

**NEW YORK STATE
COMPREHENSIVE EMERGENCY MANAGEMENT PLAN**

**RADIOLOGICAL HAZARDS ANNEX
FOR FIXED NUCLEAR FACILITIES**



**Disaster Preparedness
Commission**

**PREPARED BY THE NEW YORK STATE
DISASTER PREPAREDNESS COMMISSION**

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Preface

New York State has continuously addressed the safety of its citizens regarding ionizing radiation. The New York State Department of Health (DOH) is the State agency having primary responsibility in this area. The status of primary responsibility was designated by the former State Atomic Energy Council in 1971 and later formally affirmed by the Governor of New York in his letter of March 18, 1975, to the United States Nuclear Regulatory Commission.

The New York State Public Health Law (Section 206) gives the Commissioner of Health broad authority for protecting the health and life of the people of New York State. Section 201 of that law further assigns the Commissioner of Health the responsibility for the protection of the public health regarding the use of ionizing radiation.

To carry out these actions the State developed and implemented an emergency plan for radiation accidents in 1971. This plan provided for a coordinated effort among Federal, State, and local agencies, to prevent or minimize hazards to life and health in the event of a radiological incident. The plan assigned the State Health Commissioner the responsibility for recommending protective actions. It also recognized that the primary responsibility for implementing actions to mitigate the effects of a radiological incident rests with the local political subdivisions affected by the incident.

Key events have occurred since that State emergency plan for radiation incidents was written, manifesting a need for extensive revision to that plan. Article 2-B of the New York State Executive Law (State and Local Natural and Manmade Disaster Preparedness) was enacted in 1979 which, among its provisions, created a State Disaster Preparedness Commission (DPC). This Commission is charged with a wide variety of powers and responsibilities designed to provide a comprehensive emergency system to prevent or react to emergencies or disasters within the State.

Article 2-B was amended in 1981 to deal with certain aspects of Radiological Emergency Preparedness specifically. The law provides that counties are the first line of defense in handling emergencies subject to an assumption of responsibility by the State pursuant to a State Declaration of Disaster Emergency (see Executive Law, Section 28, McKinney's Consolidated Laws of New York, Volume 18).

In 2012, the Nuclear Regulatory Commission and the Federal Emergency Management Agency implemented a final radiological emergency preparedness rulemaking which included the consolidation of various planning requirements and guidance documents. Specifically, the FEMA Radiological Emergency Preparedness (REP) Program Manual was issued in April 2012, which superseded and consolidated a number of FEMA REP guidance documents that detailed requirements for offsite response organizations (OROs) to implement the planning standards and criteria contained in NUREG-0654-FEMA-REP- I: "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Fixed Nuclear Facilities". The current REP Program Manual is dated January 2023.

Section I: General Considerations and Planning Guidelines

A. Introduction

New York State is home to three Fixed Nuclear Facilities, impacting three counties. These three facilities are comprised of boiling water reactors (BWR) and a pressure water reactor (PWR). New York State is within ten miles of the Millstone nuclear power facility in Connecticut, which impacts one NYS county.

The State Office of Emergency Management (State OEM) will serve as the operational arm of the Disaster Preparedness Commission (DPC) and is responsible for implementing provisions of Article 2B and any rules and policies adopted by the DPC. The director of State OEM may exercise the authority given to the DPC Under Section 29 of Article 2B, to coordinate and direct state agencies and assets in response to a state disaster emergency.

B. Purpose and Relation to the NYS Comprehensive Emergency Plan (CEMP)

The New York State Radiological Hazards Annex for Fixed Nuclear Facilities falls under Volume 2 of the New York State CEMP.

The CEMP has been structured into three distinct, but interconnected volumes. These are:
Volume 1: All-Hazard Mitigation Plan
Volume 2: Response and Short-Term Recovery
Volume 3: Long-Term Recovery Plan

The purpose of the CEMP is to identify the State's overarching policies, authorities and response organizational structure that will be implemented in an emergency or disaster situation that warrants a State response. In addition, the CEMP identifies the lines of coordination and the centralized coordination of resources that will be utilized in directing the State's resources and capabilities in responding to and recovering from a disaster. Further, the CEMP serves as the foundational framework for the State's response levels and serves as the operational basis of which other functional and hazard-specific annexes will build upon.

