Title or Expertise	On Shift*	Available Within 60 Minutes
Plant Operations & Assessment of Operational Aspects	CCR		Shift Manager	1	--
			Control Room Supervisor	1	--
			Reactor Operator	2****	--
			Nuclear Plant Operators	2	--
Emergency Direction & Control (Emergency Director***)	CCR	Overall direction & control	Shift Manager or Control Room Supervisor	1**	--
Notification/Communication****	CCR	Notify licensee, State, local & Federal Personnel & maintain communication	Communicator	1	2
	EOF				
Radiological Accident Assessment	CCR/EOF	Emergency Operations Facility (EOF) Director	Emergency Plant Manager / Plant Operations Manager Emergency Director	—	1
	EOF	Offsite Dose Assessment	Offsite Radiological Assessment Director (ORAD) / Radiological Assessment Team Leader	—	1

Indian Point Energy Center Emergency Plan

Table B-1

On Shift Staffing & Augmentation

Major Functional Area	Location	Major Tasks	Position Title or Expertise	On Shift*	Available Within 60 Minutes
		Offsite Surveys	Offsite Monitors	—	4
		Onsite Surveys (out-of-plant)	Onsite Monitors	—	2
		In-plant Surveys	Health Physics Technician	1	2
		Chemistry/Radio-chemistry	Chemistry Technician	1	1
Plant System Engineering and support of Operational Assessment	CCR/TSC	Technical Support, operational accident assessment	Field Support Supervisor / Shift Tech. Advisor	1	1
			Core/Thermal Hydraulics Engineer	—	1
			Electrical Engineer	—	1
			Mechanical Engineer	—	1
Repair and Corrective Actions	OSC	Repair and Corrective Actions	Mechanical Maintenance Technician	1**	2
			Electrical Maintenance Technician	—	2
			Instrument & Control Technician)	—	1



Indian Point Energy Center Emergency Plan

Table B-1

On Shift Staffing & Augmentation

Major Functional Area	Location	Major Tasks	Position Title or Expertise	On Shift*	Available Within 60 Minutes
Protective Actions (In-Plant)		Radiation Protection: a. Access Control b. HP Coverage for repair, Corrective actions, search and rescue, first-aid & firefighting monitoring c. Personnel monitoring d. Dosimetry	Health Physics Technician or self monitored trained individual	2**	4
Firefighting		—	—	Fire Brigade per T.S.	Local Support
Rescue Operations and First-Aid		—	—	2**	Local Support

Indian Point Energy Center Emergency Plan

Table B-1

On Shift Staffing & Augmentation

Major Functional Area	Location	Major Tasks	Position Title or Expertise	On Shift*	Available Within 60 Minutes
Site Access Control		Security, Personnel		All per Security Plan	All per Security Plan
Personnel Accountability		OSC Manager / Security Supervisor			1**
				<u>TOTAL</u> <u>10</u>	<u>26</u>

- \* For Emergency Plan purposes resources may be shared between units, however each unit must maintain a Control Room Supervisor, at least one Reactor Operator and one Nuclear Plant Operator and proper cross training is required.
- \*\* May be provided by shift personnel assigned other functions
- \*\*\* Overall direction of emergency response to be assumed by the oncall Emergency Director. Direct operation of plant systems remains with the Shift Manager
- \*\*\*\* Assessment function may be performed by Field Support Supervisor

Indian Point Energy Center Emergency Plan

Table B-5

Emergency Response Organization Functions

Position / Assigned Location	Reports to	Major Functions
<b>Control Room (CR)</b>		
Shift Manager	EPM / POM	Acts as ED until relieved, overall direction of plant operations may relocate to the TSC when activated
Control Room Supervisor (CRS)	Shift Manager	Immediate supervision of plant operations
Field Support Supervisors/Shift Technical Advisor	Shift Manager	Provide technical support to operations shift
Reactor Operator (RO)[s]	CRS	Control Room operations / communications
Nuclear Plant Operator (NPO)[s] (unit 1 only)	CRS	Operates Unit 1 and support equipment
Nuclear Plant Operator (NPO)[s] (Nuclear, Conventional, Roving)	CRS	Operates equipment outside the control room
CCR Communicator [assigned]	CRS	Communications with outside organizations
Data Courier @CCR [from TSC] (unit 2 only)	TSC MGR	Provide plant data to TSC
Data Processor @CCR [from TSC] (unit 2 only)	TSC MGR	Provide plant data to TSC
TSC Communicator #2 @ CCR [from TSC] (unit 2 only)	TSC MGR	Provide plant data to TSC
Watch Chemistry Technician (OSC when activated)	Shift Manager	Provide chemistry support as needed
Watch Health Physics (HP) Technician (OSC when activated)	Shift Manager	Provide HP support as needed
Communicator (unit 3 only)	Shift Manager	Provides data to the other emergency response facilities
Plant Operations Manager (POM)	ED	Manage emergency response activities inside the Protected Area and keep the ED informed of plant status and response activities. This individual can relocate to the TSC.
<b>Command Guard House (CGH)</b>		
Security Shift Supervisor (SSS)	EPM / POM	Supervises Security Force

Indian Point Energy Center Emergency Plan

Table B-5

Emergency Response Organization Functions

Position / Assigned Location	Reports to	Major Functions
Security Guard[s]	SSS	Provide physical control of plant areas, assist in accountability and search and rescue.
<b>Emergency Operations Facility (EOF)</b>		
Emergency Director (ED)		Overall Direction of Emergency Response
EOF Manager	ED	Manages Emergency Offsite response activities
Technical Advisor	ED	Provide technical advice to ED and track EALs
Offsite Radiological Assessment Director (ORAD)/Radiological Assessment Team Leader (RATL)	EOF Manager	Directs offsite radiological assessment and control efforts
Dose Assessor(s)	ORAD/RATL	Leads dose assessment activities
Radiological Communicator	ORAD/RATL	Communicate with onsite Radiological personnel and to the NRC via HPN as necessary
Offsite Rad. Communicator / Communicator #1	ORAD/RATL	Coordinates Field Monitoring Team Activities
Field Monitor Teams	Offsite Rad Communicator/ Communicator #1	Perform Environmental Monitoring and Sampling outside the Protected Area
Admin and Logistics Manager (unit 2 only)	EOF Manager	Coordinate Emergency corporate support to the onsite Emergency Response Organization and provide logistics support to ERO
EOF Clerical Staff SAS/Proteus Operator (unit 2 only)	EOF Manager / Admin & Logistics Mgr	Provide clerical support to EOF Staff / Assist EOF Staff in operation of EOF Equipment
Offsite Communicator	EOF Manager	Communicate with offsite emergency organizations
Information Liaison	JNC Director	Provide information to JNC
Lead Offsite Liaison	EOF Manager	Liaison to Offsite Representatives arriving at the EOF and coordinates information flow to State and County Liaisons located at offsite EOCs

Indian Point Energy Center Emergency Plan

Table B-5

Emergency Response Organization Functions

Position / Assigned Location	Reports to	Major Functions
Offsite Liaisons (may be located at offsite EOCs)	Lead Offsite Liaison	Assist offsite authorities in coordinating emergency response.
<b>Unit 2 Operations Support Center (OSC)</b>		
Operations Support Center (OSC) Manager	EPM	Manages repair and assessment activities of team sent into the plant.
OSC Team Coordinator	OSC Mgr	Assemble, brief, dispatch, track and debrief OSC teams sent out from the OSC
Radiological and Chemistry Coordinator	OSC Mgr	Coordinate radiological controls inside the Protected Area and assist in coordination of chemistry sampling
Chemistry Technician	Rad/Chem Coord.	Perform chemistry sampling and analysis as needed, assist in OSC operations
HP Technicians	Rad/Chem Coord.	Perform radiological surveys, sampling and analysis as needed, provide HP coverage for OSC operations
Electrical / Instrument & Control (I&C) Coordinator	OSC-MGR	Coordinate Electrical and I&C activities
Instrument & Control (I&C) Technician(s)	Elec / I&C Coord.	Perform I&C repairs and assessment activities as needed
Electrical Maintenance Technician(s)	Elec / I&C Coord.	Perform Electrical repairs and assessment activities as needed
Mechanical Coordinator	OSC MGR	Coordinate Electrical and I&C activities
Mechanical Maintenance Technician(s)	Mech. Coord.	Perform mechanical repairs and assessment activities as needed
OSC Operations Coordinator	OSC MGR	Coordinate Operations support to the CCR

Indian Point Energy Center Emergency Plan

Table B-5

Emergency Response Organization Functions

Position / Assigned Location	Reports to	Major Functions
OSC Operators	Ops Coord.	Operate plant systems as directed by OSC Operations Coordinator and CCR. Assist OSC teams in repair and assessment activities
<b>Unit 3 Operations Support Center (OSC)</b>		
Operations Support Center (OSC) Manager	POM	Manages repair and assessment activities of team sent into the plant.
OSC Team Leaders	OSC Mgr	Assemble, brief, dispatch, track and debrief OSC teams sent out from the OSC. Team leads are provided for different disciplines, HP, Maintenance, I&C and Chemistry
HP Technicians	HP Team Leader	Perform radiological surveys, sampling and analysis as needed, provide HP coverage for OSC operations
Instrument & Control (I&C) Technician(s)	I&C Team Leader	Perform I&C repairs and assessment activities as needed
Electrical Maintenance Technician(s)	Main. Team Leader	Perform Electrical repairs and assessment activities as needed
Mechanical Maintenance Technician(s)	Main. Team Leader	Perform mechanical repairs and assessment activities as needed
OSC Operators	Operations Team Leader	Operate plant systems as directed by OSC Operations Coordinator and CCR. Assist OSC teams in repair and assessment activities
<b>Unit 2 Technical Support Center (TSC)</b>		
Emergency Plant Manager (EPM)	ED	Manage emergency response activities inside the Protected Area and keep the ED informed of plant status and response activities.
Technical Support Center (TSC) Manager	EPM	Manage technical assessment activities.
Technical Assessment Coordinator (TAC)	TSC MGR	Coordinate TSC Engineering Assessment Activities
Core Physics Engineer	TAC	Perform Core Physics Assessments
Mechanical Engineer	TAC	Perform Mechanical Engineering Assessments

# Indian Point Energy Center Emergency Plan

## Table B-5

### Emergency Response Organization Functions

Position / Assigned Location	Reports to	Major Functions
Electrical / I&C Engineer	TAC	Perform Electrical / I&C Engineering Assessments
Test and Performance Engineer	TAC	Perform Test and Performance Engineering Assessments
Operations Engineer	TAC	Perform Operations Engineering Assessments
Radiological Engineer	-TAC	Perform Radiological Assessments
TSC Data Coordinator	TSC MGR	Coordinate data collection for the TSC Staff
Document Controller	Data Coor.	Gather needed documents to support TSC operations
Data Logger (TSC)	Data Coor.	Gather and distribute data to TSC Staff
Data Logger (CCR)	Data Coor.	Gather and distribute data to TSC Staff
TSC Clerk[s]	Data Coor.	Provide Clerical Support to TSC Staff
TSC Communicator (TSC)	Data Coor.	Perform TSC communications as needed
TSC Communicator (CCR)	Data Coor.	Perform TSC communications as needed
<b>Unit 3 Technical Support Center (TSC)</b>		
Technical Support Center (TSC) Manager	POM	Manage technical assessment activities.
Core Physics Engineer	TSC Manager	Perform Core Physics Assessments
Mechanical Engineer	TSC Manager	Perform Mechanical Engineering Assessments
Electrical / I&C Engineer	TSC Manager	Perform Electrical / I&C Engineering Assessments
Administrative Support Personnel	TSC Manager	Provide Support to TSC and OSC Staff
TSC Communicator (TSC)	TSC Manager	Perform TSC communications as needed
<b>Joint News Center (JNC)</b>		
Company Spokesperson	ED	Act as official spokesperson for Entergy, coordinate public information with other Public Information Officers
Joint News Center (JNC) Director	ED	Direct operations of the Joint News Center

Indian Point Energy Center Emergency Plan

Table B-5

Emergency Response Organization Functions

Position / Assigned Location	Reports to	Major Functions
Technical Advisors	JNC Director	Provide technical expertise to JNC Staff
Administrative Manager	JNC Director	Coordinates administrative staff, JNC Registration and Security
Utility Room Documenter	Admin. Mgr.	Documents JNC activities
IT Representative	Admin. Mgr.	Assist JNC Staff with computer hardware and software use.
Registration Coordinator	Admin. Mgr.	Coordinates Registration of individual entering JNC
JNC Administrative Staff	Admin. Mgr	Provide Admin support to JNC Personnel
JNC Writer	JNC Director	Writes News Releases
Radiological Advisor	JNC Director	Public Inquiry Coordinator
Public Inquiry (PI) Coordinator	JNC Director	Answer questions from the General Public
Media Monitors	PI Coordinator	Monitor media for rumors and items to be addressed in News Releases or Media Briefings
Media Referral	PI Coordinator	Refer members of the media to proper location for answers to their inquiries.
Media Room Manager	JNC Director	Oversees operations of the Media Briefing Room
Media Room Liaison	Media Room Manager	Assist media responding to the JNC
Audio Visual Coordinator	Media Room Manager	Coordinate operations of audio visual equipment in the JNC
Audio Visual Staff	Audio Visual Coordinator	Operations of audio visual equipment in the JNC
Radiological Advisor	Media Room Manager	Assist Company Spokesperson with media briefings by providing radiological health expertise



Indian Point Energy Center Emergency Plan

Table B-5

Emergency Response Organization Functions

Position / Assigned Location	Reports to	Major Functions
Technical Briefer	Media Room Manager	Assist Company Spokesperson with media briefings by providing plant operations expertise
Agency Liaison	JNC Director	Act as liaisons between Federal, State and County representatives responding to the JNC and Entergy Staff

# Indian Point Energy Center Emergency Plan

## Part 2: PLANNING STANDARDS AND CRITERIA

### Section C: Emergency Response Support and Resources

This section describes the provisions for requesting and effectively utilizing support resources and for accommodating State and local staff at the Indian Point Emergency Operations Facility (EOF).

1. Federal Response Support and Resources: Assistance is available from Federal agencies through the Federal Radiological Emergency Response Plan (FRERP). The primary Federal agencies that provide assistance to the State and Indian Point, respectively, are the Federal Emergency Management Agency (FEMA) and the Nuclear Regulatory Commission (NRC). Other Federal agencies, through FRERP, provide assistance to the State and Local Authorities in an emergency.
  - a. Sections A and B of this Plan identify the specific ERO Positions by title who are authorized to request Federal assistance.
  - b. Federal agencies that may provide assistance in direct support of Indian Point in the event of an accident are identified in Section A of this plan. If needed, Federal resources are made available to Indian Point in an expeditious and timely manner.
  - c. Each Indian Point 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 Technical Support Centers (TSC) is able to accommodate NRC representatives. Working areas and an office have been provided for their use. The EOF/AEOF has space to accommodate NRC representatives as well as representatives from FEMA, State and key local authorities.

In addition to Indian Point facilities and equipment, State and local facilities and equipment are available to support the Federal response.

### 2. Liaisons

- a. The NRC, FEMA, State, and Local authorities may dispatch representatives to the EOF/AEOF where accommodations have been provided.
- b. At the Alert level and above, Utility liaisons are dispatched to the State and local government EOCs to act as communications liaisons and to provide clarification of emergency response information.

## Indian Point Energy Center Emergency Plan

3. Radiological Laboratories: In addition to Indian Point's radiological assessment facilities, other Entergy power plants in the area may be utilized to analyze inplant and offsite environmental samples. Outside analytical assistance may be requested from State and Federal agencies and other utilities if the offsite radiological monitoring and environmental sampling operation exceeds the capacity of the Indian Point capabilities.

The availability of commercial laboratory/analytical services has been ascertained and an agreement letter is contained in Appendix 2.

4. Other Assistance: Contracted services are available and may be used in support of an emergency response at Indian Point. The availability of services has been ascertained and an agreement letter is contained in Appendix 2.

Though not a typical contracted service, the Institute of Nuclear Power Operation (INPO) is able to provide:

- Assistance in locating sources of emergency manpower and equipment,
- An organization of industry experts who could advise the utility on technical matters, and
- Analysis of operational aspects of the incident.

Additional facilities, organizations and individuals as listed in an emergency phone list, are available and may be used in support of emergency response.

**Part 2: PLANNING STANDARDS AND CRITERIA**

**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 Station. This scheme is based on Indian Point Units 2 & 3 systems, effluent parameters and operating procedures. The initial response of Federal, State and local agencies is dependent upon information provided by the Indian Point Emergency Response Organization. Indian Point emergency planning personnel work closely with State and local agencies to ensure consistency in classification schemes and procedural interfaces.

**1. Emergency Classification:**

This Plan is based on consideration of conceivable consequences of potential situations ranging from incidents where effects on plant and personnel are negligible to highly unlikely releases of radioactivity which could affect members of the public. The emergency classification of these conditions, both radiological and non-radiological, indicates the relative severity for immediate implementation of response actions. The four (4) major classification's increase in overall severity from Notification of Unusual (least severe) Event, Alert, Site Area Emergency, General Emergency (most severe).

These mutually exclusive classifications cover the postulated spectrum of potential and actual emergencies. Each classification is associated with a particular set of immediate actions. Each classification is characterized by certain initiating symptoms or events called Emergency Action Levels (EALs). These action levels include specific sets of plant parameters (i.e., instrument indications, system status, etc.) that are used to determine the appropriate emergency classification. A brief explanation of the four classification levels follows:

**Notification of Unusual Event (NUE)**

A Notification of Unusual Event classification is used to denote events are in process or have occurred which indicate a potential degradation of the level of safety of the plant. 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) classifications. The purpose of this classification is primarily notification. These notifications provide for (1) assurance that the first step in any response later found to be necessary has been carried out, (2) bringing the operating staff to a state of readiness, and (3) providing systematic handling of unusual events information and decision making. Any radioactive releases to the environment would not cause exposure to the offsite population at levels requiring Environmental Protection Agency (EPA) protective actions to be instituted.

The Shift Manager/Emergency Director will ensure:

- a) Notification of State and local offsite authorities within 15 minutes of classifying the event;

## Indian Point Energy Center Emergency Plan

- b) Required Station Management and the NRC are informed of the nature of the unusual condition;
- c) Optional augmentation of on-shift resources as needed, which may include full or partial staffing of the Technical Support Center, Operations Support Center, Emergency Operations Facility and/or the Joint News Center;
- d) Continued assessment and response as necessary;
- e) Escalation to a more severe class, if appropriate;

OR

- f) Close out with verbal summary of offsite authorities followed by written summary within 24 hours.

State and local offsite authorities would as directed by their respective Emergency Plans:

- a) Provide fire or security assistance if requested;
- b) Escalate to a more severe class, if appropriate;

OR

- c) Standby until a verbal closeout.

### Alert

An Alert classification indicates events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

The purpose of the Alert is to (1) assure that emergency personnel are readily available to respond if the situation becomes more serious or to perform confirmatory radiation monitoring if required, and (2) provide the offsite authorities with current information. Where radiological releases to the environment have occurred, it is possible that the site boundary doses will exceed 10 mRem Total Effective Dose Equivalent (TEDE) and 10 mRem/hr external exposure rate.

The Shift Manager/Emergency Director will ensure:

- a) Initiation of activation of the Emergency Response Organization which results in the staffing of the Technical Support Center, Operations Support Center, Emergency Operations Facility and the Joint News Center;
- b) Notification of State and local offsite authorities within 15 minutes of classifying the event;
- c) Prompt notification of the NRC (not to exceed one hour);
- d) Continued assessment and response as necessary;
- e) Dispatch of onsite and offsite monitoring teams and establish associated communications;
- f) Providing periodic plant status updates to offsite authorities (approximately every 30 minutes or period agreed upon with offsite authorities);

## Indian Point Energy Center Emergency Plan

- g) Providing periodic meteorological assessment to offsite authorities and, if any releases are occurring, dose estimates for actual release;
- h) Escalation to a more severe class, if appropriate;

OR

- i) Close out or recommend reduction in emergency class by verbal summary to offsite authorities followed by written summary within eight (8) hours of closeout or class reduction.

State and local offsite authorities would as directed by their respective Emergency Plans:

- a) Provide fire or security assistance if requested;
- b) Augment resources by activating EOC 's;
- c) Augment resources and bring primary response centers and Emergency Alert System (EAS) to standby status;
- d) Alert key emergency personnel to standby status including monitoring teams and associated communications;
- e) Provide confirmatory offsite radiation monitoring and ingestion pathway dose projections if actual releases substantially exceed technical specification limits;
- f) Escalate to a more severe class, if appropriate;

OR

- g) Maintain Alert status until verbal closeout or escalation.

### Site Area Emergency (SAE)

A Site Emergency indicates events are in process or have occurred which involve actual or likely major failures of plant functions needed for protection of the public. Any releases are not expected to result in exposure levels that exceed EPA Protective Action Guideline exposure levels except near the site boundary.

The purpose of the Site Area Emergency declaration is to (1) assure that response centers are manned, (2) assure that monitoring teams are dispatched, (3) assure that personnel required for evacuation of near-site areas are at duty stations if the situation becomes more serious, (4) provide current information for and consultation with offsite authorities and public, (5) provide updates for the public through offsite authorities.

Where radiological releases to the environment have occurred, it is possible that the site boundary doses will exceed 100 mRem Total Effective Dose Equivalent (TEDE), 500 mRem/CDE Thyroid, 100 mRem/hr external exposure rate, or 500 mRem/hr Thyroid Exposure Rate for one hour of inhalation.

## Indian Point Energy Center Emergency Plan

The Shift Manager/Emergency Director will ensure:

- a) Initiation of activation of the Emergency Response Organization which results in the staffing of the Technical Support Center, Operations Support Center, Emergency Operations Facility and the Joint News Center;
- b) Notification of State and local offsite authorities within 15 minutes of classifying the event;
- c) Prompt notification of the NRC (not to exceed one hour);
- d) Continued assess and respond as necessary;
- e) Dispatch of onsite and offsite monitoring teams and establish associated communications;
- f) An individual provides for plant status updates to offsite authorities and periodic news media briefings (perhaps joint with offsite authorities);
- g) Senior technical and management staff on-site are made available for consultation with NRC and State on a periodic basis;
- h) Meteorological and dose estimates are provided to offsite authorities for actual releases via a dedicated individual or automated data transmission;
- i) Release and dose projections based on available plant condition information and foreseeable contingencies are provided to appropriate agencies;
- j) Accountability process is initiated;
- k) Escalation to General Emergency class, if appropriate;

OR

- l) Close out or recommend reduction in emergency class by briefing of offsite authorities at Emergency Operations Facility and by phone followed by written summary within eight (8) hours of close.

State and local offsite authorities would as directed by their respective Emergency Plans:

- a) Provide any assistance requested;
- b) If sheltering near the site is desirable, activate public notification system;
- c) Provide public within at least ten miles with periodic updates on emergency status;
- d) Augment resources by activating EOC's and any other primary response centers;
- e) Dispatch key emergency personnel including monitoring teams and establish associated communications;
- f) Alert other emergency personnel to standby status (e.g., those in need for evacuation) and dispatch personnel to near site duty stations;
- g) Provide offsite monitoring results to licensee, DOE and others and jointly assess them;

## Indian Point Energy Center Emergency Plan

- h) Continuously assess information from licensee and offsite monitoring teams with regard to changes to protective action already initiated for public and mobilizing evacuation resources;
- i) Recommend placing milk animals within 2 miles on stored feed and assess to extend distance;
- j) Provide media briefings, perhaps with a licensee;
- k) Escalate to General Emergency class, if appropriate;
- l) Maintain Site Area Emergency status until closeout or escalation.

### General Emergency (GE)

A General Emergency indicates events are in progress or have occurred which involved actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Releases can be reasonably expected to exceed EPA Protective Action Guideline for more than the immediate site area.

The purpose of the General Emergency is to (1) initiate predetermined protective actions for the public, (2) provide continuous assessment of information from licensee and offsite organization measurements, (3) initiate additional measures as indicated by actual or potential releases, (4) provide consultation with offsite authorities, and (5) provide updates for the public through offsite authorities. Where radiological releases to the environment have occurred, it is possible that the site boundary doses could exceed 1000 mRem Total Effective Dose Equivalent (TEDE) and 5000 mRem/CDE Thyroid, 1000 mRem/hr External Exposure Rate, or 5000 mRem/hr Thyroid Exposure Rate for one hour of inhalation.

The Shift Manager/Emergency Director will ensure:

- a) Initiation of activation of the Emergency Response Organization which would staff of the Technical Support Center, Operations Support Center, Emergency Operations Facility and the Joint News Center;
- b) Notification of State and local offsite authorities within 15 minutes of classifying the event;
- c) Prompt notification of the NRC (not to exceed one hour);
- d) Continued Assess and respond as necessary;
- e) Dispatch of onsite and offsite monitoring teams and associated communications;
- f) An individual is provided for plant status updates to offsite authorities and periodic news media briefings (perhaps joint with offsite authorities);
- g) Senior technical and management staff on-site are made available for consultation with NRC and State on a periodic basis;
- h) Meteorological and dose estimates are provided to offsite authorities for actual releases;



## Indian Point Energy Center Emergency Plan

- i) Release and dose projections based on available plant condition information and foreseeable contingencies are performed and provided to offsite authorities;
- j) Accountability process is initiated;
- k) Close out or recommend reduction of emergency class by briefing of offsite authorities at Emergency Operations Facility and by phone followed by written summary within eight hours of closeout.

State and local offsite authorities would as directed by their respective Emergency Plans:

- a) Provide any assistance requested;
- b) Activate immediate public notification of emergency status and provide public periodic updates;
- c) Recommend; as a minimum, sheltering for 2 mile radius and 5 miles downwind and assess need to extend distances; consider advisability of evacuation (projected time available vs. Estimated evacuation times);
- d) Augment resources by activating EOC's and any other primary response centers;
- e) Dispatch key emergency personnel including monitoring teams and establish associated communications;
- f) Dispatch other emergency personnel to duty stations within 5 mile radius and alert all others to standby status;
- g) Provide offsite monitoring results to licensee, DOE and others and jointly assess them;
- h) Continuously assess information from licensee and offsite monitoring teams with regard to changes to protective actions;
- i) Recommend placing milk animals within 10 miles on stored feed and assess need to extend distance;
- j) Provide news media briefings, perhaps with a licensee;
- k) Maintain General Emergency status until closeout or reduction of emergency class.

## Indian Point Energy Center Emergency Plan

### Classification Downgrading

The Indian Point policy on Classification downgrading is as follows:

All events once declared, shall remain in effect until 1. Such time as conditions warrant termination of the event and entry into the Recovery Phase. Or 2. the event is re-classified at a higher level.

### 2. Emergency Action Levels:

The postulated accidents analyzed in each units Final Safety Analysis Report (FSAR), the example initiating conditions found in Appendix 1 to NUREG 0654-REV 1 and NUMARC/NESP-007 "Methodology for development of Emergency Action Levels" were evaluated to establish an emergency classification and emergency action level scheme. NUMARC/NESP-007 has been accepted by the NRC as an alternative to NUREG-0654-REV 1 and forms the basis of the Indian Point emergency classification scheme. The results of this are presented in nine categories of EALs which show the parameters for establishing each emergency classification.

The specific instruments, parameters or equipment statuses which identify the overall severity of the emergency condition and the actions to be taken by the facility staff are identified in the plant emergency plan implementing procedures. The Emergency Action Levels (EALs) are grouped into nine categories to simplify their presentation and promote a rapid understanding by their users. (See Table D-1 for example initiating conditions of each category). These categories are:

- (1) CSFST Status
- (2) Reactor Fuel
- (3) Reactor Coolant System
- (4) Containment
- (5) Radioactivity Release/Area Radiation
- (6) Electrical Failures
- (7) Equipment Failures
- (8) Hazards
- (9) Other

Categories one through five are primarily symptom based. The symptoms are indicative of actual or potential degradation of either fission product barrier's or personnel safety.

Categories six, seven and eight are events based. Electrical Failures are those events associated with losses of either AC or vital DC electrical power. Equipment Failures are abnormal and emergency events associated with vital plant system failures, while hazards are those non-plant system related events which have affected or may affect plant safety.

## Indian Point Energy Center Emergency Plan

Category nine provides the Emergency Director (ED) or Shift Manager (SM) the latitude to classify and declare emergencies based on plant symptoms or events which in his judgement warrants classification. This judgement includes evaluation of loss or potential loss of one or more fission product barriers warranting emergency classification consistent with the NUMARC barrier loss criteria.

Table D-1, Description of Emergency Action Levels, provides a further breakdown of the types events and parameter values and equipment status which would cause the emergency plan to be implemented. The detailed emergency action levels are provided in an emergency plan implementing procedure.

### 3. Offsite Classification Systems:

Indian Point works with the State of New York and local authorities to ensure consistency between classification schemes. The content of the Emergency Action Levels is reviewed with the State and local authorities on an annual basis.

### 4. Offsite Emergency Procedures:

Indian Point works with the State of New York and local 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 Indian Point accounting for local offsite conditions that exist at the time of the emergency.

Indian Point Energy Center Emergency Plan  
Table D-1, Description of Emergency Action Levels

Category	General. Emergency	Site Area Emergency	Alert	Unusual Event
1.0 CSFST Status 1.1 Subcriticality	Failure of the Reactor Protection System to complete an automatic trip and manual trip was not successful and there is indication of an extreme challenge to the ability to cool the core.	Failure of Reactor Protection system instrumentation to complete or initiate an automatic reactor trip once a Reactor Protection system setpoint has been exceeded and manual scram trip was not successful.	Failure of Reactor Protection system instrumentation to complete or initiate an automatic reactor trip once a Reactor Protection system setpoint has been exceeded and manual trip was successful while in power operations or hot standby	
1.0 CSFST Status 1.2 Core Cooling	Complete loss of function needed to achieve or maintain hot shutdown with reactor coolant > 200 °F.  <u>AND</u> Functional restoration actions taken and procedures not effective within 15 min.	Complete loss of function needed to achieve or maintain hot shutdown with reactor coolant > 200 °F.		
1.0 CSFST Status 1.3 Heat Sink		Complete loss of function needed to achieve or maintain hot shutdown with reactor coolant > 200 °F.		
1.0 CSFST Status 1.4 Integrity			Potential or actual loss of RCS integrity.	

Indian Point Energy Center Emergency Plan  
Table D-1, Description of Emergency Action Levels

Category	General. Emergency	Site Area Emergency	Alert	Unusual Event
1.0 CSFST Status 1.5 Containment	Potential loss of Containment integrity based on exceeding containment design pressure			
2.0 Reactor Fuel 2.1 Coolant Activity		Fuel clad degradation based on an amount of coolant activity corresponding to about 2% to 5% fuel clad damage with RCS loss or potential loss indicators.	Fuel clad degradation based on an amount of coolant activity corresponding to about 2% to 5% fuel clad damage	Fuel clad degradation based on reactor coolant samples exceeding coolant technical specifications
2.0 Reactor Fuel 2.2 Containment Radiation	Containment radiation levels indicate Fuel clad loss, RCS loss, Containment potential loss	Containment radiation levels indicate Fuel clad loss, RCS loss	Increase in containment radiation levels indicating a significant RCS leak	
2.0 Reactor Fuel 2.3 Refueling Accidents or Other Radiation Monitors			Major damage to irradiated fuel or loss of water level that has or will result in the uncovering of irradiated fuel outside the reactor vessel.  <u>OR</u> irradiated fuel uncovered	Unexpected increase in plant radiation or airborne concentration due to loss of water level in spent fuel pool or reactor cavity
3.0 RCS 3.1 RCS Leakage		Loss of reactor vessel water level has or will uncover fuel in the reactor vessel.	RCS leakage exceeds the capacity of one charging pump.	Increased RCS leakage when greater than 200 °F

Indian Point Energy Center Emergency Plan  
Table D-1, Description of Emergency Action Levels

Category	General. Emergency	Site Area Emergency	Alert	Unusual Event
3.0 RCS 3.2 Primary to Secondary Leakage		Unisolable release of secondary side to atmosphere with indications of either major primary to secondary leakage or possible fuel damage		Indication of unisolable SG tube leaks that may mean a potential loss of containment
3.0 RCS 3.3 Subcooling			Conditions where leakage from the RCS is greater than available inventory control capacity such that a loss of subcooling has occurred.	
4.0 Containment 4.1 Integrity Status	Potential loss of containment in conjunction with losses of both RCS and fuel clad.	Incomplete containment isolation that allows direct release to the environment  <u>OR</u> Rapid uncontrolled decrease in containment pressure following initial increase due to RCS failure  <u>OR</u> During known LOCA Containment pressure or sump level response not consistent with conditions		Inability to maintain containment integrity during conditions when it is required.

Indian Point Energy Center Emergency Plan  
Table D-1, Description of Emergency Action Levels

Category	General. Emergency	Site Area Emergency	Alert	Unusual Event
4.0 Containment 4.2 SG Tube Rupture w/ Secondary Release	Steam Generator (SG) tube rupture events in conjunction with a loss of containment due to a significant secondary line break with actual or potential loss of the fuel clad integrity.	Steam Generator (SG) tube rupture events in conjunction with a loss of containment due to a significant secondary line break.		
4.0 Containment 4.3 Combustible Gas Concentrations	Hydrogen concentrations reach or exceed the limits, where imminent loss of the containment barrier exists.			
5.0 Radioactivity Release / Area Radiation 5.1 Effluent Monitors	Boundary dose resulting from an actual or imminent release of gaseous radioactivity exceeds 1000 mRem TEDE or 5000 mR CDE Thyroid for the actual or projected duration of the release using actual meteorology.	Boundary dose resulting from an actual or imminent release of gaseous radioactivity exceeds 100 mRem TEDE or 500 mR CDE Thyroid for the actual or projected duration of the release.	Any unplanned release of gaseous or liquid radioactivity to the environment that exceeds 200 times radiological Technical Specifications for 15 minutes or longer.	Any unplanned release of gaseous or liquid radioactivity to the environment that exceeds two times the radiological Technical Specifications for 60 minutes or longer.

Indian Point Energy Center Emergency Plan  
Table D-1, Description of Emergency Action Levels

Category	General. Emergency	Site Area Emergency	Alert	Unusual Event
<p>5.0 Radioactivity Release / Area Radiation</p> <p>5.2 Dose Projections/ Environmental Measurements/ Release Rates</p>	<p>Dose projections or field surveys resulting from actual or imminent release which indicate doses / dose rates at or beyond EPA Limits</p>	<p>Dose projections or field surveys resulting from actual or imminent release which indicate doses / dose rates at 10% of EPA Limits</p>	<p>Any unplanned release of gaseous or liquid radioactivity to the environment that exceeds 200 times radiological Technical Specifications for 15 minutes or longer.</p> <p>Dose projections or field surveys resulting from actual or imminent release which indicate doses / dose rates at 1% of EPA Limits</p>	<p>Any unplanned release of gaseous or liquid radioactivity to the environment that exceeds two times the radiological Technical Specifications for 60 minutes or longer.</p>
<p>5.0 Radioactivity Release / Area Radiation</p> <p>5.3 Area Radiation Levels</p>			<p>Release of radioactive material or increases in radiation levels within the facility that impedes operation of systems required to maintain safe operations or to establish or maintain cold shutdown.</p>	<p>Unexpected increase in plant radiation or airborne concentration.</p>



Indian Point Energy Center Emergency Plan  
Table D-1, Description of Emergency Action Levels

Category	General. Emergency	Site Area Emergency	Alert	Unusual Event
<p>6.0 Electrical Failures</p> <p>6.1 Loss of AC Power Sources</p>	<p>Prolonged loss of all offsite power and prolonged loss of all onsite AC power with reactor coolant &gt; 200 °F.</p>	<p>Loss of all offsite power and loss of all onsite AC power to essential busses with reactor coolant &gt; 200 °F.</p> <p><u>AND</u></p> <p>Inability to power required core cooling systems with alternate power sources for &gt; 15 min.</p>	<p>Loss of all offsite power and loss of all onsite AC power to essential busses during cold shutdown, refueling or defueled mode.</p> <p><u>OR</u></p> <p>AC power capability to essential busses reduced to a single power source for greater than 15 minutes such that any additional single failure would result in station blackout with reactor coolant &gt; 200 °F.</p>	<p>Loss of all offsite power to essential busses for greater than 15 minutes.</p>
<p>6.0 Electrical Failures</p> <p>6.2 Loss of DC Power Sources</p>		<p>Loss of all vital DC power with reactor coolant &gt; 200 °F.</p>		<p>Unplanned loss of required DC power during cold shutdown or refueling mode for greater than 15 minutes.</p>
<p>7.0 Equipment Failures</p> <p>7.1 Tech Spec Requirements</p>				<p>Inability to reach required shutdown within Technical Specification Limits.</p>

Indian Point Energy Center Emergency Plan  
Table D-1, Description of Emergency Action Levels

Category	General. Emergency	Site Area Emergency	Alert	Unusual Event
<p>7.0 Equipment Failures</p> <p>7.2 System Failures or Control Room Evacuation</p>		Control room evacuation has been initiated and plant control cannot be established.	<p>Turbine failure generated missiles which causes or potentially causes any required safety related system or structure to become inoperable</p> <p><u>OR</u></p> <p>Control room evacuation has been initiated.</p> <p><u>OR</u></p> <p>Inability to maintain plant in cold shutdown.</p>	Main turbine rotating component failures of sufficient magnitude to cause observable damage to the turbine casing or to the seals of the turbine generator.
<p>7.0 Equipment Failures</p> <p>7.3 Loss of Indications / Alarms / Communication Capability</p>		Inability to monitor a significant transient in progress.	Unplanned loss of most or all safety system annunciation or indication in control room with either (1) a significant transient in progress, or (2) compensatory non-alarming indicators are unavailable.	<p>Unplanned loss of most or all safety system annunciation or indication in the control room for greater than 15 minutes with reactor coolant temperature &gt; 200 °F.</p> <p><u>OR</u></p> <p>Unplanned loss of all onsite or offsite communications capabilities.</p>
<p>8.0 Hazards</p> <p>8.1 Security Threats</p>	Security event resulting in loss of ability to reach and maintain cold shutdown.	Any security event which represents actual or likely failures of plant systems needed to protect the public.	Any security event which represents an actual substantial degradation of the level of safety of the plant.	Confirmed security event which indicates a potential degradation in the level of safety of the plant.

Indian Point Energy Center Emergency Plan  
Table D-1, Description of Emergency Action Levels

Category	General. Emergency	Site Area Emergency	Alert	Unusual Event
8.0 Hazards 8.2 Fire or Explosion			Fire or explosion affecting the operability of plant safety systems required to establish or maintain safe shutdown.	Fire within protected area boundary not extinguished within 15 minutes of detection. <u>OR</u> Explosion within Protected Area boundary which impacts plant safety related systems or structures.
8.0 Hazards 8.3 Man Made Events			Vehicle crash or projectile impact which may cause any required safety related system or structure to become inoperable <u>OR</u> Release of toxic or flammable gases which jeopardizes operation of systems required to maintain safe operations.	Vehicle crash into or projectile which impacts plant safety related structures or systems within Protected Area boundary <u>OR</u> Release of toxic or flammable gases deemed detrimental to safe operation of the plant.

Indian Point Energy Center Emergency Plan  
Table D-1, Description of Emergency Action Levels

Category	General. Emergency	Site Area Emergency	Alert	Unusual Event
<p>8.0 Hazards 8.4 Natural Events</p>			<p>Earthquake felt inplant <u>AND</u> Seismic instruments indicate a magnitude 0.15 g horizontal or 0.10 g vertical has occurred.</p> <hr/> <p>Sustained winds &gt; 100 mph (unit 2) &gt; 90 mph (unit 3) onsite <u>OR</u> Tornado strikes a plant vital area</p> <hr/> <p>Any natural event which causes or potentially causes any required safety related system or structure to become inoperable</p> <hr/> <p>High or low river water levels which may effect vital equipment.</p>	<p>Earthquake felt inplant <u>AND</u> Other indications of earthquake such as seismic monitors or outside confirmation</p> <hr/> <p>Report by plant personnel of tornado within plant Protected Area boundary</p> <hr/> <p>High or low river water level</p>
<p>9.0 Other</p>	<p>As determined by the Shift Manager, or Emergency Director, events are in progress which indicate actual or imminent core damage and the potential for a large release of radioactive material in excess of EPA PAGs outside the site boundary.</p>	<p>As determined by the Shift Manager, or Emergency Director, events are in progress which indicate actual or likely failures of plant systems needed to protect the public.</p>	<p>Any event, as determined by the Shift Manager, or Emergency Director, that could cause or has caused actual substantial degradation of the level of safety of the plant.</p>	<p>Any event, as determined by the Shift Manager, or Emergency Director, that could lead to or has led to a potential degradation of the level of safety of the plant.</p>

**Part 2: PLANNING STANDARDS AND CRITERIA**

**Section E: Notification Methods and Procedures**

This section describes the notification of State and local response organizations and Indian Point emergency response personnel. It outlines the content of initial and follow-up messages to response organizations within the Indian Point Generating Station (Units 1, 2 & 3) Plume Exposure Pathway Emergency Planning Zone (EPZ).

**1. Response Organization Notification:**

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

Emergency events that involve both Units (2&3) (i.e., tornado or earthquake) when the classification for each Unit is the same shall be reported as affecting both Units.

In situations when both Units 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 updates.

The emergency conditions classified in Section D involve the alerting or activation of progressively segments of the total emergency organization. This section describes the communication steps taken to alert and activate authorities for each class of emergency.

**A. Notification of Unusual Event**

- 1) A Notification of Unusual Event is declared by the Shift Manager (or Control Room Supervisor if the SM is unavailable) if any Unusual Event threshold listed in the EALs, Table (Section D) is met or exceeded.
- 2) Depending on the particular circumstances of the situation, the Control Room Operator under the Shift Manager's direction alerts the affected Unit's personnel and non-affected Unit's (2 or 3) Control Room personnel and gives instructions regarding the event, using the public address system, the telephone or by an alternate method. Distinctive sounding signals are used to announce fire alarms or site emergencies.
- 3) Notification of portions of the on-call ERO are made by the public address system, pager or phone informing them of the declaration of an Unusual Event.

## Indian Point Energy Center Emergency Plan

- 4) Immediate Notification (within 15 minutes) of an Unusual Event is made by the Shift Manager or his designee to the New York State, Westchester, Rockland, Putnam and Orange County and Peekskill Warning Points using the Radiological Emergency Communications System (RECS) phone (primary method) or backup methods: Local Government Radio (LGR) or commercial phone lines. The New York State Warning Point relays the information to the New York State Department of Health.
- 5) The Nuclear Regulatory Commission's Operations Center is notified using the Emergency Notification System (ENS) phone or commercial phone lines.
- 6) Individuals from Corporate Headquarters are notified by phone or pager.
- 7) Closeout is accomplished by a verbal summary to offsite authorities followed by a written summary within 24 hours.

### B. Alert

- 1) An Alert is declared by the Shift Manager (or Control Room Supervisor if the SM is unavailable) in the event of an alert condition listed in the EALs Table (Section D) is met or exceeded.
- 2) Immediate corrective actions, using plant emergency procedures, are taken by the Control Room Operator to place the plant in a safe condition if the automatic protective systems have not already done it.
- 3) Notification of site personnel is accomplished by the Control Room Operators initiating the site assembly alarm and/or via Public Address Announcements. In addition, the affected unit's Control Room Operators also contacts the unaffected unit's Control Room personnel.
- 4) In the case of fire, additional notification in the form of a distinctive siren is also provided.
- 5) The Shift Manager or designee would request, by phone, outside assistance from local support services as necessary.
- 6) The Shift Manager initiates the activation of the Emergency Operations Facility, Technical Support Center, Operations Support Center and Joint News Center. During normal working hours the necessary personnel are available in the plant and are contacted by the Public Address System, pager or alternate methods. During off-hours individuals can be contacted at their homes by telephone or page "beeper" system. ERO member telephone numbers are in the emergency phone list available in the Control Rooms and Emergency Response Facilities.
- 7) Immediate Notification (within 15 minutes) of an Alert is made by the Shift Manager or his designee to the New York State, Westchester, Rockland, Putnam and Orange County and Peekskill Warning Points using the Radiological Emergency Communications System (RECS) phone (primary method) or backup methods: Local Government Radio (LGR) or commercial phone lines. The New York State Warning Point relays the information to the New York State Department of Health.

## Indian Point Energy Center Emergency Plan

- 8) Nuclear Regulatory Commission's Operations Center is notified using the Emergency Notification System (ENS) to the NRC Operations Center or commercial phone lines.
- 9) Individuals from Corporate Headquarters are notified by phone or pager.
- 10) If there is a radiological release above Technical Specification limits involved with the event, the Shift Manager or his designee will provide to the offsite authorities information on the release.
- 11) Close out in emergency class is accomplished by the briefing of offsite authorities at the Emergency Operations Facility and by phone, followed by a written summary within eight hours.

### C. Site Area Emergency

- 1) A Site Area Emergency is declared by the Shift Manager (or Control Room Supervisor if the SM is unavailable) or the Emergency Director if any one of the event-based condition listed in the EALs Table (Section D) is met or exceeded.
- 2) Notification of site personnel is accomplished by the Control Room Operator initiating the Site Assembly Alarm or use of the public address system. Accountability of personnel located within the Protected Area is performed. In addition the unaffected Control Room Personnel are contacted by the affected Control Room Operators.
- 3) The activation of emergency personnel to staff the Emergency Operations Facility, Technical Support Center, Operational Support Center and Joint News Center is initiated by the Shift Manager. The minimum organization is described in Section B. During normal working hours the necessary personnel are available in the plant and are contacted by the Public Address System, pager or alternate methods. During off-hours individuals can be contacted at their homes by telephone or page "beeper" systems. Telephone numbers of Emergency Personnel are in the emergency phone list available in the Control Room and the Emergency Response Facilities.
- 4) Individuals from Corporate Headquarters are notified by phone or pager.
- 5) Immediate Notification (within 15 minutes) of a Site Area Emergency is made by the Shift Manager or his designee to the New York State, Westchester, Rockland, Putnam and Orange County and Peekskill Warning Points using the Radiological Emergency Communications System (RECS) phone (primary method) or backup methods: Local Government Radio (LGR) or commercial phone lines. The New York State Warning Point relays the information to the New York State Department of Health.
- 6) Nuclear Regulatory Commission's Operations Center is notified using the Emergency Notification System (ENS) to the NRC Operations Center or commercial phone lines.
- 7) After arrival of ERO personnel, dedicated individuals would be assigned to provide plant status and meteorological and dose estimates for actual and projected releases.

## Indian Point Energy Center Emergency Plan

- 8) If there is a radiological release above Technical Specification Limits involved with the event, the Shift Manager/Emergency Director or his designee shall provide to the offsite authorities information on the release.
- 9) Close out in emergency class is accomplished by the briefing of offsite authorities at the Emergency Operations Facility and by phone, followed by a written summary within eight hours.

### **D. General Emergency**

- 1) A General Emergency is declared if any one of the event-based conditions listed in the EALs Table (Section D) is met.
- 2) The activation of the emergency organization, the notification of offsite authorities, Station Personnel, Corporate Headquarters the same as described in Section E.1.C for a Site Area Emergency – with the addition of a Protective Action Recommendation being given.

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

At the Unusual Event classification, select portions of the Indian Point Emergency Response Organization are notified and could be activated at the discretion of the Emergency Director.

At the Alert, Site Area Emergency, or General Emergency classification level, notification and activation of all onsite Emergency Response Organization positions and related facilities is required. Based on the event the Emergency Director would de-activate some positions or call in additional personnel as required.

Onsite personnel are notified of the declaration, escalation or termination of an emergency. An announcement is made from the Control Room over the plant public address system. In addition to the public address system, pagers or alternate methods notify emergency organization personnel.



## Indian Point Energy Center Emergency Plan

**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". 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 Entergy'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 Entergy realize that due to diversity of normal residential patterns for the stations' staff, possible adverse weather conditions and road congestion, these time frames might be exceeded.

ERO members who are away from the site when an event is declared are notified via pager and/or phone calls. Pagers are activated either as a group or individually. An automated notification system makes individual calls to members of the ERO. Once notified, ERO members respond to their assigned facilities immediately.

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 an Alert.

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

### 3. Initial Notification:

An Initial Notification using Part I of the New York State Radiological Emergency Data Form shall be used to transmit information to appropriate State and local agencies within fifteen (15) minutes of any of the following:

- A classification is made;
- The classification changes;
- A change in radioactive release condition;
- A change in the downwind sector when a release is potential or occurring;
- A change is made in Protective Action Recommendations; and
- Additional information is available which may affect a change in the State or local protective action response.

The initial emergency message form includes information about:

- a) authenticity, i.e. "This is NOT an Exercise (Drill)" or "This is an Exercise (Drill)";
- b) identity of caller and receiver of call;
- c) emergency classification;
- d) emergency action level identification and whether a release is in progress;

## Indian Point Energy Center Emergency Plan

- e) wind direction, speed and stability class;
- f) whether protective measures may be necessary;
- g) the date and time of classification and notification.

In a General Emergency the notification includes, at a minimum, a recommendation for evacuation the general public within the two (2) mile ring of Indian Point Energy Center and five (5) miles downwind, and sheltering of the remainder of the 10-mile Emergency Planning Zone.

#### 4. Follow-up Messages:

The Emergency Director ensures communications are maintained with the offsite authorities through periodic follow-up messages. Follow-up message should be provided approximately every 30 minutes or on agreed upon intervals established with the offsite authorities. The follow-up messages include the following, as appropriate:

- a. Location of incident, name and telephone number of caller;
- b. Date and time of incident;
- c. Class of Emergency. (Unusual Event, Alert, Site Area Emergency or General Emergency);
- d. Type of actual or potential radiological release (airborne, waterborne, surface spill);
- e. Whether or not [estimate of quantity of] radioactive material has been released or is being released;
- f. Radiological release information, including estimates of the relative quantities and concentrations of noble gases, halogens, and particulates;
- g. Meteorological conditions at appropriate levels (wind speed, direction to and from, stability);
- h. Actual or projected dose rates at the site boundary, projected integrated dose at site boundary;
- i. Projected dose rates and integrated dose at the Site Boundary and at 2, 5, and 10 miles;
- j. Estimates of any surface contamination if applicable;
- k. Recommended emergency actions, including protective measures;
- l. Prognosis for worsening or improvement.

## Indian Point Energy Center Emergency Plan

### 5. State and Local Information Dissemination:

State and local government organizations, in cooperation with Indian Point personnel, have established a system for disseminating appropriate information to the public. The system includes notification through appropriate broadcast media, e.g. the Emergency Alerting System (EAS).

### 6. Notification of the Public:

The State and local government organizations have the capability for providing an alert signal (sirens) to their population within fifteen (15) minutes following the decision to take a protective action.

The public Alert Notification System (ANS) is operated by local government agencies and maintained by Entergy. In cooperation with offsite agencies Entergy personnel test the siren system monthly, any system discrepancies are promptly repaired.

The public Alert Notification System (ANS) is composed mainly of sirens and is augmented with individual alerting devices for special facilities.

The sirens are electro-mechanical and are initiated from each County EOC via transmitted radio signals.

The system design consists of 154 sirens with a distribution as follows:

- Westchester - 77
- Rockland - 51
- Orange - 16
- Putnam - 10

Periodic testing and maintenance of the ANS is performed in accordance with approved procedures. Periodic testing includes:

- Bi-weekly silent test – intended to check encoder equipment, radio transmitter/repeater and siren receiver and encoder.
- Quarterly growl test – intended to test the siren sub-system from receiver antenna to siren motor (satisfies the requirement of the bi-weekly silent test).
- Annual activation test – test the actuation and operation of the siren system (satisfies the requirements of the bi-weekly silent test if the cancel signal is initiated following the activation).

Tone Alert Radios are distributed within the 10-mile EPZ to supplement siren alerting for institutions and are offered to residences in areas where the siren sound levels are less effective. On an annual basis, guidance will be provided on the use and testing of the tone alert radios.

## Indian Point Energy Center Emergency Plan

### 7. Messages to the Public:

The State has developed draft messages for the Emergency Alerting System (EAS) that are intended for the public. These draft messages are included as part of the State plan and contain instructions with regard to specific protective actions to be taken by occupants and visitors of affected areas.

Messages to the public are also provided via the Media, these messages are coordinated by utility, Federal, State and local representatives at the Joint News Center.

# Indian Point Energy Center Emergency Plan

## Part 2: PLANNING STANDARDS AND CRITERIA

### Section F: Emergency Communications

This section describes the emergency communications equipment available to support the Indian Point Energy Center (Indian Point) Emergency Response Organization (ERO). It outlines the available communications equipment to:

- Notify the Indian Point Emergency Response Organizations;
- Provide Initial Notification to Offsite governmental agencies;
- Communicate among the Indian Point Emergency Response Facilities and field teams;
- Communicate with the Nuclear Regulatory Commission (NRC) and other Federal, State, and local response agencies;
- Communicate with hospitals, ambulances, and other agencies providing offsite assistance to Indian Point.

This section further outlines the program for insuring that the communications equipment is tested on a regular schedule, and that methods are in place to ensure rapid and reliable repair of any equipment found not operational.

#### 1. Description of Primary Communications Systems

Communications may be established by different means (radio, phone, public address system) within plant buildings, between the Site and local authorities and between the following groups: Control Room personnel, offsite support groups, Emergency Operations Facility personnel, Technical Support Center personnel, Operational Support Center personnel, Joint News Center personnel, monitoring teams, security forces and Corporate Management.

##### Public Address System

The Public Address Systems are designed for paging within the Units (1/2 and 3) from the Units Control Rooms. Personnel paged have the ability to talk to the Control Room Operator via party line phones that are strategically located within the units. Plant personnel may initiate the communication to the Control Room from outlying party lines. This system is used to call personnel and announce emergencies in the Indian Point Protected Area(s).

In the event the Public Address system is not operational, alternate methods of notification will be used.

##### Telephone Exchanges

Normal telephone communication service includes Private Branch (PBX), Commercial and/or Federal Telephone System (FTS) exchanges in the Control Rooms, Emergency Operations Facility, Technical Support Centers, Operational Support Centers, Joint News Center and Corporate Headquarters.

## Indian Point Energy Center Emergency Plan

A microwave system provides alternate telephone communication through a NYC (212 exchange) from the Central Control Room and Emergency Operations Facility. The Local Government Radio Channel (Figure utilizes the microwave system. F.1-1)

The Emergency Notification System (ENS) and the Health Physics Network (HPN) are dial telephone circuits in the Federal Telecommunication System used for the dissemination of operational conditions as well as the initial warning notification from the site to the Nuclear Regulatory Commission. This system has extensions at the Control Rooms, Technical Support Centers and the Emergency Operations Facility. Additional FTS2000 lines are available in the Emergency Operations Facility for NRC personnel responding to the site.

### Direct Line Phones

Radiological Emergency Communications System (RECS) and the Emergency Response Facility direct lines.

- The Radiological Emergency Communication System (RECS) with phones in the Control Rooms and the Emergency Operations Facility is the primary means for Indian Point personnel to simultaneously notifying the State and County Warning Points, Emergency Operations Centers and the City of Peekskill of an emergency. This system is staffed twenty-four hour per day in the Control Room and City, County and State Warning Points. State and County Warning Point procedures detail the activation of their respective responses organization. Figure F.1-2 depicts RECS.
- Automatic ringing phones connect the Technical Support Centers/Operations Support Center with the Control Rooms and the Emergency Operations Facility/Alternate EOF.
- An Executive Hotline has been established between the EOF, State and Counties that provides for a dedicated link between state and local officials and the Emergency Director once the EOF has taken command and control of Entergy's emergency response.

### Radio Systems

A two-channel radio system is available for communication between the site and emergency facilities. One channel is provided between each Unit's Control Room and the Con Edison System Operator at the New York City Energy Control Center. A second channel, designated "Con Ed Frequency #1" channel is a separate radio system for emergency forces that connects the Emergency Responses Facilities, the Unit 3 Control Room, the Unit 1-2 Control Room and the emergency offsite monitoring survey vehicles.

The Security Force connecting the Command Guard Houses with all guard posts uses a security radio system.

At Unit 3, an emergency radio frequency is installed to provide communication between the Operations Support Center, dispatched in-plant teams and the Control Room.

## Indian Point Energy Center Emergency Plan

The Local Government Radio (LGR) is installed in the Control Room and Emergency Operations Facilities to be used as backup to the Radiological Emergency Communications System (RECS) phone. Figure F-1.1 depicts the LG radio channel.

Backup power for the Emergency Response Facilities radio systems is provided by either gas or diesel engine driven generators or batteries that will automatically supply AC power for the radio system if normal power is interrupted.

### Radio Paging System - (Page "Beeper" Service)

A commercial radio paging service is used for calling personnel that are offsite at the start of an emergency. A paging service is contacted to initiate the page. The paging service then transmits a message to all personnel to whom a pager has been issued. Personnel acknowledge by calling a pre-designated number connected to an answering machine that receives the caller's name and time of the call.

### Computer Systems

The Emergency Response Data System (ERDS) is a computer link from Indian Point to the NRC Operations Center that displays key plant data. ERDS will be activated at an Alert or higher classification.

Other computer systems have been established to display plant data and meteorological data in the onsite and offsite Emergency Response Facilities.

### Addition Communications Guidelines:

- a. Implementing Procedures and communications systems are in place to ensure the capability to notify state and local emergency response organizations 24 hours a day. The direct line phone system, Radiological Emergency Communications System (RECS), and the Emergency Response Facility direct lines are provided for this purpose.
- b. Indian Point Emergency Response Facilities are equipped to communicate with state and county Emergency Response Operations Centers once the Emergency Response Organizations are in place.
- c. The Nuclear Regulatory Commission is Indian Point's primary point of contact for communications with the Federal Emergency Response Organization. (see section F.1.f below for description of communications systems used.
- d. The communications described in this section provide for adequate communications between Indian Point Emergency Response Facilities. Implementing procedures provide guidance for the ERO to establish and maintain proper communications throughout an event at Indian Point
- e. Section E.2 describes the provisions for alerting and activating the Emergency Response Organization.

## Indian Point Energy Center Emergency Plan

- f. The Emergency Notification System (ENS) and the Health Physics Network (HPN) are dial telephone circuits in the Federal Telecommunication System (FTS), used for the dissemination of operational conditions as well as the initial warning notification from the site to the Nuclear Regulatory Commission. This system has extensions at the Central Control Room, Technical Support Center / Operations Support Center and the Emergency Operations Facility. Additional FTS phones are available in the Emergency Operations Facility for use by NRC personnel responding to the site.
- g. Procedures are in place for the ERO to continuously provide information to the NRC is requested.

### Notification System

A computer-based system is used to activate pagers and make phone calls. This system is capable of rapidly activating group pages, individual pages and individual phone calls to members of the Emergency Response Organization.

### Medical Communications:

Indian Point establishes communications with the primary medical supplier, Hudson Valley Hospital Center, Peekskill/Cortlandt, and if needed the backup hospital, Phelps Memorial, Tarrytown, via commercial telephone that is accessed by station personnel either via commercial onsite telephone or by an Indian Point telephone system. Calling 911 or calling the ambulance provider directly dispatches the ambulance. The Dispatcher provides for a coordinated communications link to the ambulances responding to Indian Point or transporting personnel from the Station.