The purpose of the Radiological Hazards Annex for Fixed Nuclear Facilities is to minimize the risk to the health of the inhabitants of the State of New York in the event of a radiological incident. This will be accomplished by identifying measures to prevent and mitigate such an incident by developing mechanisms to coordinate Federal, State, local and private sectors resources, prior, during and after such an incident; and by providing for recovery following a radiological incident. A radiological incident is an event at a nuclear facility that may result in the loss of control of a radiation source, leading to a hazard or potential hazard to health or property.

This Hazard Specific Annex also ensures that the strategic and broad-based nature of the CEMP is more defined to allow the State to adequately prepare for, respond to and recover from a major radiological incident. This will include utilizing individual agency activities, as appropriate.

Further, this Annex identifies the key mechanisms in coordinating with the local response and identifies the lines of coordination to interoperate with the Federal response via the National Response Framework (NRF) and the Federal Nuclear-Radiological Incident Annex.

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C. Scope

This Annex applies to any radiological incident at a fixed nuclear facility within the borders of New York State, contiguous states or in the Province of Ontario, Canada, that warrants a response beyond standard agency statutory obligations to a collective State DPC response.

This Annex applies to all State agencies and authorities that may be directed to respond to such an event and builds upon the process and structure of the CEMP by addressing unique policies, situations, operating concepts, and responsibilities. Response operations to this type of event will encompass the efforts identified in this annex and utilize existing capabilities of other annexes to the CEMP. Further, this Annex acknowledges that local and State response capabilities may be exceeded, necessitating the use of Federal agencies and resources.

D. Situation

Fixed Nuclear Power Facilities: Within New York State, there are three commercial generating nuclear facility sites and one energy center currently decommissioning, that are briefly described below. Also within New York State are non-commercial sites, briefly described below. The contiguous states of Connecticut and the Province of Ontario have operating sites that could impact portions of New York State and therefore, are referenced in this plan.

Robert Emmett (R.E.) Ginna Nuclear Power Site

The RE Ginna site is located on the south shore of Lake Ontario in Wayne County; 20 miles east of northwest of Rochester, on a 426-acre area. A portion of Monroe County is included in the 10-mile EPZ. The reactor is a PWR, which generates 576 megawatts of electricity. Constellation Energy operates the facility and is owned by Constellation Corporation.

Nine Mile Point and James A. FitzPatrick Nuclear Power Site

The Nine Mile Point and James A. FitzPatrick sites are located in Oswego County, on the south shore of Lake Ontario, in the Town of Scriba; seven miles northeast of the City of Oswego, and 36 miles northwest of Syracuse. Together, they can generate 1,907 net megawatts (MW) on a 1,500-acre area owned by Constellation Corporation. Nine Mile Point has two BWR units and James A. FitzPatrick has one BWR Unit.

Indian Point Energy Center Site

The Indian Point Site is decommissioning and shut down; it is no longer a generating site. Indian Point is located on the east bank of the Hudson River in the Village of Buchanan in Westchester County and could potentially also impact the County of Rockland. Indian Point entered the Independent Spent Fuel Storage Installation (ISFSI) only phase of the decommissioning process in December of 2023. Response to an incident in the ISFSI only Phase will fall under the All-Hazards Planning concepts.

Non-Commercial Reactors in New York State

Naval Nuclear Laboratory

Naval Nuclear Laboratory (NNL) operates two separate sites: the Knolls site in the Town of Niskayuna, 2 miles east of the City of Schenectady, and the Kenneth A. Kesselring Site Operation in West Milton, 17 miles north of Schenectady and 9 miles southwest of Saratoga Springs.

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Niskayuna is the primary site for the NNL, focusing on the design and development of naval propulsion plants and reactor cores. The West Milton site operates two land-based prototypes of shipboard reactor plants. This site is also used to train officers and enlisted personnel for the U.S. Navy's fleet of nuclear-powered vessels.