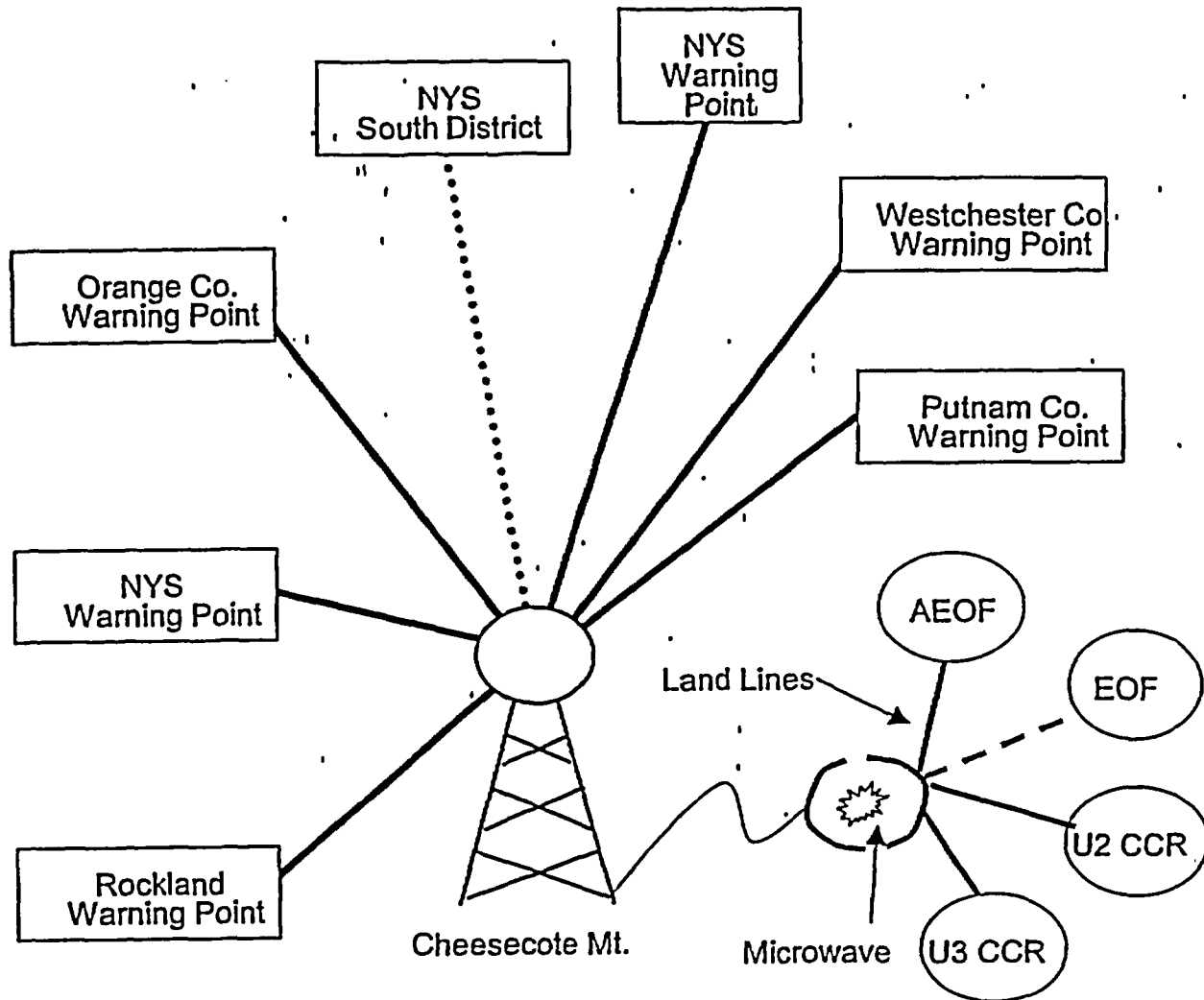
### Communications Drills and Testing:

Communications drills between Indian Point and state and local governments are conducted in accordance with criteria contained in Section N.2. Also, Indian Point personnel conduct monthly, quarterly and semi-annual surveillances to determine the working condition and availability of critical communications equipment. This surveillance includes a check of the units' operability and general condition. Deficiencies are identified and corrected.



# Indian Point Energy Center Emergency Plan

## Figure F-1.1 Local Government Radio Channel

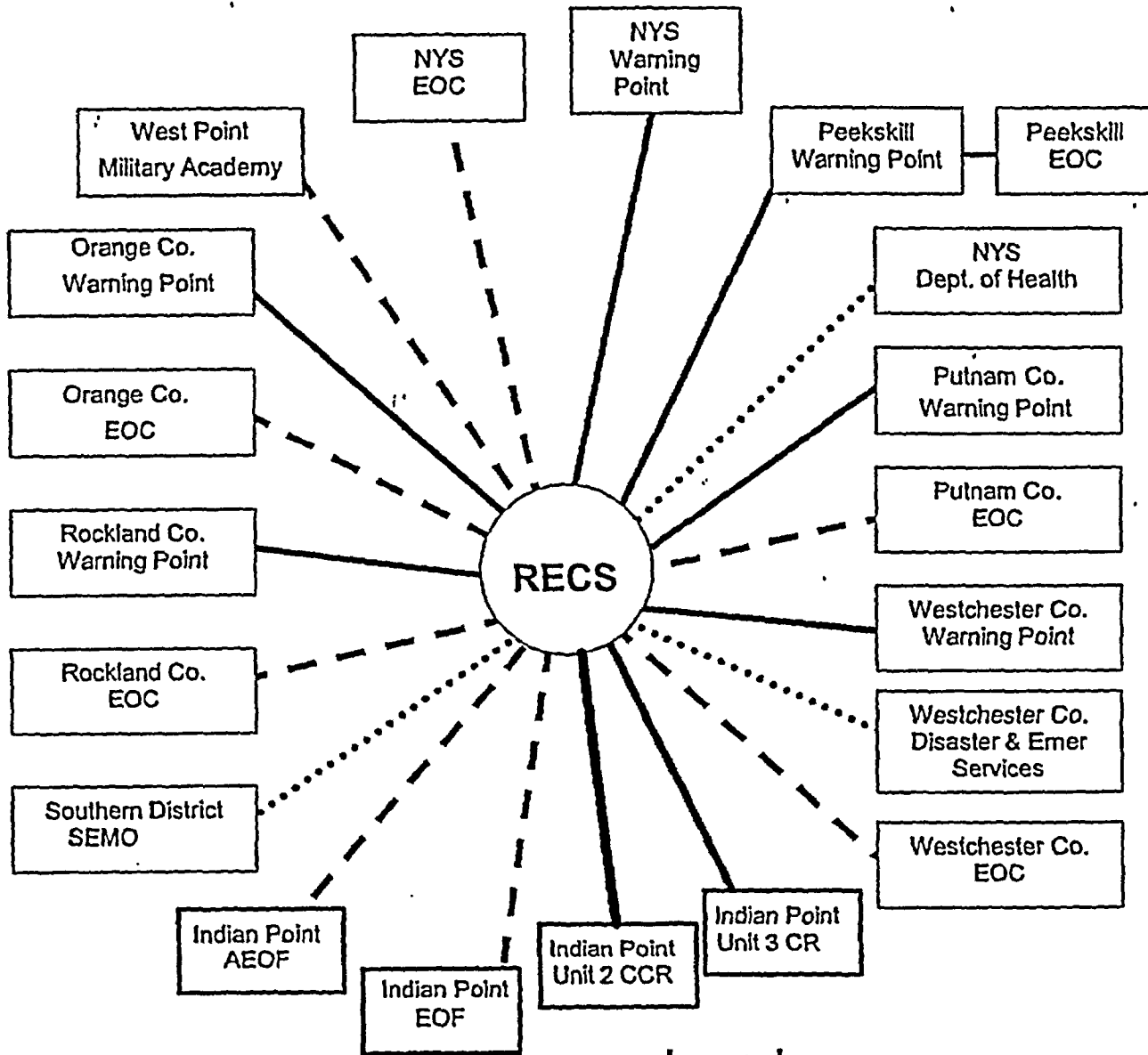


### Legend

- Manned 24 hour / day
- ..... Manned Working Hours
- - - - Manned During Emergencies

Indian Point Energy Center Emergency Plan

Figure F-1.2 Radiological Emergency Communications System



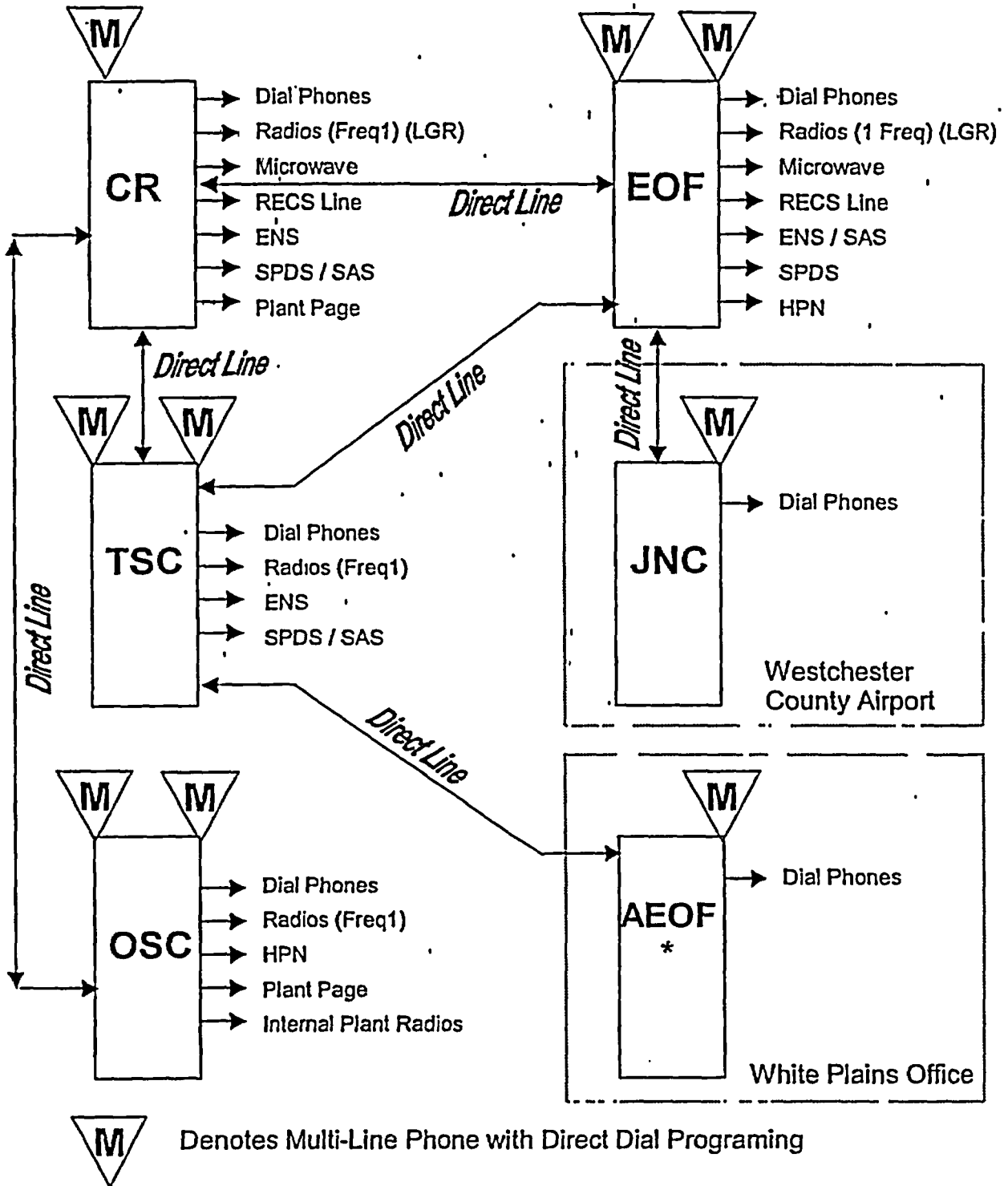
Legend

- Manned 24 hour / day
- ..... Manned Working Hours
- - - - Manned During Emergencies

Indian Point Energy Center Emergency Plan

Typical Indian Point Communications Paths

Figure F-1.3 Emergency Facilities Communications Systems



\* When the AEOF is activated in the White Plains Office, it has similar communications capabilities as the EOF.

# Indian Point Energy Center Emergency Plan

## Part 2: PLANNING STANDARDS AND CRITERIA

### Section G: Public Education and Information

This section describes the Indian Point Energy Center 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:

Energy, the New York State and the counties of Westchester, Orange, Rockland and Putnam, are responsible for periodic dissemination of educational information to the public within the 10-mile Emergency Planning Zone.

Educational information to the public within the 10-mile radius of the Indian Point Energy Center has been prepared in a booklet form that summarizes the role of members of the general public in dealing with a local emergency. The booklet focuses on the planning area in which the individual lives. It is mailed to each household within 10-mile radius under the auspices of the Four County Nuclear Safety Committee.

Updated booklets will be distributed each year.

The contents of the booklet include the following:

- a. Educational information on radiation;
- b. A description of the times which require public notifications do to events at the site;
- c. Definitions of protective measures as well as written descriptions of evacuation routes, locations of reception centers, steps to follow when sheltering or evacuating;
- d. Instructions for members of the public with special needs; and
- e. State and EPZ community contacts for additional information.

#### 2. Public Education Materials:

In addition, an advertisement containing the specified information has been prepared for insertion in telephone books, and for use as a posting in such places as motels, hotels, and workplaces. Siren information stickers are also distributed to provide information for the transient population.

These materials 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.

Distribution of materials, updated as necessary, will be conducted annually.

## Indian Point Energy Center Emergency Plan

### 3. Joint News Center

- a. The Joint News Center (JNC) is designated as the location for the news media to receive information on an event at Indian Point. The JNC is located outside the plume exposure emergency planning zone at the Westchester County Airport; Interstate 184, Exit 2; White Plains, NY and provides a place for;
  - A point of contact between the Indian Point Corporate Spokesperson and the news media; and
  - Coordination of public information released to the news media and the public by Indian Point, State and Local government including notifications and protective action recommendations.

The JNC has accommodations for Federal, State and Local government representatives as well as representatives of the news media.

When Indian Point activities the JNC the JNC Director manages it. The JNC has equipment to support required activities including telephones, facsimile and photocopiers.

Procedures provide for members of the Indian Point staff to provide information to the media at the Unusual Event classification or prior to activation of the JNC at higher classifications.

### 4. Coordination of Public Information

- a. The Indian Point Company Spokesperson is the primary spokesperson for the utilities during an emergency. The Company Spokesperson has direct access to all necessary information.
- b. The Joint News Center is staffed by Federal, State and local emergency management agencies and Indian Point personnel to assure timely exchange and coordination of information. Representatives coordinate information prior to distributing news releases and prior to news briefings.
- c. Rumors or misinformation are identified during an emergency by phone teams and media monitors located at the news center. They respond to public and news media calls and monitor media reports. Reports of misinformation or rumors are forwarded to the news center staff for an appropriate response. Rumor control is also provided for by the State of New York and local emergency management agencies.

### 5. Media Orientation:

Entergy, in cooperation with appropriate State and county officials, will annually acquaint news media personnel with the emergency plans, information concerning radiation and points of contact for release of public information in an emergency.

# Indian Point Energy Center Emergency Plan

## **Part 2: PLANNING STANDARDS AND CRITERIA**

### **Section H: Emergency Facilities and Equipment**

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

The emergency response activities of the Indian Point Emergency Plan are distributed among the functions of the following Emergency Response Facilities (ERF):

- Technical Support Center (Unit 2 & Unit 3))
- Emergency Operations Facility (joint facility)
- Alternate Emergency Operating Facility (joint facility)
- Operations Support Center (Unit 2 & Unit 3)
- Control Room (Unit 2 & Unit 3)
- Joint News Center (joint facility)

Each facility has procedures, staff, accommodations, equipment, services and supplies for implementing its function.

#### **1. In-Plant Emergency Response Facilities**

##### **Control Rooms (CR)**

Each unit's control room contains the necessary instrumentation for operating the plant under normal and accident conditions. The Control Room Watch personnel make the initial declaration and classification of an emergency and perform activities of other facilities until those facilities are activated and operational. Manipulations of the reactor or the plant to mitigate the consequences of an accident and restore safe conditions, however, remain as the primary function of the CR.

Once the entire Emergency Response Organization is activated additional positions are assigned to the CR. These individuals assure plant parameter data is available to the TSC/OSC and provide other emergency communications as necessary.

Overall management of the emergency response lies with the Shift Manager in the CR until it is accepted by either another qualified Emergency Director (Emergency Plant Manager / Plant Operations Manager) or the Emergency Director located in the EOF. Meteorological, plant parameter, offsite radiation monitor and survey data are available for accident assessment, emergency classification and protective action recommendations. Radio and telephone services are available to alert and notify government authorities of emergencies and recommend protective action.

## Indian Point Energy Center Emergency Plan

### Technical Support Center (TSC)

The Indian Point Unit 2 TSC is in the Unit 1 Superheater Building, 53' elevation across the hall from the CR.

The Indian Point Unit 3 TSC is located on the west side of the second floor of the Administration Building adjacent to the Turbine Building.

In the event that either of the TSC's becomes uninhabitable, Emergency Planning Implementing Procedures provide details on how to relocate the TSC personnel

The primary functions of the TSC include providing:

- Plant management and technical support to the reactor operating personnel in the Control Room (CR) and
- Information on plant events and conditions, including plant parameter data, to the Emergency Director in the EOF.

The TSC is activated with minimum staff personnel within 60 minutes after a declaration of an Alert, SAE or GE.

The TSC Manager directs and coordinates activities in the TSC. Plant parameter data is available for accident assessment including core damage assessment. This data can be forwarded to the EOF or AEOF. Telephone service between locations on and off the site is also available.

Included in the TSC are the Computer Room, NRC Office, Records Management Office and Workspace. The Ventilation System assures that the General Design Center Criterion 19 (GDC) exposures Limits of 5 Rem whole body and 30 Rem thyroid, during the first 30 days of a Design Basis Accident (DBA) can be met.

In the event that the TSC becomes uninhabitable, Emergency Planning Implementing Procedures provide details on how to relocate the TSC personnel.

### Operations Support Center (OSC):

The Unit 1 & 2 OSC is located in the Unit 1 Superheater Building, adjacent to the TSC.

The Unit 3 OSC is located on the west side of the second floor of the Administration Building adjacent to the Turbine Building.

The OSC is where survey, operations and repair teams are dispatched into areas of the plant and is the staging area for individuals who may be assigned to first aid, search, survey, rescue, repair and corrective action teams.

The OSC Manager is responsible for managing the activities in the OSC including:

- Ongoing accountability of anyone dispatched from the OSC. The Control Room Supervisor or the Security Shift Supervisors tracks individuals who are assigned to the Control Room Watch or the Security Force respectively;
- Radiological exposure control for the individuals within the OSC and TSC, and
- Mobilizing of individuals on the emergency roster needed to fill the positions in the OSC and other support personnel such as materials and warehouse personnel.

## Indian Point Energy Center Emergency Plan

The OSC is activated with a minimum staff within 60 minutes after a declaration of an Alert, SAE or GE.

Equipment and supplies for the OSC include protective clothing, dosimetry, sampling and survey equipment to be used by the OSC teams.

Radiological exposure controls for the OSC include monitoring conditions and relocation if necessary.

Tools and parts available for normal plant maintenance are also available for damage control operations during emergencies.

In the event the OSC becomes uninhabitable, Emergency Planning Implementing Procedures provide details on how to relocate OSC personnel.

### 2. Emergency Operations Facilities:

#### **Emergency Operations Facility (EOF)**

The EOF is located at the Buchanan Service Center on Broadway Ave. in Buchanan, NY. Functions performed at the EOF include:

- overall management of the Indian Point emergency response;
- accident assessment including environment samples, surveys and dose calculations;
- alert and notification of Federal, State and local government authorities of plant events, conditions, emergency action levels, emergency classifications and dose projections;
- protective action recommendations to State and Local government authorities for the population around the site;
- coordination with Federal, New York State (NYS) and local government;
- radiological exposure control for the individuals assigned to the EOF.

The EOF is activated with minimum staff personnel within 60 minutes after a declaration of an Alert, SAE or GE. Accommodations are available for Federal, State and local government representatives

The Emergency Director in the EOF is responsible for the overall management of the response. Meteorological, plant parameter, offsite radiation monitor, environmental sample and survey data are available for accident assessment, emergency classification and protective action recommendations. Radio and telephone services are available to alert and notify government authorities of emergencies and recommend protective action.

There are two levels in the EOF. The Emergency Control Center (ECC), Dose Assessment Area, NRC Room, Electrical Equipment Room and Communications Equipment Room are on the lower level and the State, County and Clerical Support areas are on the upper level.



## Indian Point Energy Center Emergency Plan

### Alternate Emergency Operating Facilities (AEOF)

There is an alternate location for the EOF outside the plume exposure emergency planning zone (EPZ). AEOF and EOF functions are similar.

The Alternate Emergency Operations Facility is located on the 12<sup>th</sup> floor of the AT&T building at 440 Hamilton Avenue, White Plains, NY. Procedures, staff, accommodations, equipment, services and supplies for the AEOF are similar to those for the EOF.

### Entergy Regional Offices

Entergy provides support from the regional and Corporate Headquarters. These offices may provide a common point of communication and coordination for the Emergency Director and the Indian Point emergency response organization with the resources available through other corporate organizations.

### 3. Joint News Center (JNC)

The JNC is located outside the plume exposure emergency planning zone at the Westchester County Airport; Interstate I-84, Exit 2; White Plains, NY and provides a place for;

- Point of contact between the Entergy corporate spokesperson and the news media; and
- Coordination of public information released to the news media and the public by Entergy, State and Local government including alerts, notifications and protective action recommendations.

The JNC has accommodations for Federal, State and Local government representatives as well as representatives of the news media.

The JNC Director manages Entergy activities at the JNC and the JNC has equipment to support the activities including telephones, facsimile and photocopiers.

### 4. Offsite Emergency Operations Centers (EOC)

State and Local Agencies have established Emergency Operations Centers to direct their emergency response. The offsite EOCs are located as follows:

Orange County	Orange County Government Center, 255-275 Main St. Goshen, NY 10924
Putnam County	Putnam County Office Building, 40 Gleneida Av. Carmel, NY 10512
Rockland County	Fire Training Center, Firemen's Memorial Drive Pomona, NY 10970

## Indian Point Energy Center Emergency Plan

Westchester County                      County Office Building, 148 Martine Av.  
White Plains, NY 10601

NY State                                      Public Safety Building  
State Campus Building #22  
Albany, NY 12226-5000

### 5. Activation and Staffing of Emergency Response Facilities

Entergy has put into place plans and procedures to insure the timely activation of its emergency response facilities. Facilities are activated when facility managers determine they can perform required functions based on available staff and emergency conditions. The full staffing of the emergency facilities is described in Section B of this plan. Timely mobilization and activation of the ERO is described in Section E.1

### 6. Emergency Onsite Monitoring Systems

In addition to the extensive normal plant systems which continually monitor plant systems the following systems is used for emergency assessment:

#### a. Seismic Monitoring Equipment

The seismic monitoring equipment at the Indian Point Station is located in the Unit 3 Containment Building. The Unit 3 Control Room Operator to the Unit 2 Control Room transmits information from this equipment. The monitoring system consists of three (3) peak shock records in a tri-axial mount at EL-46'-0" on the base mat; two (2) tri-axial strong motion accelerographs, one at EL-46'-0" on the base mat and one on the Containment Structure Wall at EL-100'-0" directly above the lower unit and three (3) peak recording accelerograph one each on a steam generator, a reactor coolant pump and the pressurizer.

The peak shock recorders readout in the Unit 3 Control Room on a peak shock annunciator when acceleration limits are exceeded. Both strong motion accelerographs record on magnetic tape recorders also located in the Control Room. The accelerographs on the base mat are wired to an alarm panel in the Control Room which produces an audible and a visual signal at an earthquake acceleration greater than 0.01g. If necessary, the magnetic clips from the peak recording accelerographs must be retrieved from inside containment to be further evaluated.

#### b. Radiological Monitors

A Radiological Monitoring System, consisting of fixed process (air, liquid or gas) monitors and area radiation monitors, is installed throughout each Unit with remote readouts and alarm indications in the Control Rooms. Key radiation fixed radiation-monitoring equipment is identified in the U2 and U3 FSAR's.

## Indian Point Energy Center Emergency Plan

### In-plant Iodine Instrumentation

Measurement of airborne iodine concentrations within the station can be performed by gamma energy spectrum analyses onsite using equipment located in areas expected to have post accident accessibility. Portable equipment to collect local samples is also available onsite. Procedures provide direction and guidance for sample collection and analysis.

### Post-accident Sampling

Plant design includes the capability to sample the reactor coolant system, the discharge of the recirculation and residual heat removal pumps, and the post accident containment atmosphere.

Facilities for the radiation protection and chemistry groups include laboratory and calibration rooms for both conventional and radio chemical analyses.

### Portable Survey Instruments

Counting equipment and supplies available in emergency lockers. Administrative procedures describe type, locations and amount of equipment available to the Emergency Response Organization.

#### c. Process Instrumentation

Vital parameters (e.g. pressure, flow, temperature, fluid level) are monitored and abnormal conditions immediately brought to the attention of the watch force with either local indication or remote indication in the Control Room.

Process instrumentation inside containment required operating and providing assessment information after a loss of coolant accident or a steamline break includes:

- Pressurizer Pressure channels
- Pressurizer level channels
- High-head flow channels
- Accumulator pressure channels
- Recirculation spray flow channels
- Recirculation sump level channels
- Containment sump level channels
- Residual heat loop flow channels

#### d. Instrumentation for Detecting Inadequate Core Cooling

Instrumentation for detecting inadequate core cooling includes:

- reactor coolant saturation meter
- hot leg wide range temperature
- cold leg wide range temperature
- wide range reactor coolant pressure

## Indian Point Energy Center Emergency Plan

- pressurizer level
- reactor vessel level indication system (RVLIS)

The first indication of mass loss from the Reactor Coolant System (RCS) may be a decreasing pressurizer level. Saturation or the degree of subcooling can be determined from the saturation meter or with primary system pressure and temperature from the steam table in the Control Room. Cold and/or hot leg wide range temperatures that are higher than the saturation temperature indicate degradation of core cooling.

### e. Fire Detection

Heat and smoke detectors are located throughout the plant with alarms annunciated in the Control Rooms. A detailed description of the fire detection equipment is in the Fire Protection Program documents.

## 7. Offsite Emergency Data Acquisition

### a. Alternate sources for geophysical data

If meteorological data is unavailable from the station's tower, information can be obtained from the following sources:

- Several internet sites provide meteorological data and may be accessed from Emergency Response Facilities
- National Weather Service (NWS) hourly data from area reporting stations including wind speed, wind direction, cloud cover, precipitation, temperature, dew point and atmospheric pressure.
- Atlantic City, New Jersey and Albany, New York NWS stations. These sources can also be used for flood and drought conditions for the Hudson River.

Consultants are available to the Indian Point Energy Center staff regarding seismic monitoring of the Indian Point vicinity.

- ### b. Backup radiological monitoring equipment and assistance can be obtained from other utilities through INPO or the Department of Energy's Brookhaven Group. A letter of agreement for these services can be found in Appendix 2 of this plan.
- ### c. Environmental sample preparation and counting are available through James A. Fitzpatrick (JAF) environmental lab or through the use of an offsite laboratory. The offsite laboratory contract is available through the Indian Point contracts department.

## 8. Facilities and Equipment for Offsite Monitoring

### a. Survey Vehicles

Indian Point has survey vehicles, equipped with two-way radios, cell phones, air samplers, sample counters, portable survey meters (including low-level radiiodine detection equipment with a minimum sensitivity of  $1 \times 10^{-7}$   $\mu\text{Ci/cc}$ ), personnel dosimeters and respirators are available for offsite monitoring. A

## Indian Point Energy Center Emergency Plan

more detailed list of equipment in the survey vehicles is available in the Emergency Plan Implementing Procedures.

During an emergency the survey vehicles are sent to pre-selected locations within 10-mile radius of the site. Laboratory facilities for personnel whole body counting and for environmental sample preparation and counting exist at the site.

b. **Radiological Environmental Monitoring Program**

Indian Point Radiological Environmental Monitoring Program includes routine direct gamma measurements, particulate and radioiodine air sampling, water sampling, and seasonal aquatic and land vegetation sampling at various locations. The Indian Point Radiological Environmental Monitoring Program is described in each unit's Offsite Dose Calculation Manual (ODCM).

Backup facilities for the environmental sample preparation and counting are available by a contract with an offsite laboratory.

c. **Fixed Field Measurement Sites**

Pressurized ionization chambers, one in each of the 16 sectors are located at various distances between the site boundary and 2 miles. The radiation data is collected by a computer system at the Emergency Operations Facility that allows access to information in the CR, AEOF and some offsite locations.

The data is available to the Control Room and may be used to estimate whole body exposure offsite.

9. **Meteorological Monitoring**

A primary 122-meter meteorological tower located on the Indian Point Site provides real-time meteorological parameters as specified in Enclosure 1 to Appendix 2 of NUREG-0654 (January 1980) and USNRC Regulatory Guide 1.23 (proposed) Revision 1. The three basic functions outlined in Annex 1 to Appendix 2 of NUREG-0654-Rev 1 have been implemented. Electrical service to the tower is backed up with an alternate diesel generator power supply through automatic power transfer switch. A 33-meter backup tower is located on the site.

Real-time wind speed and wind direction data are continuously recorded. An estimator of atmospheric stability (sigma theta) is derived from the wind direction fluctuations.

## Indian Point Energy Center Emergency Plan

Real-time atmospheric transport and diffusion calculations are made using a computer system and peripherals. The Class A model can provide relative concentration output within a few minutes.

Data from the meteorological tower and Class A model can be accessed remotely via telephone communication using a terminal-printer or a personal computer with a modem and is displayed in the control room. All of the data outputs are in the format specified in Enclosure 1 and Appendix 2 of NUREG-0654 (January 1980). Real-time meteorological information can be obtained from the National Weather Services stations and other offsite meteorological facilities identified in Section H.7

The telephone communications described in Section F provide access to the meteorological data from the EOF, TSCs, CRs and offsite NRC center.

### 10. Facility and Equipment Readiness

Emergency facilities and equipment are inspected and inventoried in accordance with departmental administrative procedures. The inspection includes an operational check of instruments and equipment. Equipment, supplies and parts that have a shelf life are identified, checked and replaced as necessary. Sufficient reserves of instruments/equipment are maintained to replace those that are removed from emergency kits or lockers for calibration or repair.

Survey instruments and counters have been placed on a rotating calibration schedule. Other equipment requiring calibration will be calibrated as recommended by the manufacturer. Normally, equipment-requiring calibration will be calibrated at the Station and will be immediately available in the event of an emergency.

Dedicated communications equipment between Federal, State and local government agencies within the plume exposure pathway EPZ are checked periodically in accordance with Section N.2.

The results of tests, inventories, and inspections are submitted to the Emergency Planning Manager for review. The Emergency Planning Manager is responsible for the evaluation of these results and assignment of corrective actions for deficiencies identified, if any.

Emergency Preparedness staffs will be informed of select system inoperability determinations resulting from any tests, inventories or inspections conducted on the systems, as the availability of these systems can have significant impact on the Emergency Plan.

### 11. Identification of Emergency Equipment and Supplies

Table H.1, Typical Emergency Equipment list equipment that is typically provided for emergency response. Emergency Preparedness administrative procedures provide for details of specific type, location, content and are used to inventory of emergency supplies.

## Indian Point Energy Center Emergency Plan

### 12 Collection and Analysis of Field Monitoring Data

The Indian Point Energy Center is equipped to collect Field Monitoring data and samples. Sampling and analysis equipment is available to determine the activity of samples taken outside the Protected Area. Instrumentation and equipment utilized for sample activity determination is routinely calibrated to insure timely availability. Emergency response personnel are in place to analyze samples and data to make decisions on protective action recommendations. Samples can be package and shipped to offsite laboratories for further analysis.

## Indian Point Energy Center Emergency Plan

### Table H-1: Typical Emergency Equipment

Emergency equipment and supplies are stored at various locations throughout the site for immediate use by emergency forces. The following is a listing of the types of equipment and supplies stored at various locations.

- |                                    |  |
|------------------------------------|--|
| Protective Equipment:              | - Anti-C Clothing  |
|                                    | - Respirators  |
|                                    | - Self-Contained Breathing Apparatus   |
|                                    | - Potassium Iodide (KI)  |
|                                    | - Breathing Air Stations   |
| Radiological Monitoring Equipment: | - Air Samplers   |
|                                    | - Ionization Chamber Survey Instruments  |
|                                    | - G-M Friskers   |
|                                    | - Iodine Counters  |
|                                    | - Dosimetry  |
|                                    | - Maps and Overlays  |
| Communication Equipment:           | - IP-3 and IP-2 telephones and outside lines   |
|                                    | - Various dedicated lines specific for the purpose of warning: RECS Line, ENS/HPN, Plant Alarms and P.A. |
|                                    | - Various direct lines   |
|                                    | - Radios (IP-3, IP-2, and Local Government)  |
|                                    | - Fax machines IP-3, IP-2  |
|                                    | - Log Books/EP-Forms   |
| Emergency Supplies:                | - First Aid Kits   |
|                                    | - Stretchers / Blankets  |
|                                    | - Resuscitators  |
|                                    | - Backboards / Splints   |
|                                    | - Cervical collars   |



**Part 2: PLANNING STANDARDS AND CRITERIA**

**Section I: Accident Assessment**

To effectively coordinate and direct all facets of the response to an emergency situation at Indian Point Generating Station, 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).

In the case of a Notification of Unusual Event, the assessment and coordination of efforts are handled through the Control Room, with additional support as identified by the Shift Manager. During Alert, Site Area and General Emergencies the Technical Support Center, Operations Support Center, and the Emergency Operations Facility are activated. Technical Support Center personnel assist the watch personnel in the assessment of the accident and recommend appropriate steps to mitigate the accident. The Operations Support Center assist with in field inspections of plant equipment. The Emergency Operations Facility personnel continue the evaluation of offsite consequences started by the Shift Manager. The Emergency Operations Facility when activated maintains by the Control Room and contact with the offsite agencies then. An overview of the assessment actions taken at various classifications levels follows:

**Notification of Unusual Event**

The existence of conditions which would be classified under this heading is brought to the attention of Control Room Operators by (a) meteorological reports, (b) indications and alarms in the Control Room monitoring plant parameters, (c) indications from fire, seismic or security detection systems, or (d) observations by plant personnel.

Depending upon the particular circumstances of the event, the Shift Manager takes one or more of the following actions to assess the severity of the situation: request clarification and periodic update of meteorological information received from offsite source; monitor Control Room indications more closely; request the plant security force to investigate the matter further and report their findings; dispatch member(s) of the watch force to personally inspect areas of the plant; request assistance from the plant operations staff and/or Entergy's Engineering Departments in evaluating data; and make personnel observations (e.g. assessing the intensity and extent of fire). With regard to accidental releases of radioactivity within plant buildings, the Shift Manager would evaluate the alarm received with respect to other radiation monitors and process instrumentation readouts in the Control Room. Health Physics personnel could be sent into the affected plant area to make observations and evaluate radiation levels.

## Indian Point Energy Center Emergency Plan

### Alert

For emergency situations that are classified as Alerts, the Shift Manager/Emergency Director evaluates information available in the Control Room regarding radiation monitor readings, nuclear and process instrumentation readings, containment integrity and status of safeguards equipment.

The Shift Manager or Emergency Plant Manager/Plant Operations Manager, acting as the Emergency Director at the start of the emergency, and the on call Emergency Director after taking over control at the Emergency Operation Facility, will continually direct assessment of the relative condition of the three fission product barriers and radiological conditions onsite and offsite.

During Alerts with radiological concerns, radiological assessment actions are initiated as described under the Site Area Emergency and General Emergency part of this section.

### Site Area Emergency and General Emergency

For emergency situations that are classified as Site Area Emergencies or General Emergencies, the Shift Manager/Emergency Director evaluates information available in the Control Room regarding radiation monitor readings, nuclear and process instrumentation readings, containment integrity and the status of safeguards equipment.

An immediate assessment of the projected exposure to the offsite populace is made by using Dose Assessment Computer Programs or by using an Implementation Procedure which includes determining a source term, release rate, radioactive airborne concentrations in the environment and projected exposure to the whole body and thyroid of individuals exposed to the plume. The specifics of these are as follows:

The source term is determined from the R-25 and R-26 accident monitor instruments, indicating radioactivity in the containment building released from the reactor core.

The release rate is determined from the Plant Vent Monitor, Air Ejector Monitor or the Main Steam Line Monitors. Should the plant vent monitors read off-scale or be inoperable, contact field measurements are taken on the plant vent and a procedure is available to convert the mR/hr reading to an equivalent radioactive concentration for noble gases and radioiodine.

The radioactive airborne concentrations in the environment are determined first by calculation and then by actual measurement. The calculations are done by computer or by hand, utilizing the Implementation Procedures.

- The calculation is performed using an equation that utilizes the release rate, dilution factor and wind speed. The dilution factor is obtained from a table in the computer code or implementation procedure corresponding to the current meteorological data.
- Measurements are made by offsite monitoring teams who go to selected points and perform field surveys and air sampling. The air samples are counted and the activity calculated.

The projected thyroid exposures are obtained from calculations that convert radioactive concentrations to mRem/hour and measurements taken in the field. Whole body exposures are as indicated by the field surveys.

## Indian Point Energy Center Emergency Plan

The assessment information is disseminated to the New York State Emergency Management Office and to the Westchester, Rockland, Putnam, and Orange County Offices of Emergency Management.

This assessment is updated based on air sampling and field surveys performed by offsite monitoring teams using radio and cell phone equipped, vehicles under the direction of the Emergency Director. The area within a 10-mile EPZ is divided into 16 equal 22½° sectors. In each sector there are thermoluminescent dosimeters at strategic locations.

A number of strategically located continuous air sampling sites may also be used to evaluate the exposure for the population at large.

The Emergency Director to the New York State Emergency Management Office and the Westchester, Rockland, Putnam and Orange County Offices of Emergency Management transmits updated information.

Radioactive contamination assessment is performed after a release is terminated. The ongoing Indian Point Radiological Environmental Monitoring Program described in the ODCM is utilized to determine the extent of contamination.

Radiological assessment personnel in accordance with an implementation procedure calculate total population dose. This calculation and others utilizes established demographic information in combination with the thermoluminescent dosimeter, bioassays, and projected dose distributions to obtain total population exposure within the ten-mile EPZ.

### 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 Indian Point Emergency Plan Implementing Procedures.
- 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. The types of instrumentation and equipment capabilities available for each emergency facility are described in Section H of the Emergency Plan.

### 2. Onsite Accident Assessment Capabilities

In addition to normal plant monitoring systems and procedures, the following systems are provide for accident assessment:

- Sampling System - Plant design includes the capability to sample the reactor coolant system, the discharge of the recirculation and residual heat removal pumps, and the containment atmosphere.

Facilities for the radiation protection and chemistry groups include laboratory and calibration rooms for both conventional and radio chemical analyses.

## Indian Point Energy Center Emergency Plan

- Area Radiation & Process Radiation Monitors - Indian Point has Area Radiation Monitors (ARM) for the direct measurement of inplant exposure rates and Process Radiation Monitors (PRM) for the measurement of noble gas and radioactive iodine concentrations in plant effluents. The ARM readings allow inplant 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. The Process Radiation Monitors provide an immediate indication of a radiological release of effluents. The Process Radiation Monitor readings can be used as an input into the dose assessment programs (computer programs) that displays the projected whole body and child thyroid exposures to the populace in the plume exposure pathway.
- Containment Radiation Monitors and Hydrogen Monitor - Containment Radiation Monitors and/or Hydrogen Monitors along with Core Exit Thermocouples may provide an early indication of core damage. These monitor readings are utilized as a method for core damage determination. This is accomplished through use of established procedures based on Westinghouse Owners Group guidance. The core damage estimate obtained from the procedures may also be used to confirm the core damage results obtained through isotopic analysis. These monitors also allow for the evaluation of a potential radiological release.

### 3. Release Source Term Determination

- a. The potential for release of radioactive material and the magnitude of the release can be assessed through use of the Containment Radiation Monitors and Process Monitors. The Containment Monitoring System readings can be used to estimate the percentage of core damage and establish the total number of curies available for release.
- b. If a liquid or gaseous release occurs, the routine or high range process monitors will indicate the release rate. If the release is from an unmonitored point, technicians will take grab samples to be analyzed.

Radiation monitors are located as described in the U2 & U3 FSARs. The readings obtained from these monitors are converted to actual release rates through the use of a computer program.

### 4. Effluent Monitor Data and Dose Assessment:

The correlation between effluent monitor data and onsite and offsite exposure rates is accomplished through use of the dose assessment computer codes. These programs allow for the direct input of effluent monitor and meteorological data. The computer will generate release rates, projected dose rates and doses to the whole body and thyroid as well as downwind noble gas, halogen and particulate concentrations via the plume exposure pathway. Dose projections may also be performed without the use of a computer through a series of hand calculations. Indian Point uses ground releases to conduct dose assessment.

## Indian Point Energy Center Emergency Plan

Entergy has procured and installed computer based systems, which are capable of:

- 1) Calculating the dispersion path of radioactive material if released to the atmosphere by the plant;
- 2) Obtaining meteorological information from a primary and backup meteorological tower, thus providing assurance that basic meteorological information is available during and immediately following on accidental airborne radioactivity release;
- 3) Calculating the radiological consequences of accidental radioactive releases to the atmosphere;
- 4) Providing simultaneous real-time meteorological data for estimation of transport and diffusion estimates of a release in the vicinity of the site. This information is available to the licensee, offsite emergency response organizations and the NRC Staff, via telephone computer access;
- 5) Obtaining additional radiological and meteorological inputs that assist in defining the site generated dispersion path calculations.

In addition each unit has a computer program which performs the hand calculations outlined in the implementing procedures.

### 5. Meteorological Information:

Meteorological data are available from the station meteorological tower. The data available includes wind speed, wind direction, stability class (pasquill). These data are utilized by the utility, State and NRC to provide near real-time predictions of the atmospheric effluent transport and diffusion. Section H.8 provides more details on the Meteorological Monitoring System.

### 6. Unmonitored Release:

If during an actual release, via an unmonitored flow path or in situations in which effluent monitors are either off scale or inoperative, dose projections can be made through use of actual sample data and/or field monitor team readings.

### 7. Field Monitoring:

In the event of an airborne or liquid release, the station maintains the resources and capabilities to take air, soil, water, and vegetation samples as well as to directly measure gamma dose rates. Samples are taken at locations specified by the Offsite Radiological Assessment Director/Radiological Assessment Team Leader. Environmental measurements are utilized as an aid in the determination of protective and recovery actions for the general public.

## Indian Point Energy Center Emergency Plan

A Reuter Stokes Radiation Monitoring System consisting of a network of monitors is installed in each of the 16 standard meteorological sectors around the Indian Point Site at a distance of 0.5 to 2.5 miles. These devices will continuously telemeter, over telephone lines, radiation level readings to a computer system, which can be accessed in the EOF, AEOF or EOCs.

Thermoluminescent Dosimeters (TLD's) - TLD's are deployed in three (3) rings at approximately 1, 5 and 10 miles from the site. Each ring has 16 TLD stations, one in each of the sectors, for a total of 48 stations. TLD's are sensitive to Gamma radiation and are gathered and read periodically.

Air Samplers deployed at a number of the sampling sites where they are constantly in operation passing ambient air through a series of filters capable of trapping radioactive iodine and other radioisotopes in the air. The filters are periodically removed and analyzed by Entergy personnel.

### 8. Offsite Monitoring Teams:

Offsite Monitoring Teams are available at an Alert or higher classification to make rapid assessments of the actual or potential magnitude and location of any radiological hazards from the liquid or gaseous release pathways. These teams are composed of two individuals qualified to perform radiological monitoring.

Monitoring teams establish and maintain direct radio or phone communications with the Emergency Operations Facility (EOF). A field team coordinator in the EOF controls the teams. The teams locate and monitor the radioactive plume while taking air samples as directed.

Field teams utilize portable equipment during an emergency to gather data from any of the sixty-one predesignated emergency sampling locations around the Indian Point Site. Large-scale maps showing the locations are in the Control Room and Emergency Operations Facility (EOF) or AEOF, for use by the Emergency Director. Readings taken by these teams are relayed back to the site via radio, using commercial telephones as back up.

Monitoring Team Kits containing necessities including the following radiological equipment are maintained in a ready state and would be utilized by the teams:

- Radiation field survey instruments used to perform beta and gamma radiation field surveys.
- Air Sampler which is basically a blower with a filter holder in the inlet, utilized to take samples of ambient air and pass the air through a fiberglass and an activated charcoal or silver zeolite filter. The filters remove and absorb radioisotopes from the air.
- Sample counter that is a device used to measure the radioactivity of filters used in the air sampler.
- Equipment for personnel protection such as ANTI-C clothing and special respirators for use in radiation environments.

## Indian Point Energy Center Emergency Plan

- Support equipment and supplies.

Survey data from monitoring teams is used to define affected areas, verify or modify dose projections and protective action recommendations, and assess the extent and significance of a release.

### 9. Iodine Monitoring:

Offsite Monitoring Teams collect air samples while in the plume exposure pathway. The teams carry procedures and equipment for sampling and measuring radioiodine concentrations in air as low as  $1.0E-7$  micro curies per cubic centimeter in the presence of noble gases.

### 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 State of New York has the ability to dispatch its own offsite monitoring teams to track the airborne radioactive plume. The state also has the ability and resources to coordinate with federal and utility monitoring teams to compare sample results.

**Part 2: PLANNING STANDARDS AND CRITERIA**

**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 Emergency Planning Zone (EPZ). Additionally, guidelines have been established to aid in choosing protective actions during an emergency that are consistent with federal guidance. Emergency is responsible for onsite protective actions, while the responsibility for offsite protective actions rests with the State of New York, local authorities and other offsite response agencies.

**1. Notification of Onsite Personnel:**

- a. For all emergency classifications, all station personnel, contractors, visitors and OCA badged personnel are notified of an emergency by either the public address system, distinct audio signals (air raid alert, fire, site assembly or containment evacuation alarms) and/or alternate methods. Announcements include the emergency classification and response actions to be taken by site personnel.

The Public Address System(s) are designed for paging within the Protected Area site from the Control Rooms. Personnel paged have the ability to talk to the Control Rooms via party line phones that are strategically located within the units. Plant personnel may initiate the communication to the Control Room from outlying party lines.

- b. Visitors within the Protected Area are escorted at all times by badged personnel who will ensure that the visitor takes the proper actions for the event.
- c. Contract personnel who have un-escorted access to the Protected Area must complete General Employment Training (GET) that includes instructions for actions to be taken during an emergency.
- d. Accountability of persons within the Site Boundary but outside the Protected Area is not required. However, the Security Force will ensure that individuals in the Owner Controlled Area (including individuals with OCA badges) are notified as necessary of any emergency and the response actions to be taken.

**2. Evacuation Locations:**

Assembly areas and evacuation routes are specific in the Emergency Planning Implementing Procedures. Depending on meteorological conditions, the Shift Manager/ Emergency Director decides whether to release plant personnel and the appropriate evacuation routes. Inclement weather, high traffic density and specific radiological conditions and other hazards are considered in making this decision. The release of personnel is under the direction of the Shift Manager/Emergency Director. Personnel are released to go home or continue from the site to assembly areas using their own cars when practical or other transportation provided by Indian Point.



## Indian Point Energy Center Emergency Plan

### 3. Radiological Monitoring:

Radiological monitoring of personnel, their possessions and their automobiles would be performed by Health Physics, or trained monitoring personnel using normally available instrumentation or specifically assigned for this purpose. Personnel may be evacuated/released as part of the general public to offsite relocations centers designated by offsite authorities.

### 4. Assembly & Evacuation:

Relocation outside the Protected Area and/or evacuation is the primary protective action anticipated for onsite personnel not having emergency response assignments. Non-essential personnel (personnel not assigned emergency response functions, contractors and visitors) are directed to assemble at pre-designated assembly areas (such as the Indian Point Training Center and Energy Education Center) at the Alert or higher classification. Personnel assigned emergency response functions respond to their assigned emergency facilities.

Evacuation / release of non-essential Indian Point personnel is initiated upon declaration of either a Site Area Emergency or General Emergency. The Emergency Director may release personnel at a lower classification

### 5. Accountability:

At the declaration of an Alert, all non-essential personnel are relocated from within the Protected Area. At a Site Area Emergency or General Emergency all individuals within the Protected Area are accounted for and the names of missing individuals are ascertained within 30 minutes of sounding the Site Assembly Alarm. Once established, accountability within the Protected Area is maintained throughout the course of the event, unless conditions allow suspension in the later stages of the event. Should missing personnel be identified, search and rescue operations are initiated. Accountability is coordinated by the OSC Manager, Lead Accountability Officer and/or the Security Shift Supervisor, and the results forwarded to the Emergency Plant Manager / Plant Operations Manager and/or Emergency Director.

Accountability could be suspended if movement of personnel would place them in more danger than leaving them in place, such as outside weather conditions or security events.

Personnel who are assembled outside the Protected area are given further instructions. These instructions may include sheltering in place, evacuation or, individuals may be requested to assist the ERO in accident mitigation.

If site evacuation is called for, Security will sweep all onsite areas outside the Protected Area and verify all personnel have evacuated or released.

## Indian Point Energy Center Emergency Plan

### 6. Provisions for Onsite Personnel:

The station maintains an inventory of respiratory protection equipment, anti-contamination clothing, and radioprotective drugs that is made available to emergency workers remaining onsite should conditions warrant.

- a. Assembly areas and evacuation routes are described in the Implementing Procedures. Assembly areas are located to assure that personnel are not in the path of the plume. Each assembly area has a telephone. The assembly areas within the Protected Area fence are within the range of the plant paging system.
- b. Self-contained breathing apparatus (SCBAs) and full-face respirators are used as the primary method of respiratory protection in an emergency. Emergency response personnel use SCBAs 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.
- c. Anti-contamination clothing, located in the Operations Support Center (OSC) lockers, is available for use by onsite personnel entering areas of plant with known or unknown contamination.
- d. The use of thyroid-blocking Potassium Iodide (KI) may be recommended when a projected dose of 25 Rem (CDE) is exceeded for a worker's thyroid. This is one half the value specified by EPA 400-R-92-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents". A supply of KI is maintained in the Emergency Response Facilities. Procedures are in place for the use of these agents by emergency response personnel. Administration of such agents may be authorized only by the Emergency Director or by the Emergency Plant Manager.
- e. Precautions shall be taken to prevent the contamination of drinking water and food supplies.

### 7. Protective Action Recommendations for the General Public:

Plant conditions, projected whole body gamma and thyroid doses, and/or field monitoring data are evaluated to develop protective action recommendations for the purpose of preventing or minimizing exposure to the general public. Protective action recommendations for the plume exposure pathway are based on the Environmental Protection Agency (EPA) Protective Action Guides (PAGs) discussed in EPA-400-R-92-001 - "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents".

Protective action recommendations are made directly to the State and local agencies that are responsible for implementing protective actions for the general public within the plume exposure EPZ. The Emergency Director makes protective action recommendations.

## Indian Point Energy Center Emergency Plan

Recommendations issued by Indian Point at a General Emergency based on plant conditions include as a minimum, evacuation of Emergency Response Planning Areas (ERPAs) in the two (2) mile ring and five (5) miles downwind and sheltering of the remaining ERPAs.

### 8. Evacuation Time Estimates:

An independent evacuation time study has been performed to provide estimates, by Emergency Response Planning Areas (ERPAs), of the time required to evacuate commercial, resident and transient populations surrounding station under favorable and adverse conditions (see Appendix 5). These evacuation time estimates are used to determine an exposure period for the calculation of dose projections.

### 9. Protective Measure Implementation:

State and local agencies are responsible for implementing offsite protective actions. These actions are included in the State and County Emergency Plans. Entergy is responsible for recommending offsite protective actions to the offsite authorities.

### 10. Factors Affecting Protective Measure Implementation

The State, and County emergency plans used to implement the protective measures for the plume exposure pathway take numerous factors into consideration. Among these considerations are:

- a. Most of the evacuating population will travel in their own vehicles, leaving the EPZ via designated evacuation routes. Maps showing the evacuation routes, evacuation ERPAs, reception centers in host areas, and congregate care centers have been developed as part of the state and local plans. Pre-selected sampling and monitoring points have also been identified.
- b. The population distribution around Indian Point Nuclear Power Station is presented in the Evacuation Time Estimate, Appendix 5.
- c. Section E of this plan describes how offsite agencies are notified in the event the Emergency Plan is activated. State and local agencies have the capability to notify all members of the transient and resident population within the plume exposure EPZ.
- d. State and local organizations have the capability to protect those persons where mobility may be impaired due to such factors as institutional or other confinement. At the time of an emergency, transportation requirement of special needs persons (including mobility impaired) is verified. Mobility impaired will be notified of a protective action via the Emergency Alert System (EAS).
- e. An adequate supply of potassium iodide (KI) is available for distribution to special facility staff and patients/residents where immediate evacuation would be life threatening. Authority for use of radioprotective drugs rests with the NY Health Department.

## Indian Point Energy Center Emergency Plan

- f. State and local organization plans include the method by which decisions are made for administering radioprotective drugs to emergency workers. The distribution of radioprotective drugs to the general public is not authorized by the State.
- g. State and local organizations have the capability of providing a means of relocation for the general population. Most of the evacuating population will travel in their own vehicles, driving out of the EPZ using designated evacuation routes. Transportation dependent persons will be instructed through the Emergency Alert System (EAS) to go to a pickup point or bus route for transportation to a reception center.
- h. State and local organizations are capable of providing reception centers in host areas that are beyond the boundaries of the plume exposure pathway emergency-planning zone.
- i. Projected traffic capacities have been determined for evacuation routes under emergency conditions. Appendix 5 provides details on identified routes.
- j. Federal, State and local organizations have the responsibility for the control of access to evacuated areas. Personnel from New York State Police and local police departments staff access control points. The New York Highway Department and local public works departments provide necessary equipment to support access control. The U. S. Coast guard would assist in patrolling the Hudson River areas.
- k. Potential impediments to the use of evacuation routes and contingency measures for such impediments have been identified in Appendix 5, the Evacuation Time Estimate (ETE) and in local emergency plans.
- l. Time estimates for evacuation of various ERPAs have been performed, based on time-motion studies under various conditions for the plume exposure pathway emergency-planning zone.
- m. The basis for dose driven protective action recommendations are as follows:
  - If projected doses exceed minimum EPA PAGs and timely evacuation is feasible, then evacuation is recommended. If timely evacuation is not feasible, (i.e. time required for mobilization, warning and evacuation transit is greater than time before plume arrival), then State authorities may direct sheltering in place.
  - Additionally, if the sheltering dose exceeds the PAG but is less than the projected evacuation dose, then sheltering is considered. A shielding factor of 0.9 is conservatively assumed in the calculation of the sheltering dose. This factor (from SANDIA 77-1725) represents the shielding afforded by a wood frame house. The decision to shelter is the responsibility of the offsite authorities.

### 11. Ingestion Pathway Protective Measures:

The responsibility for specifying protective measures to be used for the ingestion pathway rests with the States of New York, Pennsylvania, Connecticut and New Jersey. These measures include the methods for protecting the public from consumption of contaminated water and foodstuffs.

## Indian Point Energy Center Emergency Plan

### 12. Monitoring of Evacuees:

The State and local organizations have the capability to register and monitor evacuees at reception centers at host communities. 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.

# Indian Point Energy Center Emergency Plan

## Part 2: PLANNING STANDARDS AND CRITERIA

### 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 Entergy 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, EPA 400-R-92-001.

The general guideline for emergency personnel exposure will be to keep it as low as reasonably achievable.

#### 1. Emergency Exposure Guidelines:

Radiation exposure in an emergency is controlled taking every reasonable effort to minimize exposure. However, circumstances may warrant exposure in excess of 10CFR20 limits. Saving a life, measures to circumvent substantial exposures to the general public, or the prevention of damage to critical equipment may be sufficient cause for above normal exposures. The following are the exposure guidelines for emergency activities:

Dose Limit (Rem TEDE)	Activity	Condition
≤ 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 limits.

In any emergency response action requiring greater exposure than 10CFR20 limits, only volunteers may use. Individuals over forty-five years of age are considered first. Females of childbearing age shall not be permitted to receive exposures in excess of 10CFR20 limits.

## Indian Point Energy Center Emergency Plan

### 2. Emergency Radiological Control Program:

The Offsite Radiological Assessment Director (ORAD) / Radiological Assessment Team Leader (EOF) and the Radiological Protection Coordinator/ Health Physics Team Leader (OSC) ensures that proper personnel radiological monitoring equipment is provided for all personnel during emergency conditions, that exposure accountability is maintained, and that personnel are not allowed to enter known or potential high radiation areas unless their exposure has been properly evaluated. Plan implementing procedures detail the emergency radiological controls' utilized during emergencies. Radiation protection guidelines during emergencies include the following:

- 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 ORAD / RATL, and 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.

KI is used when individuals have been or are expected to be exposed to levels of airborne radioactive iodine that would result in exceeding dose limits. KI is stored in onsite emergency response facilities.

## Indian Point Energy Center Emergency Plan

### 3. Personnel Monitoring

- a. If abnormal (outside the Radiation Control Area) radiological conditions exist, exposure to emergency response personnel not issued TLD badges will be tracked by use of surveys and time spent in radiation areas.
- b. Workers who would be expected to enter the RCA are trained and issued TLD Badges. These badges, in addition to both low range, high range and alarming self-indicating dosimetry, are used to monitor emergency workers exposure during an accident. The capability exists for the emergency processing of TLDs on a 24-hour per day basis, if necessary, through the Teledyne Labs. Emergency workers are instructed to read self-indicating dosimeters frequently, and TLDs may be processed with increased periodicity.
- c. Emergency worker dose records are maintained in accordance with Emergency Plan Implementing Procedures and Radiation Protection Procedures.

### 4. Non-Emergency Personnel Exposure Authorization:

The responsibility for authorizing non-Emergency 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 local organization, 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 Emergency Director or the Emergency Plant Manager in conjunction with Incident Response Team Leaders (such as the Fire Department, Police or Medical teams sent to the site).

### 5. Decontamination and First Aid

- a. Normal contamination control limits apply in emergency conditions. However, these limits may be modified by the applicable Radiological Protection Coordinator/ Health Physics Team Leader or the ORAD / RATL should conditions warrant.
- b. Decontamination materials and portable first-aid kits are stored in within the Protected Area and at the Buchanan Service Center. A personnel injury onsite involving possible radioactive contamination is initially treated by an on-shift first responders or EMT if available. Prompt attention is given to life endangering injuries such as extensive burns, serious wounds or fractures, in preference to decontamination. If the injury permits, all reasonable effort is made to decontaminate the individual prior to movement. If decontamination is impractical, the patient is covered in such a manner as to minimize the spread of contamination until medical aid can be obtained or the patient can be hospitalized.



## Indian Point Energy Center Emergency Plan

The Verplanck Fire Department ambulance is the primary provider of prompt transportation of persons requiring medical attention from the station to area hospitals. This service is available on a 24-hour per day basis. For accidents involving contamination, if a health physics technician (HP) is available, then one will be assigned to accompany the patient to the hospital to assist and advise ambulance and hospital personnel.

Patients requiring Emergency Room care, laboratory work, X-rays or lifesaving procedures are transported to the Hudson Valley Hospital Center (primary), to Phelps Memorial Hospital Center (1<sup>st</sup> backup) or another equipped medical facility. Hospital personnel have been trained and hospitals are equipped to handle contaminated or radiation injured individuals. Medical personnel may recommend transportation to other medical facilities equipped for long term or intensive care for radiation injuries. HP personnel are available to assist medical personnel with decontamination radiation exposure and contamination control.

### 6. Contamination Control Measures

- a. Areas in the plant found to be contaminated are isolated as restricted areas with appropriate radiological protection and access control as directed by the Radiological Protection Coordinator/ Health Physics Team Leader.
- b. In order to preclude the spread of contamination from restricted areas, all personnel and equipment are monitored for radioactive contamination prior to exiting the restricted areas. Contaminated personnel are decontaminated. Eating, drinking and smoking are prohibited in all Emergency Response facilities until such time as habitability surveys indicate that such activities are permissible.
- c. Restricted areas will be returned to normal use when contamination levels have been returned to acceptable levels.