Contiguous State or Province

Millstone

Millstone is located on the Connecticut shore of Long Island Sound, on the east shore of the Niantic Bay; 7.5 miles northwest of Fishers Island and 8 miles north of Plum Island both of which are in Suffolk County, NY. The Millstone site is 500-acre site owned by Dominion Nuclear Connecticut Inc housing 2 PWR units. Millstone Unit Two PWR produces 882 megawatts and Unit Three PWR produces 1,155 megawatts of electricity. Millstone Unit One is permanently shut down.

The plume exposure EPZ responsibilities of New York State and Suffolk County/Town of Southold with respect to Fishers Island and Plum Island are described in each community's local radiological emergency response plan.

Pickering Nuclear Generating Station

Pickering Generating Station is located on the north shore of Lake Ontario in Pickering, Ontario Canada. It is approximately 20 miles northeast of the City of Toronto, approximately 18 miles from the New York State border and 36 miles from the New York State land area. Pickering could affect some 50-mile ingestion pathway counties in Western New York. There are currently six CANDU (Canadian Deuterium Uranium) reactors each with a gross electrical generating capacity of 431 megawatts. The Pickering site is owned and operated by Ontario Power Generation (OPG) and has been operational since 1971.

Darlington Nuclear Generating Station

Darlington Nuclear Generating Station is a Canadian nuclear power station located on the north shore of Lake Ontario in Clarington, Ontario. It is located 35 miles northeast of the City of Toronto, approximately 16 miles from the New York State border and 35 miles from NYS land area. Darlington could affect some 50-mile ingestion pathway counties in Western New York. The Darlington station is a large nuclear facility and comprises 4 CANDU nuclear reactors located on the northern shore of Lake Ontario, having a total output of 3,512 MWe (capacity net) when all units are online. The facility was constructed in stages between 1981–1993 by Ontario Hydro. Unit 2 was brought online in 1990, Unit 1 in 1992, and Units 3 and 4 in 1993. Since 1999, Ontario Power Generation (OPG) has operated the Darlington Station.

E. Planning Assumptions

Emergency Classifications

This Annex adopts the four emergency classification levels (ECLs) for commercial fixed nuclear facilities, established by the NRC. The NRC requires that, when an initiating condition for any of the four emergency classification levels exists, the Nuclear Facility Operator (NFO)/Licensee will provide early and prompt notification to both State and local officials. The four emergency classification levels:

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| Emergency Classification Level | Description |
|-------------------------------------|---|
| Notification of Unusual Event (NUE) | Events are in process or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs. |
| Alert | Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life-threatening risk to site personnel or damage to site equipment because of hostile action. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels. |
| Site Area Emergency | Events are in process or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or hostile action that result in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or (2) prevents effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary. |
| General Emergency | Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or hostile action that result in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area. |

Incident Phases

An incident involving a radiological release contains three phases:

- **Early Phase:** The beginning of the incident when immediate decisions for effective use of protective actions are required. This phase may be hours to days.
- **Intermediate Phase:** The beginning of the incident after a release has been controlled. Environmental measurements are available to aid in protective action decisions. This phase may overlap the early and late phase and can be as long as weeks to months.
- **Late Phase:** The beginning of recovery actions designed to reduce radiation levels in the environment to acceptable levels. This phase may extend from months to years.

Emergency Planning Zones

New York State has adopted the Federal concept of Emergency Planning Zones for fixed nuclear facilities. The EPZ around each nuclear facility must be defined for both short-term and long-term periods of exposure to ionizing radiation. These zones are defined as the areas for which planning is needed, to assure that prompt and effective actions can be taken, to protect the public in the event of an accident.

There are two EPZs for each nuclear facility. The first EPZ is the Plume Exposure Pathway, which is the area within (approximately) a ten-mile radius from the site. Although the radius for an EPZ implies a circular area, the actual shape would depend upon the physical and demographic features within that zone. The principal exposure sources within this zone are external whole-body exposure to gamma radiation and exposure through the inhalation of radioactive materials.