### 7. Decontamination of Relocated Personnel:

Non-essential onsite personnel are released from the Protected Area during an emergency, if radiological concerns occur. Radiation Protection personnel and/or portal monitors are used to monitor evacuees and decontamination is performed, as needed. 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 onsite personnel locally is not possible, personnel will be sent to a county reception centers for monitoring and decontamination. Provisions for extra clothing, as well as suitable decontaminates are available.

**Part 2: PLANNING STANDARDS AND CRITERIA**

**Section L: Medical and Public Health Support**

This section describes Indian Point Generating Station arrangements for medical services including contaminated injured individuals sent from the Station.

**1. Hospital Services:**

The Hudson Valley Hospital Center at Peekskill/Cortlandt has agreed to accept patients from the Indian Point Site who have been injured, contaminated or irradiated. This is a modern hospital with facilities such as an emergency room, a laboratory, a radiology department and a nuclear medicine department. A written agreement is contained in Appendix 2

The Phelps Memorial Hospital Center, Tarrytown, New York has agreed to serve as the backup hospital. A written agreement is contained in Appendix 2.

Physicians, under contract to the Entergy, when available will respond onsite or to a hospital to assist.

Station procedures contain directions that cover the request for medical assistance and the handling of patients. In the event that a patient should receive a massive radiation exposure, an expert medical consultant specializing on the management of radiation injuries would be available. A written agreement is contained in Appendix 2.

**2. Onsite First Aid Capability:**

**Unit 1 and 2 First Aid Room**

A First Aid Room in a non-radiation area is on el. 15 of the Unit 1 Administration Building. This room contains general first aid equipment, oxygen breathing apparatus and an examination table for non-contaminated patients.

**Unit 3 First Aid Room**

A First Aid and Decontamination Room is located just beyond the Health Physics Control Point. This facility consists of a stainless steel interior with decontamination table, showers and sinks draining into a holdup tank. This room contains general first aid equipment and medical supplies for treatment of injuries.

**Medical Facility**

A Medical Facility is located in the Hill Training Center. General first aid equipment including bandages and dressings splints, etc is available as well as an examination area.

**First Aid Kits**

First Aid Kits are located in several locations throughout the station.

## Indian Point Energy Center Emergency Plan

### 3. Medical Service Facilities:

The State of New York maintains a list of public, private and military hospitals and other emergency medical facilities considered capable of providing medical support for any contaminated injured individuals. A medical consultant company which specializes in treatment of radiological related injuries is contracted to provide assistance if needed.

### 4. Medical Transportation:

Indian Point has arranged with a local ambulance service for transporting victims of radiological accidents to medical support facilities.

Arrangements have been made for transporting injured, contaminated and irradiated personnel to the hospital via the Verplanck Fire Department ambulance that provides 24-hour services. Backup ambulance service is available through a mutual aid system. A written agreement is contained in Appendix 2. The Verplanck Fire Department Ambulance participates in annual medical emergency drills as described in Section N.

# Indian Point Energy Center Emergency Plan

## Part 2: PLANNING STANDARDS AND CRITERIA

### Section M: Reentry and Recovery Planning

This section describes the measures to be taken for reentry into the areas of Indian Point Energy Center that have been evacuated as a result of an accident. It also outlines the Indian Point Recovery Organization and its concepts of operation.

#### 1. Reentry and Recovery:

##### **Reentry**

During an emergency, immediate actions are directed toward limiting the consequences of the accident, so as 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 Emergency Plan therefore 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 and emergency forms, rather than written radiation protection procedures, operating procedures and maintenance procedures can be used when making these entries.

The Shift Manager and/or the Control Room Supervisor direct reentry activities prior to activation of the Emergency Facilities. Once the TSC/OSC have been activated, all reentry activities conducted during the emergency are authorized by the Emergency Plant Manager (EPM) / Plant Operations Manager (POM) and coordinated through the Operations Support Center.

- Reentry during the recovery phase is performed using normal exposure limits. Either normal procedures or procedures developed specifically for each reentry are utilized.

The Site Recovery Manager or the station's normal management organization oversees the reentry. Generally, site problems are addressed first to make the site tenable for workers, with a series of radiation surveys to establish accessibility and then steps are taken restore the station to normal operations.

All data gathered from reentry operations and additional information developed by the various technical support groups will be assessed.

The plan is to return plant conditions to within Technical Specification limits and it may include detailed schedules, specialized equipment and personnel, preparing procedures for decontamination, processing highly radioactive water, repairing equipment, and purchasing equipment. A station nuclear safety/review committee reviews and approves recovery operations in accordance with its charter and the Technical Specifications.

## Indian Point Energy Center Emergency Plan

### Recovery:

Recovery is defined as those steps taken to return the plant to its pre-accident condition. Radiation exposure to personnel involved in the recovery will be kept at a minimum and within the stated limits of 10 CFR 20. Radiation areas will be roped off and posted with warning signs indicating radiation levels and permissible entry times based on survey results. Access to these areas will be controlled, and exposures to personnel entering such areas documented. Shielding will be employed to the fullest extent possible. Survey results, interviews of individuals with direct knowledge of recent conditions in the affected area(s) and all other pertinent information collected from logs and other records or indicators in the Control Room and in the Emergency Operations Facility may be used to evaluate the advisability and the timing of reentry to affected areas.

The Emergency Director, after consulting with the EOF Manager, Company Spokesperson and the Emergency Plant Manager / Plant Operations Manager, has the responsibility for determining when an emergency situation is stable and the station is ready to enter the recovery phase. Prior to terminating an emergency and entering the recovery phase, the following conditions are considered:

- Do conditions still meet an Emergency Action Level? If so, does it appear unlikely that conditions will deteriorate?
- Radioactive releases are under control and are no longer in excess of Technical Specification limits.
- 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.
- In-plant radiation levels are stable or decreasing, and acceptable, given the plant conditions.
- The potential for uncontrolled radioactive release is acceptably low.
- The reactor is in a stable shutdown condition and long-term core cooling is available and adequate. There is no foreseeable danger of losing heat removal capability
- Containment pressure is within Technical Specification limits.
- Any fire, flood, earthquake or similar emergency condition no longer exists.
- All required notifications have been made.
- Discussions have been held with Federal, State and local agencies and agreement has been reached to terminate the emergency.

## Indian Point Energy Center Emergency Plan

- At an Alert or higher classification (non-transitory classification), the Emergency Response Organization 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.

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 severe accidents that some conditions remain which exceed an Emergency Action Level, but entry into the recovery phase is appropriate.

### 2. Recovery Organization

Once the decision is made to enter the recovery phase, the extent of the staffing required for the Indian Point Recovery Organization is determined.

- 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 Indian Point 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 Indian Point and Corporate Recovery organization is put in place.

The specific members of the Indian Point 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 Indian Point Recovery Organization is as follows:

#### a. The Corporate Recovery Manager is responsible for:

- Ensuring adequate corporate support to maintain Indian Point Energy Center (IPEC) units in a safe condition;
- Ensuring Site Recovery Manager is aware of Entergy Corporate's goals and expectations for recovery of IPEC after an event;
- Ensuring adequate support to the site to carry out recovery activities;

## Indian Point Energy Center Emergency Plan

- b. The Site Recovery Manager is charged with the responsibility for directing the activities of the Indian Point Recovery organization. These responsibilities include:
- Overseeing the development of and approving a Recovery Plan and any special recovery procedures. The Recovery Plan shall address both short term and long-term actions and provide guidance on when Recovery is to be terminated. A specific instruction for the development of a Recovery Plan is provided in an Implementing Procedure;
  - Deactivating any of the Indian Point Emergency Response Organization that 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 Indian Point Emergency Response Organization 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 Indian Point support with Federal, State and local authorities into required offsite recovery activities;
  - Approving information released by the public information organization that pertains to the emergency or the recovery phase of the accident;
  - Working with senior company management in providing for assistance to Energy Employees affected by the event; and
  - Determining when the recovery phase is terminated. Recovery will be terminated when actions identified in the Recovery Plan have been completed.
- c. The Onsite Recovery Director reports to the Site Recovery Manager and is responsible for:
- Coordinating the development and implementation of the recovery plan and procedures;
  - Directing all onsite activities in support of the recovery of Indian Point; and
  - Designating other Indian Point recovery positions required in support of onsite recovery activities.
- The Plant Manager or a designated alternate will become the Onsite Recovery Director.
- d. The Offsite Recovery Director reports to the Site Recovery Manager and is responsible for:
- Offsite activities during the Recovery phase include assisting State and local authorities to survey, map and decontaminate areas necessary to return the general public evacuated from around the site;
  - Providing liaison with offsite agencies and coordinating Indian Point assistance for offsite recovery activities;

## Indian Point Energy Center Emergency Plan

- b. The Site Recovery Manager is charged with the responsibility for directing the activities of the Indian Point Recovery organization. These responsibilities include:
- Overseeing the development of and approving a Recovery Plan and any special recovery procedures. The Recovery Plan shall address both short term and long-term actions and provide guidance on when Recovery is to be terminated. A specific instruction for the development of a Recovery Plan is provided in an Implementing Procedure;
  - Deactivating any of the Indian Point Emergency Response Organization that 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 Indian Point Emergency Response Organization 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 Indian Point support with Federal, State and local authorities into required offsite recovery activities;
  - Approving information released by the public information organization that pertains to the emergency or the recovery phase of the accident;
  - Working with senior company management in providing for assistance to Entergy Employees affected by the event; and
  - Determining when the recovery phase is terminated. Recovery will be terminated when actions identified in the Recovery Plan have been completed.
- c. The Onsite Recovery Director reports to the Site Recovery Manager and is responsible for:
- Coordinating the development and implementation of the recovery plan and procedures;
  - Directing all onsite activities in support of the recovery of Indian Point; and
  - Designating other Indian Point recovery positions required in support of onsite recovery activities.
- The Plant Manager or a designated alternate will become the Onsite Recovery Director.
- d. The Offsite Recovery Director reports to the Site Recovery Manager and is responsible for:
- Offsite activities during the Recovery phase include assisting State and local authorities to survey, map and decontaminate areas necessary to return the general public evacuated from around the site;
  - Providing liaison with offsite agencies and coordinating Indian Point assistance for offsite recovery activities;



## Indian Point Energy Center Emergency Plan

- Coordinating Indian Point ingestion exposure pathway EPZ sampling activities and the development of an offsite accident analysis report;
- Developing a radiological release report; and
- Designating other Indian Point recovery positions required in support of offsite recovery activities.

A senior Regulatory Affairs individual, a member of Emergency Preparedness Department Management or a designated alternate will serve as the Recovery Offsite Manager.

- e. The Company Spokesperson reports to the Site Recovery Manager and is responsible for:
- Functioning as the official spokesperson to the press for Indian Point on all matters relating to the accident or recovery;
  - Coordinating non-Indian Point public information groups (Federal, State, local, etc.);
  - Coordinating media monitoring and rumor control; and
  - Determining what public information portions of the Indian Point Emergency Response Organization will remain activated.

A senior Indian Point management individual or a member of the company's Public Affairs Office is designated as the Company Spokesperson.

The remainder of the Indian Point 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 Indian Point organizations. Individual recovery supervisors may be designated in any or all of the following areas:

- Training
- Radiation Protection
- Chemistry
- Technical Support
- Engineering Support
- Quality Assurance
- Operations
- Security
- Maintenance
- Special Offsite Areas (Community Representatives, Environmental Samples, Investigations, etc.)

## Indian Point Energy Center Emergency Plan

If needed a Recovery Center is designated at the affected units office area. This area will be used by the Site Recovery Manager to hold meetings with the various facility and discipline managers.

### 3. Recovery Phase Notifications:

When the decision is made to enter the recovery phase, all members of the Indian Point Emergency Response Organization are informed of the change. All Indian Point personnel of the affected unit are instructed of their roles in relation to the Indian Point Recovery Organization and their responsibilities to the recovery effort.

### 4. Total Population Exposure:

A method has been developed for estimating the total population exposure resulting from the accident. Total population exposure calculations are performed during the recovery phase of an accident. Cumulative data are collected from Indian Point Emergency Response Organization records to estimate the source term. Data are obtained from offsite agencies to estimate the total exposed population. Environmental TLDs, Bioassays, and continuing environmental monitoring results will be analyzed to provide additional data.

# Indian Point Energy Center Emergency Plan

## Part 2: PLANNING STANDARDS AND CRITERIA

### Section N: Drill and Exercise Program

This section describes the Drill and Exercise Programs that Entergy has implemented to:

- Verify the adequacy of the Indian Point Energy Center Emergency Preparedness Program.
- Develop, maintain and evaluate the capabilities of the Indian Point Emergency Response Organization to respond to emergency conditions and safeguard the health and safety of Station personnel and the general public.
- Identify deficiencies in the Indian Point Energy Center Emergency 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.

#### 1. Exercises

- a. Federally prescribed Exercises are conducted annually, which involve implementation of the participants' emergency plan(s) and activation of major portions of participating emergency organizations. Where 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. Offsite agencies involved in the planning effort for an emergency at the station shall be invited to participate at least every two years. For exercises involving only partial participation by these 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.

Where 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. Exercises provide an opportunity to evaluate the ability of participating organizations to implement a coordinated response to postulated emergency conditions. In accordance with the Indian Point Six-Year Exercise Plan (maintained in accordance with an administrative procedure), exercises are conducted to ensure that all major elements of the emergency plan and preparedness program are demonstrated at least once in each six-year period. At least one exercise every six years is started between 6:00 p.m. and 4:00 a.m. Exercises are scheduled to be conducted at different times of the year. An unannounced drill/exercise is included in the Six-Year Plan.

## Indian Point Energy Center Emergency Plan

### 2. Drills:

In addition to the exercises described above, Indian Point conducts drills for the purpose of training, testing, developing and maintaining the proficiency of emergency responders. Drills and/or surveillance tests are conducted at the Indian Point Energy Center for the following:

#### a. Communication Drills or Surveillance Tests:

- Monthly: The Radiological Emergency Communication System (RECS) link between the Control Room, EOF/AEOF and the State and four county Warning Points will be tested.
- Monthly: The Emergency Notification System with the NRC will be tested.
- Quarterly: The telephone links with Federal response organizations (i.e., Department of Energy Radiological Assistance Program) and County governments within the ingestion pathways will be tested. These links are normally tested by the State.
- Quarterly: The radio communication link between the Emergency Operations Facility, the Control Room and with the offsite survey team vehicles will be tested.
- Quarterly: The emergency communications links between facilities will be operationally checked (onsite and offsite facilities.)

Each of these drills or tests includes provisions to ensure that all participants in the test are able to understand the content of the messages (e.g. by requesting repeat-backs of information or verification of message transmittal forms).

Communications systems are also tested during the conduct of training drills and annual exercises. Any discrepancy is noted and actions initiated to correct problems as soon as possible.

- b. **Fire Drills:** Drills for the Indian Point Fire Brigade are conducted in accordance with Technical Specifications and Station procedures.
- c. **Medical Emergency Drills:** a medical emergency involving a simulated contaminated individual in which the operations personnel, the hospital, site first-aid team, radiation protection personnel and security force participate is conducted annually at each unit.
- d. **Radiological Monitoring Team Drills:** Radiological Monitoring Team drills are conducted at least annually and include provisions for the collection and analysis of environmental sample media (e.g. water, snow, vegetation, soil, and air), and the monitoring of radiological conditions outside the Indian Point Protected Area. These drills include provisions for communications and record keeping.

## Indian Point Energy Center Emergency Plan

- e. **Health Physics Drills:** At least semi-annually, drills are conducted which involve response to, and analysis of, simulated airborne samples with elevated levels of activity. These drills also involve direct measurements of radiation levels in the Station and may include collection and analysis of sample media (e.g., water, vegetation, soil and air) and provisions for communications and record keeping. Normal station health physics rules and procedures are followed and emergency health physics procedures will be simulated.
- f. **Augmentation Drills:** At least semi-annually, drills are conducted to test the ability to augment the on-shift organization. These drills are conducted using the following methods:
- Activation of the automated calling systems with responders calling in their anticipated arrival times and phone callouts being performed.
  - At least once every six years a complete call out of ERO will be conducted with actual response to Emergency Response Facilities.
- g. **Combined Functional Drills:** Periodically, drills are conducted to test the interface, coordination, communication, and operation of the onsite emergency facilities including at least two of the following facilities: EOF, TSC, OSC and Joint News Center. Drills should be developed and conducted to maximize training to participants. Coaching, mentoring, breaks for discussion should all be used when appropriate to aid participants in preparing for an actual emergency.
3. **Conduct of Drills and Exercises:** For each emergency preparedness exercise or drill conducted, a scenario package is developed which includes at least the following information:
- The basic objectives to be demonstrated during the drill or exercise,
  - Date(s), time(s), and place(s) of postulated events,
  - Scope of the drill or exercise and list of participating organizations,
  - The simulated sequence of events and the estimated schedule for major events,
  - Evaluation criteria should be provided as necessary to be used in determining the success of the drill or exercise,
  - A narrative summary which includes at least the following information:
    - Events that are postulated to occur
    - Extent of simulation
    - Briefing materials to be provided to drill controllers and/or official observers and information on arrangements made for them.

Prior approval of appropriate Indian Point management is obtained for all drills and exercises conducted in support of the Emergency Preparedness Program.

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### 4. Criteria and Evaluation:

Controllers/Observers are assigned to evaluate the drill or exercise performance. Following each drill or exercise, a critique is conducted to evaluate the ability of the participants to implement the Indian Point emergency plan and procedures. Biennially, representatives from the NRC observe and evaluate an exercise including an evaluation of 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.

### 5. Resolution of Drill and Exercise Findings:

The critique and evaluation process is used to identify areas of the Indian Point Energy Center emergency preparedness program that require improvement. The Emergency Planning Manager or his/her designee is responsible for evaluation of all recommendations and comments, entering required corrective actions into the Corrective Action Program and the determination regarding which of the items is to be incorporated into the Emergency Preparedness Program. Feedback is provided to participants through critiques, drill or exercise reports or during annual refresher training.

# Indian Point Energy Center Emergency Plan

## Part 2: PLANNING STANDARDS AND CRITERIA

### 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 Entergy to employees and offsite support personnel requiring site access.

#### 1. Assurance of Training:

Entergy assures the training of appropriate station personnel through implementation of an Emergency Response Organization (ERO) Training program. Guidance is in place outlining how initial and ongoing training of the ERO is completed. The required training for the Indian Point ERO positions that are defined in Section B is described here.

Offsite training is offered to support organizations (fire, ambulance, medical providers, law enforcement agencies, etc.) that may be called upon to provide assistance in the event of an emergency. The following outlines the training received by these organizations:

- a. Specialized training is offered to the offsite agencies (fire, ambulance, medical providers, law enforcement agencies, etc.) who may be called upon to provide onsite assistance in the event of an emergency:

Training consists of the following:

- Notification Process
- Site Orientation
- Basic Radiation Protection
- Specific Interface

These courses do not qualify offsite personnel for unescorted access. Escorts are provided to assist support personnel.

This training may be provided by the Emergency Planning Department or by appropriate interfacing organizations such as Fire Protection, Security, Safety department and/or the Training Department. The Emergency Planning Department shall audit training provided by other departments to ensure it meets requirements of this Emergency Plan.

- b. Indian Point offers training support, as requested, for State and local agencies whose function is to provide assistance during an emergency at Indian Point. Training is offered on an annual basis, or as needed. Training of offsite emergency response organizations is described in their respective radiological emergency plans.

## Indian Point Energy Center Emergency Plan

### 2. Methods of Training

Members of the Indian Point ERO receive general and specialized classroom as necessary, self-study and / or hands-on emergency response training.

Classroom training is used for initial qualifications as needed to provide individual with basic knowledge needed to perform assigned functions.

Self Study training is used for refresher training for individuals to requalify to an ERO position.

Hands-on 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 Indian Point 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 to demonstrate ability to perform assigned emergency functions. During drills, on-the-spot correction of erroneous performance will be made and drill controllers or coaches/mentors will make a demonstration of the proper performance.

Exercises, drill evaluations and/or written tests are used to evaluate the effectiveness of the training accomplished. All key positions will be evaluated in a drill; exercise or tabletop prior to becoming qualified to fill assigned position.

### 3. First Aid Response:

First Responder personnel are trained to respond to medical emergencies.

### 4. Indian Point ERO Training Program:

The Indian Point ERO personnel who are responsible for implementing this plan receive initial, specialized and annual requalification training. Training program details are maintained in Training Department and Emergency Planning Department Administrative Procedures.

State and local EOC personnel receive training as outlined in the their respective plans. Entergy provides support as requested.



## Indian Point Energy Center Emergency Plan

Indian Point emergency response position assignments are based upon an individual's normal daily function and area(s) of expertise. Position-specific training provides the individual with the skills and knowledge to satisfactorily perform emergency assignments. A computerized system is used to track initial/continuing training and drill/exercise participation.

New Indian Point ERO personnel receive an initial overview course which familiarizes them with the Plan by providing basic information in the following areas as well as specific information as delineated in the sections below:

- Planning Basis
- Emergency Classifications
- Indian Point ERO and Responsibilities
- Callout of Emergency Organization
- Emergency Response Facilities
- Communications Protocol/Emergency Public Information
- Offsite Organizations

Annual requalification training is provided to ensure personnel are informed of changes in the Plan, procedures, organization and facilities.

- a. Personnel Responsible for Management of an Emergency (Shift Manager, Emergency Director, EOF Manager, Emergency Plant Manager / Plant Operations Manager / TSC Manager and OSC Manager)

These positions receive specialized training in the following areas as applicable to their ERO responsibilities:

- Emergency Classifications
- Notifications
- Protective Action Recommendations
- Emergency Action Levels
- Emergency Exposure Control
- Command and Control Practices

## Indian Point Energy Center Emergency Plan

### b. Personnel Responsible for Accident Assessment:

The skills and knowledge required to perform plant stabilization and mitigation are a normal function of specific Nuclear Operation's positions, as identified in Section B of this Plan. Power changes, 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.

To remove peripheral duties from the Nuclear Operations shift, those Emergency Organization positions responsible for accident assessment, corrective actions, protective actions, and related activities receive position-specific training.

### c. Radiological Monitoring Teams and Radiological Analysis Personnel

**Offsite Radiological Monitoring:** Offsite radiological monitoring is performed by trained individuals who provide samples and direct readings for dose assessment calculations.

Offsite Monitoring Team members receive classroom and hands-on training in the following areas:

- Equipment and Equipment Checks
- Communications
- Plume Tracking Techniques

**Personnel Monitoring:** trained individuals who monitor Station personnel and their vehicles for contamination during an emergency perform Personnel monitoring. This monitoring will normally be done by Health Physics Technicians who are qualified to do this type of monitoring as part of their normal job.

If non-qualified Health Physics personnel are to be used as Personnel Monitoring Team members they shall receive classroom and hands-on training in the following areas:

- Personnel Monitoring Equipment and Techniques
- Radiological Survey Techniques
- Contamination Control Techniques
- Basic De-Contamination Techniques

**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 any meteorological condition. Individuals responsible for performing dose assessment are trained in the following areas:

- Computerized and Manual Dose Assessment
- Protective Action Recommendations

## Indian Point Energy Center Emergency Plan

- Radiological Monitoring Team Interface
- Protective Action Guidelines associated with offsite plume exposure doses
- Basic Meteorology

### d. Police, Security and Fire Fighting Personnel

**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 of the Emergency Plan.

**Security:** The Indian Point emergency security response is based upon a normal daily security function that is to safeguard the site. Security personnel receive specialized training in the following areas:

- Accountability
- Evacuation
- Search and Rescue
- Emergency Response Facility Activation and Access Control
- Radiation Protection for Security Outpost

**Onsite Fire Fighting Personnel:** Onsite fire fighting personnel are selected from the Operations (or other on shift personnel) and receive their emergency response training as part of those groups in accordance with station Fire Protection Program documents.

- ### e. Repair and Damage Control Teams:
- Operations, Maintenance, Radiation Protection and Chemistry personnel are trained as part of their normal job specific duties to respond to both normal and abnormal plant operations. Part of this training includes an overview of OSC operations and immediate response actions individuals are to take when notified of an emergency and activation of their assigned facilities.

Operations personnel are trained to recognize and to mitigate degrading conditions in the plant. Operations personnel are trained to mechanically and electrically isolate broken or malfunctioning equipment, to isolate fluid leaks and to minimize transients.

Maintenance / I&C personnel are trained to troubleshoot and to 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, time limits, and other protective actions specific to the conditions present.

## Indian Point Energy Center Emergency Plan

- 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. **Communications Personnel:** Indian Point ERO personnel receive training on communications protocol as a part of the initial Emergency Response Overview. 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.
- i. **Personnel responsible for Recovery:** ERO personnel receive training on the Recovery organization and their Recovery functions.
- j. **Drill/Exercise Evaluation Support:** Controllers/Observers will be trained on their roles and responsibilities to support drill/exercise control and player evaluation.

### 5. General, Initial and Annual Training Program Maintenance

- a. **General Employee Training (GET):** All personnel with unescorted access to the stations Protected Area receive orientation training. GET provides initial training and annual requalification training on the basic elements of the Indian Point Emergency Plan for all personnel working at Indian Point. These elements include:
  - Station emergency alarms and their meaning
  - Assembly areas
  - Site evacuation procedures
  - Special precautions and limitations during an emergency
  - Purpose of the Indian Point Emergency Plan
  - Role of the worker during emergency
- b. **Initial Training:** Prior to becoming a qualified ERO member, personnel receive a first-time course that provides introductory knowledge to new members of the organization. Indian Point provides initial emergency response overview and specific training to assigned ERO members as outlined in the Emergency Response Organization Training Program. Additionally, Indian Point offers initial training to those offsite organizations that provide onsite support, as discussed in Part 1.a of this Section.

When an employee successfully completes the training requirements for an assigned emergency position, training is documented and the employee's name placed in the emergency telephone list(s). The completed training documents certify that the individual is qualified to perform their emergency functions.

## Indian Point Energy Center Emergency Plan

- c. **Requalification Training:** Annual requalification training is provided to Indian Point ERO personnel. Requalification training consists of one or more of the following:
- Annual Requalification Evaluation
  - Classroom or hands-on training addressing changes to the Indian Point Emergency Response organization, facilities, procedures and equipment
  - Drill participation
- d. **Update Training:** In some cases, it may be necessary to provide additional training prior to the annual requalification training. Changes to this Plan, Indian Point ERO, procedures, facilities or equipment may require training in an effort to maintain a proficient Indian Point ERO.

Program changes or deficiencies identified during drills, exercises or audits may require training to be performed prior to annual requalification training. Emergency Preparedness management evaluates the impact of these changes or deficiencies upon the effectiveness of the organization. As a result of this evaluation process, one or more of the following may occur:

- Specialized Classroom Training
- Hands-On Training
- Required Reading
- Drills
- Memo (email) Notifications

**Part 2: PLANNING STANDARDS AND CRITERIA**

**Section P: Responsibility for the Maintenance of the Planning Effort**

This section describes the responsibilities for development, review and distribution of the Indian Point Generating Station Emergency Plan and actions that must be performed to maintain the Indian Point Emergency Preparedness Program. It also outlines the criteria for insuring that personnel who perform the planning are properly trained.

**1. Emergency Planning Staff Training**

Emergency Planning Staff Members receive on-going training and experiences to maintain or improve their knowledge related to emergency planning. At least once each calendar year members of the Emergency Preparedness staff are involved in one of the following activities:

- Training courses specific to emergency preparedness.
- Training courses related to emergency preparedness management, such as problem solving, stress management or 'confrontation/media relations' courses.
- Observation of or participation in drills and/or exercises at other utilities or stations.
- Participation in industry review and evaluation programs.
- Participation in regional or national emergency preparedness seminars, committees, workshops or forums.
- Indian Point training courses in related areas, such as systems, operations, or radiological protection training.

**2. Authority for Emergency Preparedness Effort:**

The Site Vice President(s) has overall authority and responsibility for the Indian Point Emergency Preparedness Programs. This includes the authority to provide the necessary resources to ensure the continuous state of readiness for the Emergency Response Organizations.

Plant Managers are responsible for ensuring adequate staffing of the ERO.

**3. Emergency Planning Manager:**

Entergy has designated a site Emergency Planning Manager who is responsible for the maintenance of the Indian Point Emergency Preparedness Program. In maintaining the program, the Emergency Planning Manager ensures the following:

- Development, maintenance and revision of the Indian Point Emergency Plan and implementing procedures is accomplished in accordance with applicable regulations and industry standards.

## Indian Point Energy Center Emergency Plan

- Development and maintenance of 50.54q evaluations of program changes.
- Adequate Entergy support is provided to ensure the maintenance of offsite emergency response plans and procedures for the State of New York and the local communities involved in response to an incident at Indian Point Station.

Entergy adequately supports • the training program for offsite response personnel.

- Development and maintenance of a strong working relationship with State and local authorities responsible for Emergency Preparedness.
- Consistency is maintained between this plan and its implementing procedures and the emergency plans and procedures of the State and local authorities.
- Preparation for and conduct of each unit's drill and exercise program, and that the program meets all regulations and guidelines of the NRC.
- Emergency Response Facilities are maintained in a constant state of readiness.
- Appropriate files are maintained to document the activities of the Emergency Preparedness Program as required by law and regulations.
- Work coordinated with the communications group in development and implementation of the Emergency Preparedness Public Information program.
- Indian Point is appropriately represented at state and local meetings dealing with emergency preparedness matters.
- Preparation of reports to the NRC, FEMA and other agencies on emergency preparedness matters.
- That the alert and notification systems are maintained and tested in accordance with approved procedures.
- Emergency Preparedness staffs are involved in a program to maintain an adequate knowledge of state of the art planning techniques and the latest applications of emergency equipment and supplies.
- Emergency Preparedness staff provides technical assistance to other Indian Point organizations in areas of emergency preparedness.
- Coordination of EP Self-Assessment, Audits and Inspections.
- Development of and coordination of the EP budget to ensure program integrity.
- Coordination of the EP Drill and Exercise Program.
- Corrective actions identified during the conduct of Exercises, Drills, Training, Audits and Inspections are tracked using the station's corrective action program.