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The level of potential exposure within the Plume EPZ depends on the magnitude and duration of a release and meteorological conditions at that time.

The second zone is the Ingestion Exposure Pathway Zone, which is the area within (approximately) a fifty-mile radius from the site. The principal exposure sources within this zone are the ingestion of contaminated water, or foods such as milk or fresh vegetables. Protective actions for the Ingestion Exposure Pathway are planned to be in place for an extended time period. It is the intent of this planning effort to initiate protective actions as early as possible to prevent or minimize potential radiological contamination.

The concept of these zones and their respective sizes represent the kind and extent of planning and response activities needed for the effective protection of the public health. Depending on the nature of a specific emergency, protective actions might be restricted to a small part of either or both planning zones.

Protective Action Guides

Protective Action Guides (PAGs) are used as the basis for initiating activities to minimize the potential exposure of individuals. PAGs are expressed in units of radiation dose (rem) and identify preplanned protective actions should the projected dose to be received by an individual exceed the designated level. PAGs are used to assist governmental authorities in deciding how much of a radiation hazard in the environment constitutes a basis for initiating emergency protective actions.

The PAGs represent radiation doses to be used as a decision aid to response situations. They are not intended to represent "acceptable" or "safe" radiation dose levels.

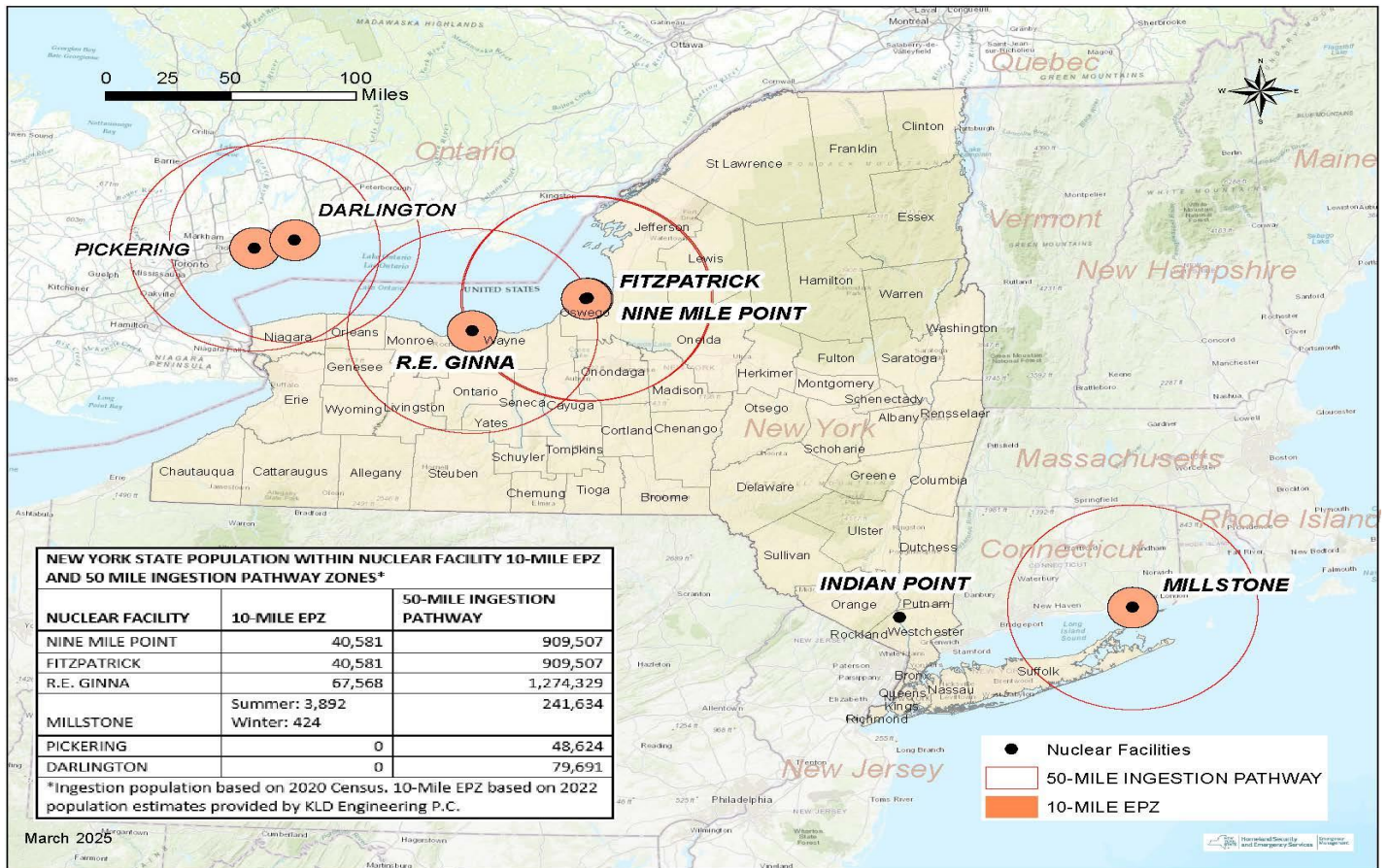
The established PAGs for deposited radioactive materials are expressed in terms of the projected dose, over a one-year period of time. The PAGs should be considered mandatory only for planning purposes. Application of the PAGs should be considered flexible based on the incident.