## Indian Point Energy Center Emergency Plan

### 4. Indian Point Emergency Plan Revisions:

This plan is reviewed and updated as necessary, on an annual basis. The annual update includes required changes identified during training, drills and exercises. The Emergency Planning Manager is responsible for determining which recommended changes are incorporated into the Plan. Editorial changes to the plan can be held until the annual plan update. If no change to the plan is required a memo to file shall be maintained to document annual review.

Revisions to the Plan that decrease the effectiveness of the Emergency Plan, when determined through the technical review process or other changes deemed appropriate by the Emergency Planning Manager will be reviewed by the onsite safety review committee prior to implementation.

Changes to the Plan are made without NRC approval only if such changes do not decrease the effectiveness of the Plan, and the Plan as changed continues to meet the standards of 10CFR50.47(b) and 10CFR50, Appendix E. This will be determined using the 50.54q review process. Proposed changes that decrease or have a potential to decrease the effectiveness of the approved Plan are not implemented without prior approval by the NRC.

Emergency Plan Implementing Procedures shall be developed and revised concurrent with the Emergency Plan and reviewed in accordance with station procedures.

Technical reviews of the Emergency Plan and procedures shall be conducted in accordance with station procedures. Individuals that conduct the technical review and safety review shall be qualified in accordance with station requirements. The reviewer shall determine the need for cross-disciplinary reviews. Revisions to the Emergency Plan and Implementing Procedures shall be reviewed and approved by the Emergency Planning Manager prior to implementation.

State and County personnel are provided the opportunity to review the Emergency Action Levels (EALs) annually and upon any changes made to the EALs.

### 5. Emergency Plan Distribution:

Controlled copies of the Indian Point Emergency Plan and Implementing Procedures are issued to all appropriate locations onsite, as well as Nuclear Regulatory Commission. The State and County are provided with the Emergency Plan only. Verified copies may be used for position specific procedure sets used by the Emergency Response Organization. Procedure requirements include use of revision numbers and required page identifications (i.e. section of plan, revision number, etc.).

### 6. Supporting Emergency Response Plans:

Other plans which support this Plan are:

- Federal Radiological Emergency Response Plan
- State of New York Radiological Emergency Response Plan



## Indian Point Energy Center Emergency Plan

- State of New York Radiological Emergency Response Plan
- Westchester County Radiological Emergency Response Plan
- Rockland County Radiological Emergency Response Plan
- Orange County Radiological Emergency Response Plan
- Putnam County Radiological Emergency Response Plan

Each of these plans has associated Implementing Procedures.

### 7. Implementing and Supporting Procedures:

Appendix 3 of this Plan contains a listing, by number and title, of those procedures that implement this Plan during an emergency. Administrative procedures that outline the steps taken to maintain the Indian Point Emergency Preparedness Program have been developed. All Emergency Plan Implementing Procedures are reviewed biennially.

Major revisions to the procedures are reviewed by the departments or ERO positions affected (i.e. departments or individuals to whom responsibilities are assigned or changed) prior to their approval. (NOTE: Only one individual qualified for a given position is required to review a procedure change and an ERO facility management position can review changes within his/her facility or functional area.) Implementing procedures are reviewed and approved in accordance with approved station procedures.

### 8. Cross Reference to Planning Criteria:

The Plan is formatted in the same manner as NUREG-0654, FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in support of Nuclear Power Plants", Revision 1. This allows for ease in auditing evaluation criteria and eliminates the need for a cross-reference.

### 9. Review of Indian Point Emergency Preparedness Program:

An assessment (audit) of the emergency preparedness program is performed by the Indian Point Nuclear Quality Assurance (NQA) organization. The assessment will be performed either at intervals not to exceed 12 months or as necessary, based on an assessment by NQA against the emergency preparedness performance indicators, and after changes in personnel, procedures, equipment, or facilities that could adversely affect emergency preparedness, but no longer than 12 months after the change. In any case, all elements of the emergency preparedness program are reviewed at least once every 24 months. The Quality Assurance Program provides the management controls for documenting, reporting and retaining audit results and for evaluation and correcting audit findings.

Results of this audit are submitted for review to the Station's Vice President(s). The Emergency Planning Manager ensures that any findings that deal with offsite interfaces are reviewed with the appropriate agencies. Records of the audit are maintained for at least five years.

## Indian Point Energy Center Emergency Plan

On an annual basis, a report of the Emergency Planning activities for the year will be presented to the onsite safety review committee. Such activities include: plan and procedure revisions, drill/exercise results, and audit/inspection results. Additional activities may be added as deemed appropriate by the Emergency Planning Manager.

### 10. Maintenance of Emergency Telephone List and Letters of Agreement

A phone list(s) contains telephone numbers used by the Emergency Response Organizations during an emergency. Emergency Preparedness Administrative Procedure(s) provide for verifying and updating these numbers at least quarterly.

The Letters of Agreements (LOAs) with outside support organizations and government agencies are reviewed and renewed every two years.

# Indian Point Energy Center Emergency Plan

## Appendix 1: References

References consulted in the writing of this Emergency 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. 10CFR50.47, Emergency Plans
2. 10CFR50 Appendix E, Emergency Planning and Preparedness for Production and Utilization Facilities.
3. 10CFR20, Standards for Protection Against Radiation
4. Code of Federal Regulations, Title 10, Chapter I Parts 70, 73, and 100.
5. Code of Federal Regulations, Title 33, Chapter I, Part 153.
6. Code of Federal Regulations, Title 40, Chapter I, Parts 110, 112, 116, 118, 302 and 355.
7. Code of Federal Regulations, Title 44, Chapter I, Part 401.
8. Code of Federal Regulations, Title 49, Chapter I, Parts 171 and 172.
9. 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.
10. NUREG-0696, Revision 1, Functional Criteria for Emergency Response Facilities
11. 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.
12. NUREG-0578, "TMI-2 Lessons Learned Task Force Status Report and Short-Term Recommendations."
13. NUREG-0696, Revision 1, Functional Criteria for Emergency Response Facilities
14. NUREG-0737, Clarification of TMI Action Plan Requirements, dated October 1980.
15. NUREG-0737, Supplement 1, Requirements for Emergency Response Capability, December 1982.
16. EPA 400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents
17. FEMA-Guidance Memorandum, MS-1 "Medical Services"
18. Indian Point Unit 1, 2 and 3 FSARs
19. Indian Point Unit 1, 2 and 3 Tech Specs
20. Reg. Guide 1.101, "Emergency Planning & Preparedness for Nuclear Power Plants"
21. 10CFR50, Appendix R
22. SANDIA 77-1725
23. INPO Emergency Resources Manual

## Indian Point Energy Center Emergency Plan

### Appendix 1: References (cont.)

24. "Maintaining Emergency Preparedness Manual," dated November, 1987 INPO 87-019.
25. "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.
26. "Voluntary Assistance Agreement By and Among Electric Utilities involved in Transportation of Nuclear Materials," dated November 1, 1980.
27. Comprehensive Environmental Response, Compensation and Liability Act of 1980.
28. Accidental Radioactive Contamination of Human Food and Animal Feeds; Recommendation for State and Local Agencies, Volume 47, No. 205, October 22, 1982.
29. American Nuclear Insurers Bulletin #5B (1981), "Accident Notification Procedures for Liability Insured's".
30. "Potassium Iodide as a Thyroid Blocking Agent in a Radiation Emergency: Final Recommendations on Use," Federal Register Vol. 47, No. 125, June 29, 1982.
31. INPO Coordination agreement on emergency information among USCEA, EPRI, INPO, NUMARC and their member utilities, dated April (1988).
32. Babcock and Wilcox Company, Post Accident Sample Offsite Analysis Program (1982).
33. ANI/MAELU Engineering Inspection Criteria For Nuclear Liability Insurance, Section 6.0, Rev. 1, "Emergency Planning."

# Indian Point Energy Center Emergency Plan

## Appendix 2: Letters of Agreement

Copies of agreement letters for the offsite emergency response supporting organizations listed below are contained in this appendix.

1. Verplanck Fire Protection Association (Fire/Ambulance)
2. Buchanan Fire Department
3. Hudson Valley Hospital Center at Peekskill / Cortlandt
4. Phelps Memorial Hospital Center
5. RMC - Medical Consultant
6. Department of Energy Radiological Assistance Plan
7. Westinghouse Electric Corporation
8. Institute of Nuclear Power Operations (INPO)
9. New York State Police
10. New York State Disaster Preparedness Commission

VERPLANCK FIRE PROTECTIVE ASSOCIATION, INC.  
POST OFFICE BOX 518 \*Eight Street  
Verplanck, New York 10596-0518  
CHIEF'S OFFICE (914) 788-6943 \*FAX (914) 788-6943

May 12, 2002

Mrs. Weaver  
Entergy Nuclear Northeast  
Entergy Nuclear Operations, Inc.  
Entergy Nuclear IP2, LLC  
P.O. Box 308  
Buchanan, NY 10511

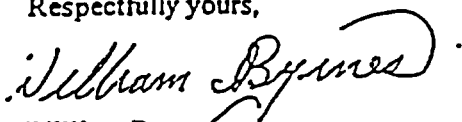
Dear Mrs. Weaver:

This letter is to affirm that, in the event of an emergency situation or accident at the Entergy Nuclear Northeast Plant, the Verplanck Fire Department and/or ambulance will respond upon notification. This response may include providing firefighting equipment and services for providing pumping capability to supply Hudson River water to selected connection points.

The proper means of notification is to telephone the emergency number 911, for both the fire department and ambulance. Please give all available information at the time of notification. Should the ambulance respond, and after initial first aid treatment, we will then provide ambulance transportation to the appropriate or designated medical facility, which will be determined by the extent or type of injuries.

If at any time you feel that you have a unique situation that may require a pre-plan, please feel free to contact us at your convenience at (914) 788-6943.

Respectfully yours,

  
William Byrnes  
Chief

HUDSON  
VALLEY  
  
HOSPITAL  
C E N T E R

This agreement made this First day of April, 2002, between HUDSON VALLEY HOSPITAL CENTER, 1980 Crompond Road, Cortlandt Manor, New York 10567 (hereinafter referred to as "Hospital") and the Indian Point Energy Center Plants, P.O. Box 308, Buchanan, New York 10511.

1. The Hospital will accept as patients, in accordance with the plant and Hospital procedures, any personnel from the Indian Point Energy Center Plants who may be considered to have sustained radiation injuries and/or who may have been exposed to radioactive material, provided that: All potentially contaminated patients will be accompanied to the Hospital by the Indian Point Facility personnel; and the Indian Point Facility will take all appropriate precautionary radioactive contamination measures and will advise the Hospital by telephone in advance of patient's arrival, of the patient's status, and radiation hazard.
2. The Indian Point Energy Center will:
  - a) Pay the Hospital the sum of \$30,000 each year and in addition thereto, will:
  - b) Compensate or reimburse the Hospital for all materials and equipment consumed or which must be destroyed or replaced due to radiation.
  - c) Indemnify and hold the Hospital harmless from any and all claims of third persons resulting from radiation exposure not resulting from the Hospital's negligence.
  - d) Be responsible for decontaminating the Hospital's equipment and property and disposing of materials contaminated as a result of services rendered to personnel of Energy.

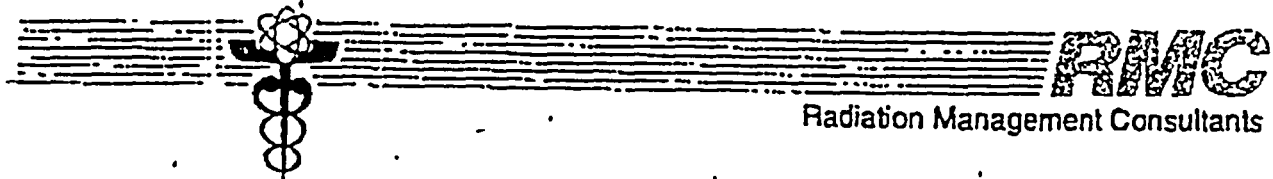
HUDSON VALLEY HOSPITAL CENTER

ENTERGY NUCLEAR NORTHEAST  
INDIAN POINT ENERGY CENTER

  
\_\_\_\_\_  
John C. Federspiel  
President

  
\_\_\_\_\_  
Mike Slobodien  
Director of Emergency Programs





February 14, 2002

Mr. Mike Slobodien  
Director Emergency Programs  
Energy, Nuclear Northeast  
Indian Point Energy Center  
P. O. Box 308  
Buchanan, New York 10511

**SUBJECT:** Emergency Medical Assistance Program for 2002

Dear Mr Slobodien:

This confirms an agreement between Radiation Management Consultants (RMC) and the Indian Point Energy Center wherein RMC agrees to furnish certain services to the nuclear stations. These services comprise a program that is identified by RMC as an Emergency Medical Assistance Program (EMAP). This agreement remains in effect from January 1, 2002 through December 31, 2002. The EMAP program contains the following provisions:

1. Twenty-four hour per day availability of expert medical consultation on management of radiation injuries.
2. Twenty-four hour per day availability of RMC's Radiation Emergency Medical Team (REM-Team) comprised of physicians, Certified Health Physicists and a technician with portable instrumentation to travel to your location and assist hospital personnel, attending physicians and/or plant personnel in the initial evaluation and treatment of radiation injuries.
3. Availability of and assistance with transfer of patients to Definitive Care Centers established at Northwestern Memorial Hospital, Chicago, IL for treatment of radiation injuries and Loyola University Medical Center, Chicago IL for the treatment of burns.



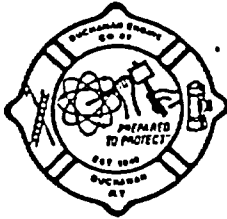
Twenty-four hour per day availability of RMC's dose assessment capabilities including:

- a. Bioassay laboratory for urine, fecal, sputum and tissue analysis
  - b. Mobile Whole Body Counter
  - c. Experienced Certified Health Physicists and Physician Team for evaluation and treatment of radiation exposures.
5. Annual training for the plant personnel in the handling and treatment of injured/contaminated patient(s).
  6. Annual training for EMS personnel in the rescue and transport of injured/contaminated patient(s).
  7. Annual training for hospital personnel in the handling, treatment and evaluation of injured/contaminated patient(s).
  8. Annual radiation emergency medical drill to include preparation of accident scenarios, two drill observers and drill evaluation reports related to observations made at the plant, ambulance and hospital.
  9. Annual inventories of support hospital radiation emergency medical supplies and equipment.
  10. Performance of annual telephone number verification as well as a review of the hospital procedural manual; revise and distribute changes to the manual under controlled document distribution system.
  11. Accident Response: consultation and laboratory services under RMC's employment and control are at no extra charge except for travel, lodging and meals.
  12. Preparation of incident/accident reports for NRC and other regulatory bodies at no additional charge.
  13. Legal and medical appearances as required and requested by <sup>Energy</sup> ~~New York~~ Power Authority.

RADIATION MANAGEMENT CONSULTANTS, INC.



Roger E. Linnemann, M.D.  
President



Organized December, 1940  
**Buchanan Engine Co., No. 1, Inc.**

159 Albany Post Road, Buchanan, New York 10511

— Member of —

*Firemen's Association of The State of New York,  
Hudson Valley Volunteer Firemen's Association  
Westchester County Volunteer Firemen's Association  
Westchester County Fire Chiefs Association*

For Emergency  
Dial 911

Business Phone  
737-5010

Chief's Office  
737-0334

August 5, 2002

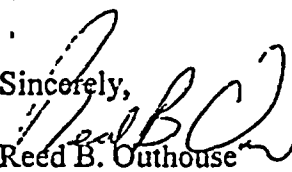
To: Mr Michael Slobodien  
Director Emergency Programs  
Entergy Nuclear Northeast

RE: Letter of Agreement for emergency response.

This letter is to confirm the intent of Buchanan Engine Co.No.1 Inc to respond to an emergency situation or accident at the Indian Point Energy Center under the Mutual Aid System. Buchanan Engine Company No.1 Inc will provide equipment and emergency services for assistance to Entergy and respond to emergency situations or accidents at the Indian point Energy Center. This response may include firefighting equipment and services for providing pumping capabilities to supply Hudson River water to selected connection points.

If you have any questions regarding this agreement, please feel free to contact me at my office- (914) 737-0334

Sincerely,

  
Reed B. Outhouse  
Chief of Department



## Department of Energy

Brookhaven Area Office  
P.O. Box 5000  
Upton, New York 11973

JUN 03 2002

TO: DISTRIBUTION LIST

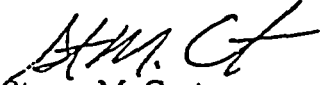
SUBJECT: DEPARTMENT OF ENERGY'S (DOE) RADIOLOGICAL ASSISTANCE PROGRAM (RAP) MEMORANDUM OF UNDERSTANDING

The DOE Brookhaven Area Office (BAO) as the Regional Coordinating Office (RCO) for DOE's Region 1, after discussion with representatives from the U.S. Nuclear Regulatory Commission (USNRC) and the Federal Emergency Management Agency (FEMA), has concluded that individual memorandums of understanding (MOUs) are no longer required.

Numerous federal laws, regulations, and DOE Orders, that are currently in existence, require DOE to maintain an ever-ready response capability for coping with any nuclear/radiological incident in support of FEMA and the NRC. The elimination of the annual letters would in no way impact the assistance or support that BAO is required to provide and has maintained over the years. BAO, as the RCO for DOE Region 1, will carry out that assistance required by law, regulation, and DOE Orders.

If you have any questions or would like further details, please contact me at (631) 344-7309.

Sincerely,

  
Steven M. Centore  
Regional Response Coordinator



Westinghouse Electric Company  
 Nuclear Services  
 Waltz Mill Service Center  
 P.O. Box 158  
 Madison, Pennsylvania 15663  
 USA

Mr. Michael Slobodien, Director  
 Emergency Programs  
 Entergy Nuclear Northeast  
 Entergy Nuclear Operations, Inc.  
 Indian Point Energy Center  
 295 Broadway, Suite 3  
 P.O. Box 308  
 Buchanan, NY 10511-0308

Direct tel: 724-722-5658  
 Direct fax: 724-722-5106  
 e-mail: irasm@westinghouse.com

Our ref: INT-02-25

April 18, 2002

Entergy Nuclear Northeast  
 Indian Point Unit 3  
Westinghouse Emergency Response Plan Initial Contacts

Dear Mr. Slobodien,

The purpose of this letter is to provide an update to the Westinghouse Emergency Response Plan roster in response to your recent request. Following is a list of Westinghouse personnel to contact should it be necessary under your Emergency Response Plan.

Title	Name	Office #	Home #	Beeper/Cell Phone #
First Contact	Steve Harms	(IP2) 914-734-5825 (IP3) 914-736-8846	845-897-3343	(Beeper) 800-921-5984 (Cell) 914-319-9954
1 <sup>st</sup> Alternate	Steve Ira	724-722-5658	724-744-1920	(Beeper) 888-897-2755 (Cell) 412-996-6888
2 <sup>nd</sup> Alternate	Carl Schwartz	412-374-3678	412-373-2426	(Beeper) 800-984-6218 (Cell) 412-378-0383

Very truly yours,

Steve M. Ira, Customer Projects Manager

cc: Steve Harms

Carl Schwartz

PHelps Memorial Hospital Center  
701 North Broadway  
Sleepy Hollow, New York 10591-1096

P H E L P S

February 13, 2002

Mr. Mike Slobodian, Director of Emergency Programs  
Entergy Nuclear Northeast  
Indian Point Energy Center  
P. O. Box 308  
Buchanan, New York 10511

Dear Sir:

This letter will confirm that Entergy will pay Phelps Memorial Hospital Center a sum of \$30,000 per year, in accordance with our agreement to accept as patients any personnel from the Indian Point Energy Center who may be considered to have sustained radiation injuries and/or contamination.

Sincerely,

  
Keith F. Safian, FACHE  
President and CEO

KFS:bd



Institute of  
Nuclear Power  
Operations

Suite 100  
700 Galleria Parkway, SE  
Atlanta, GA 30339-5957  
770-644-8000  
FAX 770-644-8549

November 21, 2001

Dear Administrative Point of Contact:

This letter certifies that the plant emergency assistance agreement between INPO and its member utilities remains in effect. In the event of an emergency at your utility, INPO will assist you in acquiring the help of other organizations in the industry, as described in Section 1 of the *Emergency Resources Manual*, INPO 86-032. If requested, INPO will provide the following assistance:

- facilitate technical information flow from the affected utility to the nuclear industry
- locate replacement equipment and personnel with technical expertise
- obtain technical information and industry experience regarding plant component and systems
- provide an INPO liaison to facilitate interface

This agreement will remain in effect until terminated in writing. Should you have questions, please call me at (770) 644-8210.

Sincerely,

David P. Igyarto  
Director  
Plant Operations Division

DPI:ms

cc: Emergency Preparedness Point of Contact  
INPO Coordinators  
Mr. Gary R. Leidich



NEW YORK STATE POLICE  
BLDG. 22, 1220 WASHINGTON AVE.  
ALBANY, NY 12226-2252

JAMES W. McMAHON  
SUPERINTENDENT

February 25, 2002

Mr. Mike Slobodien  
Director Emergency Programs  
Energy Nuclear Northeast  
Energy Center  
P.O. Box 308  
Buchanan, New York 10511

Dear Mr. Slobodien

The Division of State Police will continue to respond to requests for routine police service at your facility. In addition, the Division will supply support activities as set forth in the New York State Radiological Emergency Preparedness Plan and Article 2-B of the State's Executive Law. In regards to other matters of a police nature, our members are governed by statute and will respond within the constraints of such laws when a violation of law appears probable, is attempted, or occurs.

The radio communication equipment installed at our Peekskill station allows for continuous communication capability with the Indian Point nuclear facilities, and for any emergency contingency that may arise.

Please be assured of our continued cooperation in all matters of mutual interest.

Sincerely,

James W. McMahon  
Superintendent



Edward F. Jacoby, Jr., Director

**New York State Emergency Management Office**  
1220 Washington Avenue  
Building 22, Suite 101  
Albany, NY 12226-2251

February 8, 2002

Mr. Mike Slobodien, Director  
Emergency Programs  
Entergy Nuclear Northeast  
Indian Point Energy Center  
PO Box 308  
Buchanan, NY 10511

Dear Mr. Slobodien:

This serves to update the annual agreement letter between the Indian Point Energy Center Facilities and the State Emergency Management Office for the Radiological Emergency Preparedness Program.

In the event of an emergency at the Indian Point Energy Center Power Plants, New York State will respond in accordance with procedures contained within the State Radiological Emergency Preparedness Plan. Notification to New York State of the emergency should be initiated via the Radiological Emergency Communication System hotline. The State will also continue to participate in necessary training exercises and drills.

Sincerely,

Edward F. Jacoby, Jr.  
Director

EFJ:lw  
cc:Frank Inzirillo  
Emergency Preparedness Manager  
Indian Point Energy Center



# Indian Point Energy Center Emergency Plan

## Appendix 3: Procedure Cross-Reference to Sections of the Plan

### Emergency Plan Implementing Procedures to Plan Sections

Number	Subject Addressed	IPEC Emergency Plan Section(s)
IP-1024 (u2) ICs & EALs (u3)	Emergency Classification	D.2, Table D-1
IP-1002 (u2)	Activation of the Emergency Response Organization	D.1, E.2
IP-EP-255 IP-1035 (u2) IP-2001 (u3)	Emergency Management	B.2 B.3, B.4, B.5, Table B-1
IP-1010 (u2) IP-2000 – 2006 (u3)	Control Room Augmentation	B-5, Table B-1
IP-1035 (u2) IP-2100 – 2106 (u3)	TSC Activation and Response	B-5, Table B-1
IP-1023 (u2) IP-2200 – 2211 (u3)	OSC Activation and Response	B-5, Table B-1
IP-EP-255 IP-1030 (u2) IP-2300 - 2311(u3)	EOF Activation and Response	B-5, C.2.b, Table B-1
IP-1023 (u2) IP-1027 (u3)	Radiation Protection, Emergency Exposure Controls and Response	B-5, Table B-1 J.6, K.1, K.2
IP-1050(u2) IP-2500(u3)	Emergency Security Organization Activation and Response	B-5, Table B-1
IP-EP-310	Offsite Dose Assessment	B-5, Table B-1
IP-EP-410	Protective Action Recommendations	J-2
IP-EP-251	Alternate EOF Activation and Response	H.2
IP-EP-510 IP-EP-520	Data Equipment Operation	B-5, Table B-1
IP-1015(u2) IP-1011(u3)	Offsite Monitoring Team Activation and Response	I.7, I.8, I.9
IP-1027 (u2) IP1050, 1053 (u3)	Evacuation/Accountability	J.2, J.4, J.5
IP-1023(u2) IP-1054(u3)	Search and Rescue	J.5
IP-EP-610	Termination and Recovery	M.2, M.3, M.4
IP-1011 (u2) JNC Operations Manual (u3)	Joint News Center Procedure Set	G.3, G.4
IP-EP-610 IP-1018 (u2)	Emergency Preparedness Corporate Support	A.1, B.7, C.4, O.4

## Indian Point Energy Center Emergency Plan

### Emergency Preparedness Administrative Procedures

The following procedures do not implement the Emergency Plan during emergencies, but do outline maintenance of the program as required by the applicable sections of the Plan.

Number	Subject Addressed	IPEC Emergency Plan Section(s)
EP-AD-01 EP-ADM-03	Emergency Preparedness Department Organization and Responsibilities	P.1, P.2, P.3
IP-EP-AD2	Emergency Plan Controlled Documents	P.4, P.5
EP-AD-03	Emergency Response Organization Training	Section O
EP-AD-04 EP-ADM-08	Maintenance of the Emergency Telephone Directory	P.10
EP-AD-05 EP-ADM-05	Emergency Preparedness Department Facilities and Equipment Surveillances	F.3, H.10
EP-AD-07 EP-ADM-04	Preparation, Conduct, and Evaluation of Drills and Exercises	N.1.b, N.2.a, N.2.c, N.2.e.1, N.2.e.2
EP-AD-08 Unit 3 TBD	Emergency Action Levels Technical Basis Document	D.1, D.2, I.1, I.4, J.7
EP-AD-09 EP-ADM-08	Emergency Communications Test	F.3, N.2.a

# Indian Point Energy Center Emergency Plan

## Appendix 4

### Abbreviations, Acronyms and Definitions

Any abbreviation followed by a lower case 's' denotes the plural form of the term.

ac.....	alternating current
AEOF.....	Alternate Emergency Operations Facility
ALARA.....	as low as reasonably achievable
ANI .....	American Nuclear Insurers
ANSI .....	American National Standards Institute
ARM.....	Area Radiation Monitor
CB .....	citizen band
cc.....	cubic centimeter
CR .....	Control Room
CFR.....	Code of Federal Regulations
CIC .....	Corporate Information Center
cm <sup>2</sup> .....	square centimeter
Cs .....	Cesium
dc.....	direct current
DOE.....	U. S. Department of Energy
DOT .....	U. S. Department of Transportation
dpm .....	disintegration per minute
EAL.....	Emergency Action Level
EAS .....	Emergency Alerting System
ENS .....	NRC Emergency Notification System
EOC.....	Emergency Operating Center
EOF .....	Emergency Operations Facility
EOP .....	Emergency Operating Procedure
EPA .....	U. S. Environmental Protection Agency
EPZ .....	Emergency Planning Zone
FEMA.....	Federal Emergency Management Agency
FRERP .....	Federal Radiological Emergency Response Plan
FSAR.....	Final Safety Analysis Report
Ge.....	Germanium
GET .....	General Employee Training

# Indian Point Energy Center Emergency Plan

## Appendix 4

### Abbreviations, Acronyms and Definitions

I	Iodine
I&S	Indoctrination and Support
INPO	Institute of Nuclear Power Operations
IP1, IP2, or IP3	Indian Point Unit 1,2, or 3
IPEC	Indian Point Energy Center
IRAP	Interagency Radiological Assistance Program
Li	Lithium
LOCA	Loss of Coolant Accident
mR	milliroentgen
NRC	U. S. Nuclear Regulatory Commission
NSRAC	Nuclear Safety Review and Audit Committee
OSC	Operations Support Center
PAG	Protective Action Guide
PAR	Protective Action Recommendation
PASS	Post Accident Sampling System
PDP	Plant Data Phone
R	roentgen
RACES	Radio Amateur Civil Emergency Services
RERP	Radiological Emergency Response Plan
RMT	Radiation Monitoring Team
SCBA	self contained breathing apparatus
SNSC	Station Nuclear Safety Committee
SPDS	Safety Parameter Display System
Sr	Strontium
STA	Shift Technical Advisor
TAG	Technical Assessment Group
TDD	Telecommunications Device for the Deaf
TLD	Thermoluminescent Dosimeter
TSC	Technical Support Center
μCi	microcuries

# Indian Point Energy Center Emergency Plan

## Appendix 4

### Abbreviations, Acronyms and Definitions

#### Definitions

**Assembly / Accountability** - the process used by the Onsite Emergency Organization to identify potentially missing and/or injured personnel within the Protected Area during an emergency.

**Annual** – Frequency of occurrence equal to once per calendar year, between January 1<sup>st</sup> and December 31<sup>st</sup>.

**Area Radiation Monitors** - fixed radiation detectors placed in strategic locations throughout the Station for the purpose of continuously monitoring area radiation dose rates; an integral part of the Radiation Monitoring System that provides the Control Room with remote monitoring capabilities.

**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.

**Biennial** – Frequency of occurrence equal to once per two calendar years.

**Corrective Actions** - those emergency measures taken to ameliorate or terminate an emergency situation at or near its source.

**Classification** - The classification of emergencies is divided into FOUR (4) categories or conditions, covering the postulated spectrum of emergency situations. Each emergency classification is characterized by Emergency Action Levels (EALs) or event initiating conditions. The four classifications address emergencies of increasing severity.

**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.

**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).

**Drill** - A supervised instruction period aimed at testing, developing and maintaining skill in a particular operation.