PAGs for the ingestion phase are applied independently of PAGs for the plume phase. In addition, PAGs for relocation, food ingestion and drinking water are applied independently of each other.

The following map depicts the 10-mile and 50-mile Emergency Planning Zones (EPZs) surrounding the commercial nuclear power generating plants located within New York State, within contiguous State of Connecticut and within the Province of Ontario.

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F. Risk Assessment

Nuclear Facility Conditions

Upon detection of an initiating condition for any of the four ECL's, the Licensee will immediately notify the State and counties within the plume exposure EPZ utilizing the Emergency Response Procedures.

The initial notification message from the Licensee will contain pertinent information such as:

- Date/time of incident
- Name and location of the facility, or location of incident
- Emergency Classification Level (ECL), date and time
- Release of radioactive material information
- Reactor operating or shutdown status
- Whether a release is taking place or not
- Potentially affected population
- Protective action recommendation
- Brief event description
- Weather conditions, wind speed and direction

The Licensee will provide updated information to the State and impacted counties such as:

- Estimate of quantity of radioactive material released or being released.
- Meteorological Data
- Atmospheric Release Information (ground, Iodine, noble gas, release rate)

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- Waterborne Release Information (volume, concentration, radionuclides)
- Actual, projected, or integrated dose rates at site boundary.
- Projected dose rates at site boundaries 2, 5 and 10 miles.
- Emergency Response Planning Areas/Protective Action Areas (ERPAs/PAAAs) affected.
- Estimate of any surface radioactive contamination onsite or offsite.
- Field measurements of dose rates and contamination.
- Prognosis for worsening or termination of event based on plant information.

Radiological Dose Modeling

Within the Emergency Support Function (ESF) #5 Information and Planning, the REP Assessment and Evaluation (A&E) function, has access to various dose/plume modeling procedures and computer models. To effectively use these models, A&E has four primary sources of information:

- Previously developed incident analysis data and information.
- Relayed data on the prevailing radiological release rates and on-site meteorological conditions and real-time plant parameters.
- Radiological laboratory analysis.
- On-going assessments from nuclear specialists from the Licensee, NRC, and State.

Environmental Assessment

Relayed data from meteorological monitors at the reactor sites will be available to A&E. This information, when integrated with data from the National Weather Service, can be used to determine the actual and projected meteorological conditions for the area of concern.

The State will receive relayed data from numerous fixed radiation monitors in and/or around the plant. The State will also receive relayed real-time data derived from the Licensee plant computer which will enable the State to make an independent, but parallel, evaluation of the status of nuclear plant.