**Emergency Action Level (EAL)** - a predetermined, site-specific, observable threshold for a plant Initiating Condition that places the plant in a given emergency class. (NUMARC/NESP-007)

# Indian Point Energy Center Emergency Plan

## Appendix 4

### Abbreviations, Acronyms and Definitions

#### Definitions (cont.)

**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, state or local government authorities on the EAS would broadcast instructions/notifications to the public on conditions or protective actions.

**Emergency Coordinator** - a position title in NUREG 0654-Rev 1 corresponding to the Emergency position of Emergency Director.

**Emergency Director** - a previously designated and trained individual for directing all licensee activities related to an emergency at the site. The Emergency Director is the interface between the Onsite Emergency Organization and all offsite agencies.

**Emergency Notification System (ENS)**- The NRC Emergency Notification System is a dedicated telephone system (part of the Federal Telephone System) that connects the plant with NRC headquarters in Bethesda, Maryland. It is directly used for reporting emergency conditions to NRC personnel.

**Emergency Operations Facility** - the facility for evaluating and coordinating all of Emergency activities related to an emergency.

**Emergency Plan Administrative Procedures** - Procedures that provide detailed information necessary to maintenance of the Emergency Planning Program. Primarily used by members of the Emergency Planning Staff.

**Emergency Plan Implementing Procedures** - Procedures that provide detailed information necessary to implement the required task during an emergency. Used by members of the Emergency Response Organization.

**Emergency Planning Manager** - individual responsible for reviewing and updating the emergency plan and supporting documents and coordinating all onsite and offsite emergency planning efforts.

**Emergency Planning Zone (EPZ)** - the area around the Indian Point Site where planning is required for the plume exposure pathway out to approximately 10-miles (10-mile EPZ) and for the ingestion exposure pathway out to approximately 50-miles (50-mile EPZ). The 10-mile EPZ encompasses areas of Westchester, Rockland, Putnam and Orange Counties. The 50-mile EPZ includes the 10-mile EPZ and encompasses areas of Connecticut, New Jersey, Pennsylvania and New York.

**Emergency Operations Center** - each of the four (4) counties (Westchester, Rockland, Putnam and Orange) surrounding the site has an Emergency Operations Center from which the County officials evaluate and coordinate all County activities during an emergency.

**Emergency Response Data System (ERDS)** - ERDS is a 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.

Indian Point Energy Center Emergency Plan  
Appendix 4  
Abbreviations, Acronyms and Definitions

Definitions (cont.)

**Essential Personnel** - Those individuals needed to achieve the goals and tasks as deemed necessary by the Shift Manager, Emergency Director and/or Emergency Plant Manager during an emergency. Unless otherwise directed initially all members of the Emergency Response Organization are considered essential personnel.

**Exclusion Area** - the area surrounding the reactor in which licensee has authority to determine all activities including exclusion or removal of personnel and property from the area. (10 CFR 100)

**Fission Product Barrier** - The fuel cladding, reactor coolant system boundary, or the containment boundary.

**Health Physics Network (HPN)** - In the event of a site emergency, the NRC HPN line will be activated by the NRC Operations center in Bethesda, Maryland. This phone is part of a network that includes the NRC Regional Office and the NRC Operations Headquarters in Bethesda, Maryland. Plant personnel to NRC Operations Center and the Regional office dedicate this system to the transmittal of radiological information. HPN phones are located in the TSC/OSC and EOF.

**Implementation Procedures** - detail procedures developed for implementing specific tasks or methods described in the Emergency Plan

**Indian Point Site** - the combined areas immediately surrounding Units 1, 2 and 3 that are owned and operated by Entergy.

**New York Emergency Operations Center** - New York State has two (2) Emergency Operations Centers, one in the Southern District Emergency Management Office located in Poughkeepsie, New York, and the other is in the substructure of the Public Security Building, State Office Building Campus, and Albany, New York.

**Nuclear Facility Operator** - The licensee (Entergy) who operates the nuclear power plants at the Indian Point Site.

**Offsite** - locations outside of the Indian Point Site boundary.

**Onsite** - the area within the Indian Point Site boundary.

**Onsite Emergency Organization** - The Indian Point organization that has the capability to provide initial response to emergency situations.

**Operations Support Center** - located on the 72' elevation above the TSC, it houses all Operations, Instrument and Control, Quality Assurance, Maintenance, Chemistry and Health Physics personnel awaiting assignment by the Shift Manager/Plant Operations Manager. (NUREG0654)

**Plant Emergency Operating Procedures** - procedures located under separate cover from the Emergency Implementing Procedures that specify actions required to be performed by control room personnel to mitigate reactor coolant system or process system abnormalities.

Indian Point Energy Center Emergency Plan  
Appendix 4  
Abbreviations, Acronyms and Definitions

**Definitions (cont.)**

**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. The States as PARs may issue access control and other recommendations concerning the safeguards of affected food chain processes.

**Process Radiation Monitors** - radiation detectors which continuously monitor operating plant systems or specific effluent release points and provide the Control Room with remote monitoring capabilities and in some cases provide initiation of automatic termination of a specific effluent release.

**Protective Actions** - those actions taken during or after an emergency for the purpose of reducing or eliminating hazards or preventing or minimizing radiological exposures to persons that would likely occur if the actions were not taken. Protective actions would be warranted provided the reduction in an individual dose expected to be achieved by carrying out the protective actions is not offset by excessive risks to individual safety in taking the protection action.

**Protective Action Guides** - projected radiological dose or dose commitment values to individuals in the general populations that warrant protective actions following a release of radioactive material.

**Protected Area** - the area enclosed by the security fence immediately surrounding Units 1, 2 and 3 where access is restricted in accordance with the Security Plan.

**Quarterly** - Frequency of occurrence equal to once in each of the following periods: January 1<sup>st</sup> through March 31<sup>st</sup>, April 1<sup>st</sup> through June 30<sup>th</sup>, July 1<sup>st</sup> through September 30<sup>th</sup>, October 1<sup>st</sup> through December 31<sup>st</sup>.

**Radiation Area** - any area, accessible to personnel, in which there exists radiation, originating in whole or in part within licensed material, at such levels that a major portion of the body could receive in any one hour a dose in excess of five millirem, or in any five consecutive days a dose in excess of one hundred millirem.

**Radiologically Controlled Area** - those areas within the plant building or on plant property where access is restricted and monitored for the purpose of radiation protection.

**Radiological Emergency Communication System (RECS)** - dedicated private line telephone system connecting the licensee with State and County Warning Points and Emergency Operations Centers.

**Recovery Actions** - those actions taken after the emergency to restore the plant as nearly as possible to its pre-emergency condition.



# Indian Point Energy Center Emergency Plan

## Appendix 4

### Abbreviations, Acronyms and Definitions

#### Definitions (cont.)

**Recovery Center** - the location from which the Recovery Manager will control the overall recovery effort.

**Recovery Manager** - the individual who reports to the President of the company and who directs the Corporate Response Organization during the recovery stage. He is responsible for the technical direction and control of the integrated recovery effort.

**Shift Manager** - management person in charge of plant operations during each shift. He initially takes charge of the emergency response effort until arrival of the management persons who will relieve him of the emergency duties of Plant Operations Manager and Emergency Director.

**Site Boundary** - that line beyond which the land is neither owned, leased, nor otherwise controlled by the site licensee (Technical Specifications). The site boundary for the purposes of the Emergency Plan coincides with the "exclusion area" boundary shown in the FSAR. (FSAR, Figure 2.2-2)

**Site Evacuation** - process of removing non-essential personnel from the Owner Controlled Area.

**Station** - the three Entergy Nuclear Generating Units (1, 2 and 3) located on the Indian Point Site, near Peekskill, NY.

**Technical Support Center** - a previously designated and equipped location, onsite, which will be used by technical, engineering and operations personnel in their support of the watch personnel handling the in-plant accident conditions (NUREG-0654)

**Technical Support Center Manager** - the individual who directs and coordinates the technical support activities.

**Vital Area** - Areas within the station security fence that contain vital equipment. Examples include Control Rooms, Containment and Electrical Equipment Rooms.

**Warning Point** - a location designated by a government agency for the purposes of receiving and promulgating warning information.

**Watch** - positions covered by plant operating personnel on a 24-hour basis.

# Indian Point Energy Center Emergency Plan

## Appendix 5

### EVACUATION PLANS

#### I. INTRODUCTION

The evacuation plan is based on the identification of both the population to be evacuated and the transportation facilities required accomplishing this evacuation. These are the essential data around which the plan and detailed procedures are built. Because the population in the areas to be evacuated can vary with the time of day, the day of the week, and the seasons, a set of six time-based scenarios has been developed as a means of characterizing the population shifts. These scenarios, prepared for both fair and adverse weather conditions, address variations in both the general population, transient population and the special facilities (e.g., schools, nursing homes, hospitals, and recreation areas), include: (1) winter weekday - school in session - early dismissal; (2) winter weekday - school in session - direct evacuation; (3) winter night; and (4) summer weekend - holiday.

Several important contingencies can introduce significant variations in emergency action and in the execution of an actual evacuation and are thus addressed in the detailed Procedures. The contingencies include situations such as loss of particular evacuation routes or segments of routes, called links, because of construction work, accidents or flooding; severe weather conditions, such as a blizzard; and special single events.

In order to provide the plan with the flexibility to evacuate sub-areas of the EPZ in the event that a full evacuation is not necessary, the 10 Mile EPZ has been divided into 51 Emergency Response Planning Areas (ERPAs) (See Figure 1). The delineation of the ERPAs is based on the following criteria:

1. Major population areas have been preserved or grouped.
2. The boundary definitions have been simplified as much as possible (by using, e.g., political divisions or major roads) for purposes of clarity.
3. Important topographic features, such as rivers, hills, and valleys, have been utilized as boundaries when practical.
4. The size and orientation of the planning areas are adequate to respond to various levels of accident severity.
5. The effects of meteorological conditions and patterns that can be responded to.

In general evacuation is necessary, individual ERPAs will be evacuated as units. In other words, if it is decided that any given portion of an ERPA is required to evacuate, then the entire ERPA will be required to evacuate. The ERPA definitions for the EPZ surrounding the Indian Point Nuclear Power Plant Site are presented on pages G-5 through G-13. Estimates of the 1990 resident population for each of the planning areas and totals for the ERPA's are shown on Table 1.

# Indian Point Energy Center Emergency Plan

## Appendix 5

### EVACUATION PLANS

For each ERPA within the EPZ, primary evacuation routes have been identified. The ERPAs have been further subdivided into traffic zones. Each traffic zone is assigned an evacuation route for each mode of travel. Descriptions of the traffic zones and their associated evacuation routes are given in the county plan procedures. Listings and maps of reception centers for each traffic zone are also included in the county procedures.

As part of the public education program associated with the implementation of the County Radiological Emergency Response Plan (RERP), the general public will be provided with materials to enable identification of their residential locations within a given traffic zone in the appropriate ERPA, thus identifying the recommended evacuation route and reception center as well.

#### II. EVACUATION ROADWAY TRAVEL TIME ESTIMATES

Evacuation travel time estimates by ERPA and evacuation area for each of the four scenarios for the resident general population (with and without vehicles) is presented for fair and adverse weather conditions on pages G-12 through G-19. For a more detailed discussion, consult the actual Evacuation Travel Time Estimates report prepared by HMM Associates, Incorporated.

#### III. DESCRIPTION OF THE EVACUATION PLAN

The evacuation plan comprises four major phases: mobilization, egress, maintenance and re-entry. As a Response Action, the first phase of evacuation--mobilization--may be initiated for an incident classified as an Alert, a Site Area Emergency or a General Emergency. The decision to proceed with the second phase of the plan--egress--will be made as the status of the incident is assessed. The final phases of the plan--maintenance and re-entry--are applicable only after an evacuation has occurred.

# Indian Point Energy Center Emergency Plan

## Appendix 5

### EVACUATION PLANS

#### Emergency Response Planning Areas

The plume exposure Emergency Planning Zone (EPZ) for the Indian Point Nuclear Power Station (IPNPS) has been subdivided into 51 discrete Emergency Response Planning Areas (ERPAs) as shown in Figure 1. Preliminary 1990 population estimates for each ERPA are shown in Table 1. The boundaries of the various ERPAs are described below:

- ERPA 1** The Village of Buchanan.
- ERPA 2** City of Peekskill, including Blue Mountain Reservation North of Dickey Brook.
- ERPA 3** West-central part of Town of Cortlandt: The hamlet of Verplanck, being defined as the Verplanck Fire District south of the Village of Buchanan, bounded on the south by Kings Ferry Road and the Cortlandt Yacht Club.
- ERPA 4** Central to southwest part of the Town of Cortlandt: The hamlet of Montrose and the Blue Mountain Reservation; south of the City of Peekskill, the Village of Buchanan and the Verplanck Fire District, and including all of the Montrose Postal Area (10548) except the Verplanck Fire District and the FDR VA Hospital.
- ERPA 5** Southeast Town of Cortlandt (including "Mount Airy"): South of a line from the Benchmark near the intersection of Croton Avenue and Baptist Church Road to 450+ foot promontory on the west-northwest side of Salt Hill, thence to the headwaters of the Brook which rises in the eastern end of Pine Lake Park, thence to the line dividing the properties which are accessed from Cola Baugh Pond Road and Reber Road from the properties which are accessed from Furnace Dock Road, thence southwesterly along a line northwest of the properties which front upon the northwest of Woody book and of the Brinton Book Sanctuary; north of the incorporated Village of Croton-on-Hudson and of the Croton River near Croton Reservoir.
- ERPA 6** The Village of Croton-on-Hudson.
- ERPA 7** Camp Smith Military Reservation, and the adjacent portions of the Town of Cortlandt (to the W, S, and SE of Camp Smith) along the Hudson River and along Annsville Creek, south of the intersection of Doris Lee Road with U.S. Route 9 (New York-Albany Post Road), about 0.2 miles north, northeast of the juncture of Annsville Creek and Sprout Brook.
- ERPA 8** Northeastern area in the Town of Cortlandt: bounded on the west by Camp Smith and Annsville Creek (South of the intersection of Doris Lee Road and U.S. Route 9), and on the south by the City of Peekskill and Bear Mountain State Parkway (also Route 202 - Route 35 to the East).

Indian Point Energy Center Emergency Plan

Appendix 5

EVACUATION PLANS

Emergency Response Planning Areas (cont.)

- ERPA 9 East-central area in the Town of Cortlandt ("Toddsville"): South of Bear Mountain State Parkway (also U.S. Route 202 - Route 35 to the East), east of the City of Peekskill, and north of west side of Dickey Brook of Matasak Road and of the Hendrick Hudson Central School District and of the Benchmark near the intersection of Croton Avenue and Baptist Church Road.
- ERPA 10 Northeastern area of the Town of Yorktown, west of the Taconic State Parkway, and north of Route 202 - Route 35.
- ERPA 11 Northeastern area of the Town of Yorktown, east of the Taconic State Parkway and north of Route 202 - Route 35.
- ERPA 12 Southeastern part of the Town of Yorktown, west of the Taconic State Parkway northbound, and south of Route 202 - Route 35.
- ERPA 13 Southeastern part of the Town of Yorktown, east of the Taconic State Parkway northbound, and south of Route 202 - Route 35.
- ERPA 14 Northwestern part of the Town of Somers, west of the Route 118 and Route 202, and North of Route 202 - Route 35-118.
- ERPA 15 Southwestern part of the Town of Somers south of Route 35; west of (north to south) Route 35, Wood Street, and Moseman Avenue; and north of Route 100.
- ERPA 16 Southwestern portion of the Town of Philipstown, except for the area of Continental Village included in ERPA 18, bounded on the north and east by (Southeast to Northwest) U.S. Route 9 (New York-Albany Post Road), Cat Rock Road (Route 403), Lower Station Road, and a short line from Lower Station Road as it nears the river to the boat basin just south of the Village of Garrison.
- ERPA 17 Central portion of the Town of Philipstown, bounded on the south and west by (east and west) Canopus Hollow Road, Old West Point Road, Capistrano Avenue, U.S. Route 9 (New York-Albany Post Road) northward, Cat Rock Road (Route 403). Lower Station Road as it nears the river to the boat basin just south of the Village of Garrison; on the north (west to east) by the Cold Spring eastern Village line, Moffet road north-eastwardly, Lane Gate Road, U.S. Route 9 (New York- Albany Post Road), Old Albany Post Road, Indian Brook Road, and the Southwest boundary of Clarence Fahnestock Memorial State Park.

# Indian Point Energy Center Emergency Plan

## Appendix 5

### EVACUATION PLANS

#### Emergency Response Planning Areas (cont.)

- ERPA 18** Southwestern portion of Putnam County, including Continental Village in the southeastern corner of the Town of Philipstown, bounded on the west by U.S. Route 9 (New York-Albany Post Road) and on the north by Capistrano Avenue, Old West Point Road, Old Albany Post Road, and Canopus Hollow Road; and the Village of Lake Peekskill in the southwestern corner of the Town of Putnam Valley, bounded on the north by an east-west line through the unpopulated area north of the village from the town line to the north end of Howard Street, and on the east by Howard Street and Oscawana Lake Road.
- ERPA 19** The central and southern part of the Town of Putnam Valley, except for the area of the village of Lake Peekskill included in ERPA 18, bounded on the north (west to east) by the south boundary of Clarence Fahnestock Memorial State Park, Sunken Mine Road, Northshore Road, Lake Road (Route 20), Tinker Hill Road, Peekskill Hollow Road, and Bryant Pond Road; and on the east by the Taconic State Parkway.
- ERPA 20** Southeastern corner of the Town of Putnam Valley, bounded on the west by the Taconic State Parkway, and on the north by Bryant Pond Road and Lake Secor Road; and the southwestern corner of the Town of Carmel, bounded the east by Austin Road, Route 6N, Stillwater Road (including northern branch), and the Muscoot River.
- ERPA 21** Western part of the Town of New Castle, bounded on east (south to north) by Hardscrabble Road, Quaker Street (Route 120), Millwood Road (Route 133), and Seven Bridges Road (Route 5).
- ERPA 22** The incorporated Village of Ossining and the unincorporated area of the Town of Ossining.
- ERPA 23** The Village of Cold Spring; the Village of Nelsonville except for the portion in Hudson Highlands State Park; and a small part of the Town of Philipstown, south of Route 301 (Cold Spring - Carmel Road) and west of Moffet Road.
- ERPA 24** U.S. Military Academy West Point Military Reservation.
- ERPA 25** Northwestern part of the Town of Highlands north and west of the West Point Military Reservation; and the southern part of the Town of Cornwall, bounded on the east and north by Route 9W (not included in the EPZ), and on the Northwest by (Northeast to Southwest) Angola Road (County Route 9), Long Hill Road, and Woodbury Road.
- ERPA 26** Town of Highlands east and south of West Point Military Reservation; and north of the Palisades Interstate Parkway - U.S. Route 6, and on a east-west line connecting PIP - U.S. Route 6 to the West Point Military Reservation boundary, about 1 1/2 miles west of the Bear Mountain Bridge.

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Appendix 5  
EVACUATION PLANS  
Emergency Response Planning Areas (cont.)

- ERPA 27** Northeastern part of the Town of Woodbury, bounded on the east by (north to south) the West Point Military Reservation boundary, the Harriman State Park boundary, on the south by the northerly boundary of U.S. Route 6 and on the west by (south to north) the easterly boundary of the New York State Thruway in the Town of Woodbury.
- ERPA 28** Southern part of the Town of Woodbury west of Harriman State Park and south of the Village of Harriman; and northern part of the Town of Tuxedo, bordered on the east, and south, by Harriman State Park, bordered on the west by the easterly boundary of the New York State Thruway and the easterly boundary of the Village of Harriman.
- ERPA 29** Northeastern portion of the Town of Stony Point, south of Bear Mountain State Park, bounded on the south and west by (southeast to northwest) the southern boundary of Stony Point State Park, Park Road north, Routes 9W-202 (Liberty Drive), Free Hill Road and Buckberg Road (Road 78), the western edge of the Tomkins Lake Community (North of Mott Farm Road), and a short line connecting the road to the north and northwest of Tompkins Lake to the Bear Mountain State Park boundary where the road is closest to the boundary.
- ERPA 30** Town of Stony Point east of the main body of Harriman State Park and south of Bear Mountain State Park, except for the northeastern portion constituting ERPA 29; and the industrial and marshy northeastern corner of the Town of Haverstraw to the east and north of the Villages of West Haverstraw and Haverstraw.
- ERPA 31** Town of Haverstraw east of the Palisades Interstate Parkway, except for the northeastern corner included in ERPA 30, and the portion of High Tor State Park in the Town of Clarkstown.
- ERPA 32** Northeastern part of the Town of Clarkstown, excepting High Tor State Park, bounded on the south and west by (southeast to northwest) the south and west boundaries of Nyack Beach State Park, Hook Mountain State Park, and Rockland Lake State Park, Lake Road and Congers Road (Route 92), the western edge of DeForest Lake, the small stream entering DeForest Lake just west of its north end, Route 304 northeastward for about 0.1 mile, the north-northwest running road connection Route 304 with Long Clove Road, a short section of Long Clove road, Scratchup Road, and Route 101.

Indian Point Energy Center Emergency Plan

Appendix 5

EVACUATION PLANS

Emergency Response Planning Areas (cont.)

- ERPA 33** Eastern-central part of the Town of Clarkstown, bounded on the north by Congers Road and Lake Road (Route 92); on the east by the boundaries of Rockland Lake State Park and Hook Mountain State Park and Route 9W southward; on the south by (east to west) Christian Herald Road, Morris Road, Crusher Road, and the southern edge of DeForest Lake from the intersection of Crusher Road with Old Mill Road; and on the west by the western edge of DeForest Lake.
- ERPA 34** Northwestern part of the Town of Clarkstown, excepting High Tor State Park, bounded on the east by the western boundary of ERPA 32, and on the south by (east to west) Congers Road, Goebel Road northward, Route 304, Squadron Boulevard, Main Street northward, West Phillips Hill Road, Old Phillips Hill Road, Buena Vista Road northward, and Conklin Road; and the northeastern part of the Town of Ramapo, bounded on the west by the Palisades Interstate Parkway, and on the south by Conklin Road and a short section of Route 45.
- ERPA 35** Central part of the Town of Clarkstown, bounded on the south by (west to east) Clarkstown Road, a short segment of the Palisades Interstate Parkway, Church Road, Germonds Road, Parrott Road (excluding facilities on the north side), McCarthy Way, a short segment of Strawtown Road, and Hillcrest Road; on the east by the western edge of DeForest Lake; on the north by (east to west) Congers Road, Goebel Road northward, Route 304, Squadron Boulevard, Main Street northward, West Phillips Hill Road, Old Phillips Hill Road, Buena Vista Road northward, and Conklin Road; and an eastern portion of the Town of Ramapo, east of the Palisades Interstate Parkway and south of Conklin Road and a short section of Route 45 connecting Conklin Road to the Palisades Interstate Parkway.
- ERPA 36** The northeastern part of the Town of Ramapo, west of the Palisades Interstate Parkway and east of Harriman State Park, bounded on the south by (east to west) Route 45, Pomona Road, Camp Hill Road northward, Route 202, Route 306 (Monsey-Ladentown Road) northwestward, Calls Hollow Road northward, and Mountain Road; and the central part of the Town of Haverstraw east of Harriman State Park and West of the Palisades Interstate Parkway.
- ERPA 37** Eastern part of the Town of Ramapo, west of Palisades Interstate Parkway and east of Harriman State Park, bounded on the north by (east to west) Route 45, Pomona Road, Camp Hill Road northward, Route 202, Route 306 (Monsey-Ladentown Road) northeastward Calls Hollow Road northward, and Mountain Road; on the south by (east to west) Eckerson Road (Route 107, Union Road, and Viola Road (Route 106)); and on the west by Spook Rock Road (U.S. Route 6), Sky Meadow Road, and a line formed by extending the east-west running section of Sky Meadow Road west to Harriman State Park boundary.



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EVACUATION PLANS  
Emergency Response Planning Areas (cont.)

- ERPA 38 Eastern part of Bear Mountain State Park and the Jones Point and Dunderberg areas, south of Salisbury Meadow and Ring Meadow and east Routes 9W-202, and including the non-park areas east and south of Dunderberg Mountain, north of the main southern boundary of Bear Mountain State Park.
- ERPA 39 The eastern part of Harriman State Park and Bear Mountain State Park, bounded on the west and north by the Palisades Interstate Parkway northbound and U.S. Route 6 to the Bear Mountain Bridge, and south of Salisbury Meadow and Ring Meadow on the east by Routes 9W-202 and the Park boundary, where the boundary is west of Routes 9W-202.
- ERPA 40 The central and eastern parts of Harriman State Park, bounded on the east by the Palisades Interstate Parkway northbound and a line connecting PIP-U.S. Route 6 to the West Point Military Reservation boundary, about 1 1/2 miles west of the Bear Mountain Bridge; on the south by the Ramapo- Haverstraw Town line and the Rockland-Orange County line southwestward; and on the west by the New York State Thruway and the (northwest - southeast) running utility right-of-way crossing Smith Rock and Pound Mountain.
- ERPA 41 The southern part of Harriman State Park, contained in the Town of Ramapo, bounded on the west and south by the utility right-of-way running northwest - southeast across Pound Mountain to a point near where Johnsonstown Road and Spring Brook cross the Park boundary, and running west-northwest - east-southeast from that point to Kakiat County Park, about 1 mile west of Wesley Chapel.
- ERPA 42 Hudson River north of Hook Mountain and south of the north tip of Croton Point.
- ERPA 43 Hudson River north of the north tip of Croton Point and south of Stony Point.
- ERPA 44 Hudson River north of Stony Point and south of Round Island.
- ERPA 45 Hudson River north of Round Island and south of Con Hook.
- ERPA 46 Hudson River north of Con Hook and south of Little Stony Point.
- ERPA 47 The Franklin D. Roosevelt Veterans Administration hospital in Montrose.
- ERPA 48 Southwestern part of the unincorporated Town of Cortlandt: The hamlets of Crugers and Oscawana (including Amberlands Apartments) bounded on the north by Montrose and on the northeast by Washington Street, Furnace Dock Road and Mount Airy Road West to a point approximately one furlong (approximately 220 feet) west of Reber Road and on the southeast by the Village of Croton-on- Hudson, Brinton Brook Sanctuary and properties which front upon the northwest side of Woodybrook.

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**Appendix 5**  
**EVACUATION PLANS**  
**Emergency Response Planning Areas (cont.)**

- ERPA 49** Central part of the Town of Cortlandt ("Furnace Woods"- "Pleasant side"): east of the Blue Mountain Reservation, south of the east side of Dickey Brook, and of the Lakeland and Yorktown Central School Districts, north of a line from the Benchmark near the intersection of Croton Avenue and Baptist Church Road to 450+ foot promontory on the west-northwest side of Salt Hill, thence to the headwaters of the Brook which rises in the eastern end of Pine Lake Park, thence to the line dividing the properties which are accessed from Colabaugh Pond Road and Reber Road from the properties which are accessed from Furnace Dock Road; north east of Washington Street - Furnace Dock Road - Mount Airy Road West.
- ERPA 50** The extreme southeastern portion of the Town of Cortlandt, all of which lies south of Croton River/New Croton Reservoir.
- ERPA 51** The incorporated Village of Briarcliff Manor and unincorporated area of the Town of Mount Pleasant northwest of Washburn Road and south of Underhill and Chappaqua Roads.

Indian Point Energy Center Emergency Plan

Appendix 5  
EVACUATION PLANS

TABLE 1

1990 POPULATION ESTIMATES EMERGENCY RESPONSE PLANNING AREAS

<u>Emergency Response Planning Area</u>	<u>1990 Resident Population Estimate</u>
1	1,970
2	19,536
3	1,858
4	3,406
5	1,460
6	7,018
7	46
8	11,016
9	3,428
10	6,980
11	17,165
12	2,504
13	6,818
14	2,672
15	1,040
16	470
17	1,984
18	3,560
19	5,511
20	3,740
21	4,399
22	27,658
23	2,598

Indian Point Energy Center Emergency Plan

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EVACUATION PLANS

TABLE 1 (cont.)

1990 POPULATION ESTIMATES EMERGENCY RESPONSE PLANNING AREAS

<u>Emergency Response Planning Area</u>	<u>1990 Population Estimate</u>
24	8,024
25	790
26	5,639
27	1,667
28	92
29	1,070
30	11,710
31	30,314
32	4,169
33	11,679
34	7,329
35	21,827
36	2,804
37	20,602
38	76
39	60
40	80
41	29
42	0
43	0
44	0
45	0
46	0
47	753
48	3,024

Indian Point Energy Center Emergency Plan

Appendix 5

EVACUATION PLANS

TABLE 1 (cont.)

1990 POPULATION ESTIMATES EMERGENCY RESPONSE PLANNING AREAS

<u>Emergency Response Planning Area</u>	<u>1990 Population Estimate</u>
49	2,906
50	472
51	7,459
<u>TOTAL</u>	279,412
TOTALS by County:	
Orange County	16,212
Putnam County	17,863
Rockland County	111,749
Westchester County	133,588

Sources for Table 1 are the County Radiological Emergency Response Plans.