Mobile radiation monitoring teams will be deployed by the Licensee and the at-risk counties. Initial Federal support will be obtained through Radiological Assistance Program (RAP) administered by the Brookhaven Area Office of the U.S. Department of Energy. Additional radiation surveillance resources of the State and local agencies will work cooperatively with the Licensee and Federal field assessment teams to determine and verify off-site consequences. All data will initially be transmitted to the State EOC ESF #5, (A&E) in Albany, and later consolidated within the Federal Radiological Monitoring and Assessment Center (FRMAC). Licensees have mutual agreements of monitoring assistance afforded to each other in the event of an incident.

Plume Exposure Pathway Protective Measures

Plume exposure protective actions are recommended by the Licensee. Protective action decisions are made by the at-risk county. The A&E section will review and evaluate the assessment data for concurrence with decisions made by the at-risk county, however the at-risk county will make the final protective action decisions.

The following plume exposure protective action decision options are:

- Shelter-In-Place.
- Evacuation.
- Thyroid Blocking Agents (emergency workers and general population).

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Ground Deposition Assessment

External gamma radiation exposure from deposited radioactive materials (ground shine) is a potential exposure pathway for the general public following a nuclear accident. Furthermore, internal radioactive exposure from inhalation of re-suspended radioactive materials is an additional potential pathway in the Intermediate Phase of an accident.

Ingestion Pathway/Relocation Protective Measures

If an incident progresses from the plume/early phase to the intermediate/ingestion phase, responsibility for determining appropriate protective actions transfers from the county to the State. The Ingestion Pathway Protective Action Options enable the State Commissioner of Health to recommend effective actions to ensure that the potential for the general population to receive a radiation dose is minimized. These options may involve restricting public consumption of contaminated drinking water, agricultural products, and relocation of additional populations. Routine operations would be resumed in those areas cleared for unrestricted use.

G. Concept of Operations

National Response Framework and National Incident Management System, Incident Command System (NIMS/ICS).

The National Response Framework (NRF) along with NIMS/ICS principles have been incorporated into emergency response plans in New York State. New York State has adopted an overall emergency preparedness system which includes four interrelated critical phases.

Comprehensive Emergency Management

These four phases are parts of an on-going cycle in which one phase leads into another:

Preparedness: This is the initial phase of activities that is aimed at eliminating or reducing the probability of the occurrence of a radiological incident, and at minimizing the impact of a radiological incident on public health and property. These activities include the development of legislation, preparedness plans, and training programs.

Response: This phase follows the identification or notification of an incident. Response activities minimize the adverse impact on public health and to protect property, to the extent possible, through emergency assistance. These activities include accident assessment and evaluation, radiological exposure control, and protective action orders and recommendations.

Recovery: The Recovery phase begins when the incident has been brought under control and there is no further threat to the public. Recovery activities continue until the community life of the affected area returns to its previous level or better.

Mitigation: The Mitigation phase is an ongoing course of action or set of procedures used to reduce or eliminate long-term risk to people and property from hazards and their effects. New York State relies on the nuclear facilities to ensure that protective barriers are in place to prevent a release of radioactive material to the atmosphere.

H. Authorities and Supporting Plans

The authorities to develop this Annex and implement specific response actions to effectively respond to a radiological incident involving fixed nuclear facilities can be found in a variety of New York State and Federal laws, regulations, and guidance documents.

Under the provisions of Article 2-B, local governments have developed radiological emergency plans consistent with this Annex. This State planning effort is designed to cope with a variety of potential radiological incidents at a nuclear facility that could have a public health impact. In addition to the State and local radiological plans, nuclear facility licensees have developed and maintain site emergency preparedness plans.

The Nuclear Regulatory Commission (NRC), grants licenses for fixed nuclear facilities if the health and safety of the public is adequately protected. The NRC requires consideration of overall emergency preparedness as part of the licensing process and requires adequate on and off-site emergency plans for the continuance of a license.

The NRC regulates on-site planning and procedures. FEMA has the lead responsibility for review and approval of all off-site nuclear emergency planning.