Indian Point Units 1 & 2 Emergency Plan

Appendix 5

EVACUATION PLANS

TABLE 2								
Evacuation Time Summary by ERPA -- All Conditions								
Evacuation Time (hours:minutes)								
ERPA	Winter Weekday School in Session Early Dismissal				Winter Weekday School in Session Direct Evacuation			
	Fair Weather		Adverse Weather		Fair Weather		Adverse Weather	
	90%	100%	90%	100%	90%	100%	90%	100%
1	2:50	3:20	3:15	3:50	2:50	3:20	3:15	3:50
2	3:10	4:10	4:00	5:40	3:15	4:40	3:55	6:50
3	2:45	2:50	2:50	3:00	2:50	3:00	3:00	3:10
4	3:10	4:10	3:50	5:40	3:15	4:30	4:05	6:00
5	3:50	4:10	4:35	5:30	3:55	4:10	4:45	6:00
6	4:25	5:00	6:00	7:10	4:30	5:20	6:15	7:30
7	2:50	3:40	3:15	4:00	3:00	3:40	3:15	4:00
8	3:50	5:10	5:35	6:50	4:30	5:20	6:10	7:10
9	3:30	4:00	4:15	5:00	3:35	4:00	4:25	5:10
10	4:30	5:20	6:00	7:20	4:40	5:30	6:15	7:30
11	3:25	5:20	4:35	7:20	3:30	5:30	4:40	7:40
12	3:30	5:10	4:20	7:20	3:35	5:20	4:30	7:40
13	3:40	5:20	4:35	7:20	3:40	5:30	4:45	7:40
14	3:55	5:20	5:10	7:20	4:00	5:30	5:20	7:40
15	2:45	4:10	3:10	5:10	2:45	4:20	3:05	5:20
16	3:00	3:40	3:15	4:10	3:00	3:40	3:20	4:10
17	3:00	3:50	3:15	4:20	3:00	3:50	3:15	4:20
18	3:10	4:30	3:55	6:30	3:25	5:20	4:25	7:20
19	4:05	5:20	5:40	7:20	4:25	5:30	6:00	7:40
20	3:35	5:20	6:25	7:20	3:40	5:30	4:55	7:40
21	4:10	5:20	5:25	7:20	4:10	5:30	5:30	7:40
22	4:25	5:20	5:55	7:20	4:30	5:30	6:10	7:40
23	2:50	3:50	3:00	4:20	2:45	3:50	2:55	4:20
24	2:25	2:50	4:15	5:10	2:35	3:10	4:35	5:30
25	2:00	2:40	3:25	5:10	2:00	2:40	3:40	5:30
26	2:30	2:50	4:20	4:50	2:40	3:00	4:35	5:10
27	2:40	3:00	3:10	5:20	2:40	3:00	3:25	5:40
28	2:35	3:00	4:45	5:20	2:35	3:00	5:00	5:40
29	2:05	2:30	2:05	2:30	2:05	2:30	2:05	2:30
30	3:05	3:30	4:10	4:50	3:20	3:50	4:30	5:10

Indian Point Units 1 & 2 Emergency Plan

Appendix 5

EVACUATION PLANS

TABLE 2

Evacuation Time Summary by ERPA -- All Conditions

Evacuation Time (hours:minutes)

ERPA	Winter Weekday School in Session Early Dismissal				Winter Weekday School in Session Direct Evacuation			
	Fair Weather "		Adverse Weather		Fair Weather		Adverse Weather	
	90%	100%	90%	100%	90%	100%	90%	100%
31	3:00	3:40	4:00	4:50	3:15	3:50	4:20	5:20
32	2:50	3:10	3:35	4:35	3:10	3:40	3:50	4:40
33	3:25	3:50	4:15	4:50	3:40	4:00	4:35	5:10
34	2:45	3:20	3:30	4:00	2:55	3:30	3:45	4:20
35	3:10	3:50	4:10	5:00	3:25	4:00	4:30	5:30
36	3:00	3:40	4:00	5:00	3:15	4:00	4:20	5:20
37	3:05	3:50	4:05	5:00	3:20	4:00	4:25	5:30
38	2:10	2:30	2:10	2:30	2:10	2:30	2:10	2:30
39	1:00	1:30	1:00	1:30	1:00	2:00	1:05	2:00
40	3:15	3:50	4:30	5:20	3:25	4:10	4:45	5:40
41	3:20	3:50	4:20	5:10	3:30	4:10	4:40	5:40
42								
43								
44								
45								
46								
47	3:00	3:10	3:45	4:00	3:05	3:20	3:50	4:10
48	4:20	5:00	5:50	7:10	4:30	5:10	6:05	7:30
49	3:45	4:00	4:20	4:40	3:45	4:00	4:25	5:00
50	3:05	3:10	3:20	3:30	3:05	3:10	3:35	3:40
51	4:25	5:20	5:55	7:20	4:30	5:30	6:10	7:40
Full EP:	4:25	5:20	6:25	7:20	4:40	5:30	6:15	7:40

Indian Point Units 1 & 2 Emergency Plan

Appendix 5

EVACUATION PLANS

TABLE 2

Evacuation Time Summary by ERPA -- All Conditions

Evacuation Time (hours:minutes)

ERPA	Winter Night				Summer Weekend - Holiday			
	Fair Weather		Adverse Weather		Fair Weather		Adverse Weather	
	90%	100%	90%	100%	90%	100%	90%	100%
1	2:55	3:20	3:05	3:30	2:55	3:20	3:05	3:30
2	3:05	3:30	3:20	4:30	3:15	4:50	3:35	5:20
3	2:45	2:50	2:55	3:00	2:50	3:00	2:50	3:00
4	3:05	3:30	3:30	4:30	3:25	4:50	4:05	5:20
5	3:45	4:00	4:25	4:50	3:55	4:30	4:25	5:50
6	4:00	4:50	5:25	6:40	4:55	5:30	5:50	6:40
7	3:00	3:30	3:15	4:00	2:50	3:20	2:55	3:40
8	3:15	3:40	4:25	6:50	3:15	5:10	3:55	6:10
9	3:30	3:50	4:05	4:40	3:35	4:10	4:00	4:30
10	4:25	5:20	6:00	7:10	4:30	5:30	5:25	6:30
11	3:25	5:20	4:25	7:10	3:25	5:30	4:05	6:40
12	3:25	5:00	4:10	6:50	3:25	5:40	3:55	6:50
13	3:35	5:00	4:25	6:50	3:45	5:40	4:20	6:50
14	3:55	5:20	5:05	7:10	3:55	5:30	4:45	6:40
15	2:45	4:10	3:05	5:00	2:45	4:20	3:00	4:50
16	3:05	3:40	3:20	4:10	2:50	3:30	3:05	3:40
17	3:05	3:40	3:15	4:10	2:55	3:40	3:10	3:50
18	2:55	3:40	3:30	5:10	3:00	3:40	3:30	4:40
19	3:45	5:20	5:00	7:10	3:45	5:30	4:30	6:40
20	3:30	5:20	4:35	7:10	3:35	5:30	4:15	6:40
21	3:55	5:00	5:00	7:00	4:20	5:40	5:15	6:50
22	2:45	5:00	5:25	7:00	4:30	5:40	5:30	6:50
23	2:30	3:50	3:00	4:20	2:50	3:40	3:00	3:50
24	2:00	2:50	4:15	5:10	2:30	2:50	2:50	3:30
25	2:00	2:40	3:25	5:10	2:00	2:40	2:00	2:50
26	2:30	2:50	4:15	4:50	2:30	2:50	3:00	3:20
27	2:35	3:00	3:15	5:20	2:40	3:30	2:55	4:00
28	2:40	3:00	4:45	5:20	3:05	3:30	3:50	4:00
29	2:05	2:30	2:05	2:30	1:55	2:30	1:55	2:30
30	2:55	3:30	3:55	4:30	3:35	4:00	4:10	4:40
31	2:45	3:20	3:45	4:30	3:30	4:10	4:05	4:50



Indian Point Units 1 & 2 Emergency Plan

Appendix 5

EVACUATION PLANS

TABLE 2

Evacuation Time Summary by ERPA -- All Conditions

Evacuation Time (hours:minutes)

ERPA	Winter Night				Summer Weekend - Holiday			
	Fair Weather		Adverse Weather		Fair Weather		Adverse Weather	
	90%	100%	90%	100%	90%	100%	90%	100%
32	2:45	3:10	3:20	4:10	3:10	3:50	3:30	4:20
33	3:25	3:50	4:05	4:30	3:40	4:00	4:15	4:50
34	2:45	3:20	3:20	3:50	2:50	3:30	3:20	4:00
35	3:05	3:40	4:00	4:50	3:20	4:10	3:55	4:30
36	2:55	3:20	3:45	4:40	3:45	5:00	4:15	5:40
37	3:00	3:40	3:55	4:50	3:30	4:20	4:05	5:00
38	2:15	2:30	2:15	2:30	2:00	2:30	1:55	2:30
39	1:00	1:30	1:00	1:30	1:35	1:50	1:50	2:10
40	3:10	3:40	4:25	5:20	4:50	5:40	5:30	6:40
41	3:15	3:40	4:05	5:00	5:10	5:40	6:05	6:40
42								
43								
44								
45								
46								
47	2:55	3:10	3:35	3:50	3:10	3:30	3:35	3:50
48	3:55	4:50	5:25	6:30	4:45	5:30	5:25	6:40
49	3:40	3:50	4:20	4:40	3:45	4:10	4:10	4:30
50	3:05	3:10	3:20	3:20	3:05	3:10	3:10	3:20
51	4:05	5:00	5:25	7:00	4:30	5:40	5:25	6:50
Full EP:	4:25	5:20	6:00	7:10	5:10	5:40	6:05	6:50

Indian Point Units 1 & 2 Emergency Plan

Appendix 5

EVACUATION PLANS

TABLE 3

Evacuation Time Summary by Evacuation Area Winter Weekday - School In Session Early Dismissal

Downwind Direction	Evacuation Area			Evacuation Time (Hours:Minutes)			
	Sectors	Ring	Downwind	Fair Weather		Adverse Weather	
				90%	100%	90%	100%
A		2-mile		3:00	4:10	3:35	5:40
B		ERPA 1, 3, 4		2:35	3:10	2:55	3:20
C	NNE	1, 2, 3	2-mile + 5-miles	3:40	5:10	5:00	6:50
D	NNE	1, 2, 3	5-mile + 10-miles	3:35	5:20	4:50	7:20
E	NE	2, 3, 4	2-mile + 5-miles	3:40	5:10	5:00	6:50
F	NE	2, 3, 4	5-mile + 10-miles	3:40	5:20	4:50	7:20
G	ENE	3, 4, 5	2-mile + 5-miles	3:30	5:10	4:35	6:50
H	ENE	3, 4, 5	5-mile + 10-miles	3:40	5:20	4:55	7:20
I	E	4, 5, 6	2-mile + 5-miles	4:05	5:10	5:35	6:50
J	E	4, 5, 6	5-mile + 10-miles	3:25	5:20	4:40	7:20
K	ESE	5, 6, 7	2-mile + 5-miles	3:55	5:00	5:20	7:10
L	ESE	5, 6, 7	5-mile + 10-miles	4:05	5:20	5:30	7:20
M	SE	6, 7, 8	2-mile + 5-miles	3:55	5:00	5:20	7:10
N	SE	6, 7, 8	5-mile + 10-miles	3:50	5:20	5:00	7:20
O	SSE	7, 8, 9	2-mile + 5-miles	3:00	5:00	3:45	7:10
P	SSE	7, 8, 9	5-mile + 10-miles	3:40	5:20	4:50	7:20
Q	S	8, 9, 10	2-mile + 5-miles	3:25	5:00	4:40	7:10
R	S	8, 9, 10	5-mile + 10-miles	3:40	5:20	4:50	7:20
S	SSW	9, 10, 11	2-mile + 5-miles	3:00	4:10	3:45	5:40
T	SSW	9, 10, 11	5-mile + 10-miles	3:30	5:10	4:55	7:10
U	SW	10, 11, 12	2-mile + 5-miles	3:00	4:10	3:55	5:40
V	SW	10, 11, 12	5-mile + 10-miles	3:25	5:10	4:30	7:10
W	WSW	11, 12, 13	2-mile + 5-miles	3:00	4:10	3:55	5:40
X	WSW	11, 12, 13	5-mile + 10-miles	3:30	5:10	4:40	5:40
Y	W	12, 13, 14	2-mile + 5-miles	3:05	4:10	3:55	5:40
Z	W	12, 13, 14	5-mile + 10-miles	3:40	5:10	4:45	7:10
AA	WNW	13, 14, 15	2-mile + 5-miles	3:00	4:10	3:40	5:40
BB	WNW	13, 14, 15	5-mile + 10-miles	3:40	5:10	4:45	7:10
CC	NW	14, 15, 16	2-mile + 5-miles	3:05	4:10	4:00	5:40
DD	NW	14, 15, 16	5-mile + 10-miles	3:40	5:10	4:45	7:10
EE	NNW	15, 16, 1	2-mile + 5-miles	3:15	5:10	4:35	6:50
FF	NNW	15, 16, 1	5-mile + 10-miles	3:35	5:10	4:40	7:10
GG	N	16, 1, 2	2-mile + 5-miles	3:15	5:10	4:20	6:50
HH	N	16, 1, 2	5-mile + 10-miles	3:40	5:20	4:55	7:20
II		Up River	2-mile + 10-miles	3:25	5:20	4:35	7:20
JJ		Down River	2-mile + 10-miles	3:40	5:20	4:50	7:20
KK			5-mile	3:35	5:10	4:45	7:10
LL			Full EPZ	4:05	5:20	5:35	7:20

# Indian Point Units 1 & 2 Emergency Plan

## Appendix 5

### EVACUATION PLANS

**TABLE 3**

Evacuation Time Summary by Evacuation Area Winter Weekday - School In Session Direct Evacuation

	Evacuation Area				Evacuation Time (Hours:Minutes)			
	Downwind Direction	Sectors	Ring	Downwind	Fair Weather		Adverse Weather	
					90%	100%	90%	100%
A			2-mile		3:10	4:40	3:50	6:50
B			ERPA 1, 3, 4		2:35	3:10	3:05	3:20
C	NNE	1, 2, 3	2-mile +	5-miles	4:00	5:20	5:30	7:20
D	NNE	1, 2, 3	5-mile +	10-miles	3:45	5:30	5:05	7:40
E	NE	2, 3, 4	2-mile +	5-miles	4:00	5:20	5:25	7:20
F	NE	2, 3, 4	5-mile +	10-miles	3:45	5:30	5:05	7:40
G	ENE	3, 4, 5	2-mile +	5-miles	3:45	5:20	4:55	7:10
H	ENE	3, 4, 5	5-mile +	10-miles	3:50	5:30	5:10	7:40
I	E	4, 5, 6	2-mile +	5-miles	4:25	5:20	6:00	7:30
J	E	4, 5, 6	5-mile +	10-miles	3:40	5:30	5:00	7:40
K	ESE	5, 6, 7	2-mile +	5-miles	4:10	5:20	5:40	7:30
L	ESE	5, 6, 7	5-mile +	10-miles	4:10	5:30	5:40	7:40
M	SE	6, 7, 8	2-mile +	5-miles	4:10	5:20	5:40	7:30
N	SE	6, 7, 8	5-mile +	10-miles	3:55	5:30	5:15	7:40
O	SSE	7, 8, 9	2-mile +	5-miles	3:10	5:20	4:10	7:30
P	SSE	7, 8, 9	5-mile +	10-miles	3:50	5:30	5:00	7:40
Q	S	8, 9, 10	2-mile +	5-miles	3:40	5:20	5:00	7:30
R	S	8, 9, 10	5-mile +	10-miles	3:50	5:30	5:00	7:40
S	SSW	9, 10, 11	2-mile +	5-miles	3:10	4:40	4:10	6:20
T	SSW	9, 10, 11	5-mile +	10-miles	3:40	5:20	4:50	7:30
U	SW	10, 11, 12	2-mile +	5-miles	3:10	4:40	4:15	6:20
V	SW	10, 11, 12	5-mile +	10-miles	3:35	5:20	4:50	7:30
W	WSW	11, 12, 13	2-mile +	5-miles	3:10	4:40	4:15	6:20
X	WSW	11, 12, 13	5-mile +	10-miles	3:40	5:20	4:55	7:30
Y	W	12, 13, 14	2-mile +	5-miles	3:15	4:40	4:20	6:20
Z	W	12, 13, 14	5-mile +	10-miles	3:45	5:20	5:00	7:30
AA	WNW	13, 14, 15	2-mile +	5-miles	3:10	4:40	4:00	6:20
BB	WNW	13, 14, 15	5-mile +	10-miles	3:50	5:20	5:00	7:30
CC	NW	14, 15, 16	2-mile +	5-miles	3:10	4:40	4:25	6:20
DD	NW	14, 15, 16	5-mile +	10-miles	3:50	5:20	5:00	7:30
EE	NNW	15, 16, 1	2-mile +	5-miles	3:30	5:20	4:55	7:10
FF	NNW	15, 16, 1	5-mile +	10-miles	3:40	5:20	4:55	7:30
GG	N	16, 1, 2	2-mile +	5-miles	3:25	5:20	4:40	7:20
HH	N	16, 1, 2	5-mile +	10-miles	3:50	5:30	5:10	7:40
II		Up River	2-mile +	10-miles	3:40	5:30	4:50	7:40
JJ		Down River	2-mile +	10-miles	3:50	5:30	5:05	7:40
KK			5-mile		3:40	5:20	5:00	7:30
LL			Full EPZ		4:25	5:30	6:00	7:40

Indian Point Units 1 & 2 Emergency Plan

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EVACUATION PLANS

TABLE 3

Evacuation Time Summary by Evacuation Area Winter Night

A	Evacuation Area			Evacuation Time (Hours:Minutes)				
	Downwind Direction	Sectors	Ring	Downwind	Fair Weather		Adverse Weather	
					90%	100%	90%	100%
			2-mile		3:00	3:30	3:20	4:30
B			ERPA 1, 3, 4		2:45	3:10	2:55	3:20
C	'NNE	1, 2, 3	2-mile + 5-miles		3:20	3:50	4:15	6:50
D	'NNE	1, 2, 3	5-mile + 10-miles		3:20	5:20	4:30	7:10
E	NE	2, 3, 4	2-mile + 5-miles		3:20	3:50	4:15	6:50
F	NE	2, 3, 4	5-mile + 10-miles		3:25	5:20	4:30	7:10
G	ENE	3, 4, 5	2-mile + 5-miles		3:20	5:10	4:05	6:50
H	ENE	3, 4, 5	5-mile + 10-miles		3:30	5:20	4:35	7:10
I	E	4, 5, 6	2-mile + 5-miles		3:40	5:10	5:00	6:30
J	E	4, 5, 6	5-mile + 10-miles		3:10	5:20	4:20	7:10
K	ESE	5, 6, 7	2-mile + 5-miles		3:40	4:50	4:45	6:40
L	ESE	5, 6, 7	5-mile + 10-miles		3:45	5:20	3:45	7:10
M	SE	6, 7, 8	2-mile + 5-miles		3:40	4:50	4:45	6:40
N	SE	6, 7, 8	5-mile + 10-miles		3:30	5:10	4:40	7:00
O	SSE	7, 8, 9	2-mile + 5-miles		2:50	4:50	3:30	6:40
P	SSE	7, 8, 9	5-mile + 10-miles		3:30	5:10	4:30	7:00
Q	S	8, 9, 10	2-mile + 5-miles		3:10	4:50	4:10	6:40
R	S	8, 9, 10	5-mile + 10-miles		3:30	5:10	4:30	7:00
S	SSW	9, 10, 11	2-mile + 5-miles		2:55	3:30	3:30	4:30
T	SSW	9, 10, 11	5-mile + 10-miles		3:20	5:10	4:20	6:50
U	SW	10, 11, 12	2-mile + 5-miles		2:55	3:40	3:40	5:20
V	SW	10, 11, 12	5-mile + 10-miles		3:15	5:10	4:15	6:50
W	WSW	11, 12, 13	2-mile + 5-miles		2:55	3:40	3:40	5:20
X	WSW	11, 12, 13	5-mile + 10-miles		3:20	5:10	4:20	6:50
Y	W	12, 13, 14	2-mile + 5-miles		3:00	3:40	3:40	5:20
Z	W	12, 13, 14	5-mile + 10-miles		3:20	5:10	4:25	6:50
AA	WNW	13, 14, 15	2-mile + 5-miles		3:00	3:40	3:30	5:20
BB	WNW	13, 14, 15	5-mile + 10-miles		3:20	5:10	4:20	6:50
CC	NW	14, 15, 16	2-mile + 5-miles		3:00	3:40	3:45	5:20
DD	NW	14, 15, 16	5-mile + 10-miles		3:20	5:10	4:20	6:50
EE	NNW	15, 16, 1	2-mile + 5-miles		3:05	5:10	4:10	5:20
FF	NNW	15, 16, 1	5-mile + 10-miles		3:20	5:10	4:20	6:50
GG	N	16, 1, 2	2-mile + 5-miles		3:05	5:10	4:00	6:50
HH	N	16, 1, 2	5-mile + 10-miles		3:25	5:20	4:30	7:10
II		Up River	2-mile + 10-miles		3:20	5:20	4:20	7:10
JJ		Down River	2-mile + 10-miles		3:30	5:00	4:30	7:00
KK			5-mile		3:20	5:10	4:25	6:50
LL			Full EPZ		3:45	5:20	5:00	7:10

# Indian Point Units 1 & 2 Emergency Plan

## Appendix 5

### EVACUATION PLANS

#### TABLE 3

Evacuation Time Summary by Evacuation Area Summer Weekend - Holiday

Downwind Direction	Evacuation Area			Evacuation Time (Hours:Minutes)			
	Sectors	Ring	Downwind	Fair Weather		Adverse Weather	
				90%	100%	90%	100%
A		2-mile		3:10	4:50	3:30	5:20
B		ERPA 1, 3, 4		2:25	3:10	2:55	3:10
C	NNE	1, 2, 3	2-mile + 5-miles	3:25	5:10	3:55	6:10
D	NNE	1, 2, 3	5-mile + 10-miles	4:10	5:40	4:50	6:40
E	NE	2, 3, 4	2-mile + 5-miles	3:20	5:10	3:55	6:10
F	NE	2, 3, 4	5-mile + 10-miles	4:05	5:40	4:50	6:50
G	ENE	3, 4, 5	2-mile + 5-miles	3:10	5:10	3:40	6:10
H	ENE	3, 4, 5	5-mile + 10-miles	4:10	5:40	4:55	6:50
I	E	4, 5, 6	2-mile + 5-miles	3:55	5:30	4:30	6:40
J	E	4, 5, 6	5-mile + 10-miles	4:20	5:40	5:00	6:50
K	ESE	5, 6, 7	2-mile + 5-miles	4:10	5:30	5:00	6:40
L	ESE	5, 6, 7	5-mile + 10-miles	4:15	5:40	5:00	6:50
M	SE	6, 7, 8	2-mile + 5-miles	5:00	5:30	5:00	6:40
N	SE	6, 7, 8	5-mile + 10-miles	4:10	5:40	4:50	6:50
O	SSE	7, 8, 9	2-mile + 5-miles	4:55	5:30	4:55	6:40
P	SSE	7, 8, 9	5-mile + 10-miles	4:00	5:40	4:40	6:50
Q	S	8, 9, 10	2-mile + 5-miles	3:50	5:30	4:30	6:40
R	S	8, 9, 10	5-mile + 10-miles	4:00	5:40	4:40	6:50
S	SSW	9, 10, 11	2-mile + 5-miles	3:20	4:50	3:50	5:20
T	SSW	9, 10, 11	5-mile + 10-miles	4:00	5:40	4:40	6:40
U	SW	10, 11, 12	2-mile + 5-miles	4:45	5:40	4:50	6:40
V	SW	10, 11, 12	5-mile + 10-miles	3:55	5:40	4:35	6:40
W	WSW	11, 12, 13	2-mile + 5-miles	4:45	5:40	4:50	6:40
X	WSW	11, 12, 13	5-mile + 10-miles	4:05	5:40	4:50	6:40
Y	W	12, 13, 14	2-mile + 5-miles	4:55	5:40	5:00	6:40
Z	W	12, 13, 14	5-mile + 10-miles	4:20	5:40	5:05	6:40
AA	WNW	13, 14, 15	2-mile + 5-miles	4:55	5:40	5:00	6:40
BB	WNW	13, 14, 15	5-mile + 10-miles	4:25	5:40	5:10	6:40
CC	NW	14, 15, 16	2-mile + 5-miles	4:05	5:40	4:40	6:40
DD	NW	14, 15, 16	5-mile + 10-miles	4:25	5:40	5:10	6:40
EE	NNW	15, 16, 1	2-mile + 5-miles	4:10	5:40	4:45	6:40
FF	NNW	15, 16, 1	5-mile + 10-miles	4:15	5:40	5:00	6:40
GG	N	16, 1, 2	2-mile + 5-miles	3:10	4:50	3:40	6:10
HH	N	16, 1, 2	5-mile + 10-miles	4:15	5:40	5:05	6:40
II		Up River	2-mile + 10-miles	3:25	5:30	4:00	6:40
JJ		Down River	2-mile + 10-miles	3:55	5:40	4:40	6:50
KK		5-mile		4:20	5:40	5:05	6:40
LL		Full EPZ		5:00	5:40	5:10	6:50

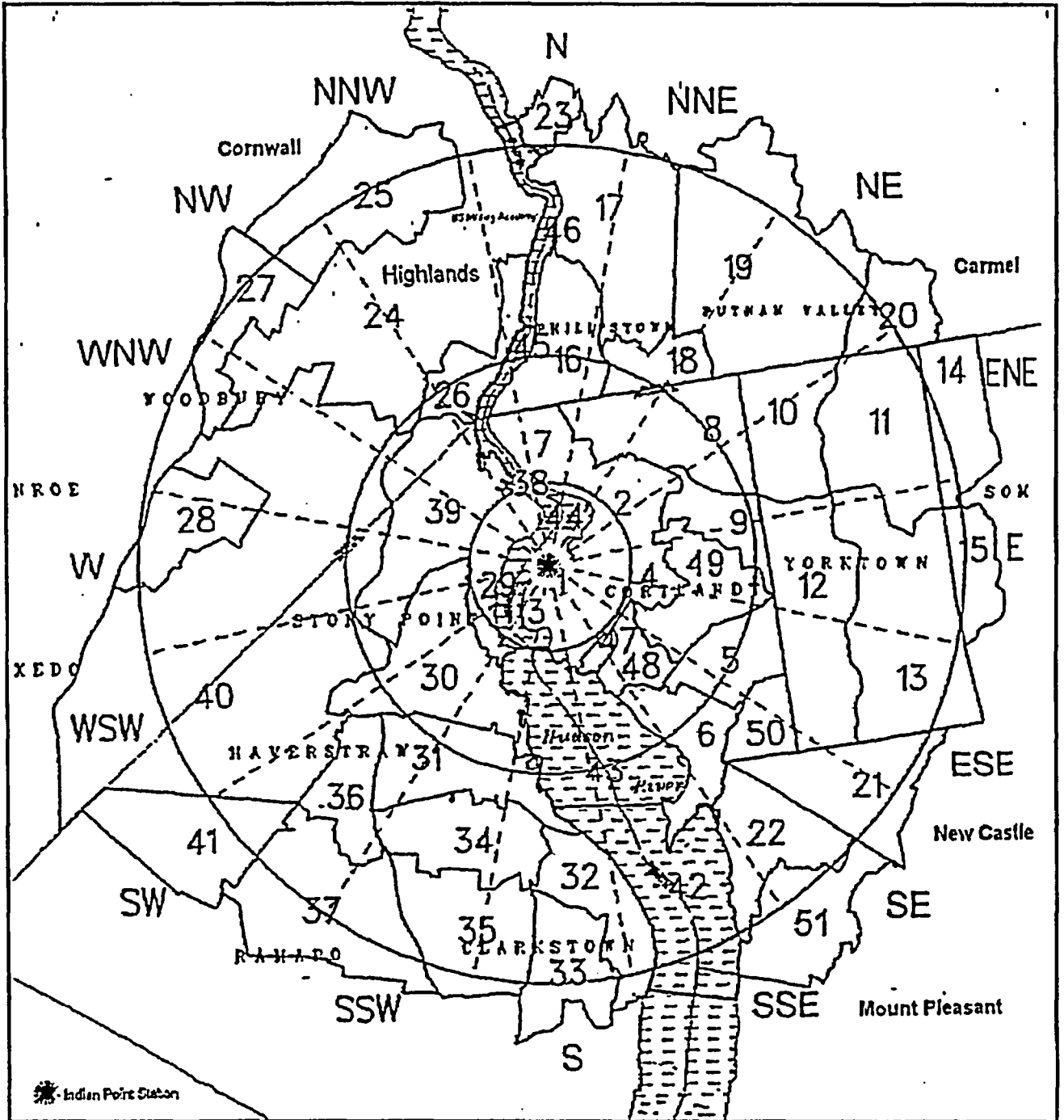
Indian Point Units 1 & 2 Emergency Plan

Appendix 5

EVACUATION PLANS

FIGURE 1

EMERGENCY RESPONSE PLANNING AREAS



## Indian Point Units 1 & 2 Emergency Plan

### Appendix 5

#### EVACUATION PLANS

#### Evacuation Travel Time Estimate Notes

1. The evacuation cases represent a range of conditions. In using the Evacuation Travel Time Tables, choose the case that most closely matches the actual condition.
2. Evacuation Travel Times are from the time of decision and include: notification time (15 minutes), preparation time (15 minutes) and a range of mobilization (0-120 minutes).
3. Evacuation Travel Times are for the first wave only. See multiple wave evacuation times by ERPA for only those special facilities and/or transit-dependent populations requiring multiple wave transportation resources. Shading indicates these. If resources are available to include them in the first wave, use the first wave evacuation travel times.
4. Adverse weather reduces roadway capacity by 20% for the summer and by 30% in the winter. These times can also be used for a reduced state of preparedness.
5. For the development of evacuation times, traffic control was only assumed on Bleakley Avenue at New York and Albany Post Roads in Buchanan. In all other cases, normal traffic control devices and lane utilization is assumed.
6. Evacuation Travel Times represent the time required to evacuate the designated evacuation areas except of the individual ERPA times where it is the time to clear the individual ERPA including vehicles traveling through the ERPA.
7. The Winter Weekday-School in Session Early Dismissal case can be used for the previous case of School not in Session.
8. Since the evacuation times assume a simultaneous evacuation of the entire EP: evacuation areas can be combined. Choose the evacuation areas that contain all of the ERPAs to be included in the evacuation and use the highest time of the different cases. This also can be applied between evacuation areas and individual ERPA times.
9. The Winter Weekday-School in Session Early Dismissal evacuation travel times assume that school children are at home prior to an evacuation (except for Peekskill City School District and colleges which do not follow the early dismissal plan).
10. West Point U.S. Military Academy football games/graduation increase the evacuation times by 1 hour and 25 minutes.