New York State Executive Law – Sections 20 – 29-j (Article 2-B): Provides State and Local natural and man-made disaster preparedness. Establishes the existence of the DPC and its powers and responsibilities. Provides the duties and responsibility of local Chief Executives.

New York State Public Health Law Section 201: Provides the Commissioner of Health the responsibility for public health aspects in the use of ionizing radiation.

New York State Public Health Law Section 206: Provides the Commissioner of Health broad authority for protecting the health and life of the people of New York State.

New York State Sanitary Code Title 10 Part 16: Implements the Public Health Law. Requires actions to be instituted to correct and prevent unnecessary radiation exposure due to the release activities at any radiation installation or radioactive materials licensee.

Agriculture and Markets Law Article 17, Section 199-1: Provides the Commissioner of Agriculture and Markets the ability to test food or foodstuffs for contaminants.

Environmental Conservation Law Title 6, Chapter IV, Subchapter C, Radiation Part 380: Provides for the prevention and control of environmental pollution by radioactive materials.

The New York State Comprehensive Emergency Management Plan: This plan establishes the methods and procedures to cope with the effects of a disaster by comprehensive management of all private and public resources available in New York State.

NYS/NRC Letter of Agreement 10/62: Delegates NRC responsibilities for licensing and inspection of facilities using radioactive materials to various agencies within NYS. (Signatories: Gov. Rockefeller and the Atomic Energy Commission)

Executive Order # 26.1 of 2006: NYS Adoption of the Incident Command System.

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Emergency Management Assistance Compact (EMAC): EMAC is the Governor's interstate mutual aid compact that facilitates the sharing of resources, personnel, and equipment across state lines during times of disaster and emergency. EMAC is formalized into law by member states. EMAC was adopted by NYS in September 2001.

Atomic Energy Act of 1954: Requires that the NRC grant licenses only if the health and safety of the public is adequately protected.

Title 10 Code of Federal Regulations Part 50: Provides requirements for licensee emergency plans for onsite and offsite emergency preparedness measures for nuclear reactors, fuel cycle facilities and certain other fuel cycle and materials licensees.

NUREG-0654 - FEMA - REP-2:

Associated Evaluation Criteria that further define the Planning Standards.

Radiological Emergency Preparedness Program Manual, January 2023: Serves as the principal source of policy and implementation guidance for the FEMA REP Program.

Title 44 Code of Federal Regulations Part 350: Policy and procedures for the review/approval of State/local plans for offsite effects of radiological emergencies at commercial nuclear power reactors by the FEMA.

Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 100-707), as amended): Constitutes the statutory authority for most Federal disaster response activities, especially as they pertain to FEMA.

EPA 400-R-92-001 Manual of Protective Action Guides and Protective Actions for Nuclear Incidents and EPA-400/R-17/001 PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents: Provides Protective Action Guides for the early (plume) and the intermediate (ingestion and relocation) phases of an incident. In addition to the PAGs, EPA established separate guidance on dose limits for emergency workers.

FDA Guidance on Use of Potassium Iodide as a Thyroid Blocking Agent in Radiation Emergencies, December 11, 2001: Established guidance for the use of potassium iodide (KI).

National Response Framework: A guide on how the Nation conducts all-hazards response. It is built upon scalable, flexible, and adaptable coordinating structures to align key roles and responsibilities across the Nation.

Supporting Plans:

- Monroe County Radiological Emergency Preparedness Plan
- Oswego County Radiological Emergency Preparedness Plan
- Westchester County Radiological Emergency Preparedness Plan
- Rockland County Radiological Emergency Preparedness Plan
- Wayne County Radiological Emergency Preparedness Plan
- Onondaga County Radiological Emergency Response Host Plan
- Holtec, ISFSI Plan for Indian Point
- Constellation Nuclear, Nine Mile Point Nuclear Station Units 1 and 2 Emergency Plan
- Constellation Nuclear, Ginna Nuclear Emergency Plan

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- Constellation Nuclear, James A. Fitzpatrick Site Emergency Plan
- Dominion Generation, Millstone Nuclear Radiological Emergency Response Plan
- Department of Energy, Knolls Atomic Power Laboratory Interface Plan with NY State and Localities for a Radiological Incident
- Ontario Provincial Nuclear Emergency Response Plan- Trans Border Nuclear Emergency
- Darlington Nuclear Generating Station, Ontario Provincial Nuclear Emergency Response Plan
- Pickering Nuclear Generating Station, Ontario Provincial Nuclear Emergency Response Plan

I. Letters of Agreement

New York State has Letters of Agreement (LOA) signed with Constellation James A. FitzPatrick, Constellation Nine Mile Point and Constellation R.E. Ginna Nuclear Facilities. Also, an LOA is in place with Holtec Indian Point Energy Site. Copies of current LOAs are on file for each of these Nuclear Facilities at the State OEM.

Currently, the State has an MOA with the United States Coast Guard Sector Buffalo for the James A. FitzPatrick, Nine Mile Point and R.E. Ginna Nuclear Facilities.

New York State is part of the Emergency Management Assistance Compact (EMAC), the National Emergency Management Association (NEMA) and is accredited by the Emergency Management Accreditation Program (EMAP). In a radiological incident the State will communicate with neighboring state's potentially affected by a release from a generating Fixed Nuclear Facility.

The State will request FEMA Region 2 coordinate with Federal Entities to engage the Nation of Canada, if required during a radiological incident occurring at one of the State nuclear power generating stations. The State will notify the Canadian Province of Ontario as required.

New York State agencies will respond via Emergency Support Functions in accordance with procedures. The authority to respond as identified is found in Article 2-B of the New York State Executive Law. LOAs are not necessary between NYS and the Counties or between NYS and Emergency Support Functions.

J. Annex Administration/ Maintenance

Planning is an ongoing process, resulting in an ever-constant evolution and refinement of emergency plans. As such, this Annex to the CEMP will be routinely updated and supplemented as Federal, State, and local plans and procedures evolve. Plan changes may be based upon experiences and lessons- learned from exercises, or from real-world events. Ongoing planning efforts will focus on ensuring that the necessary and appropriate contacts with local, State, and Federal officials have coordinated their response.

The State OEM will be the lead agency responsible for coordinating the update and distribution of this document. The State OEM will conduct the review/revision process annually. Based on the FEMA P-1028 Radiological Emergency Preparedness Program Manual, the REP Annex is required to be updated at least 90 days prior to a Federally Evaluated Exercise.

The State OEM REP develops and maintains a radiological call list, which contains all pertinent points of contact for all radiological partners. This radiological call list is updated quarterly.

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Section II: Preparedness

A. Radiological Preparedness Planning

Preparedness is the first phase of emergency management. Its primary purpose is to eliminate, or reduce, the effects of radiological incidents. As required by the Homeland Security Grant Program (HSGP), the State must complete an annual Threat Hazard Identification Risk Assessment (THIRA) to better understand the risks, threats and potential radiological hazards facing the State. Preparedness activities are derived from the outcome of the THIRA. Radiological preparedness activities include mitigation activities, plans, policies, public education, logistical assistance, technical assistance, and off-site monitoring of potential radiological incidents. The State also utilizes testing, training, and exercising as key components of the preparedness process. These and similar activities, are essential to the protection of public health and the environment from radiological exposure.

Administration - Annual Letter of Certification (ALC) is provided by the State and radiological counties annually to FEMA. The ALC addresses all fixed nuclear facilities in the State. The ALC provides FEMA with reasonable assurance that the State has taken all planning and preparedness activities required.

Logistical Assistance - The timely mobilization and efficient management of resources available for response operations is of the utmost importance in determining the effectiveness of dealing with a radiological incident. Three key activities are the identification, acquisition, and the maintenance of an up-to-date inventory of potentially useful emergency response resources that can be marshaled in the event of an emergency.

State government, in cooperation with other levels of government, as well as the public, determines what resources are needed to mitigate the effects of an emergency. Federal, State, and local level agencies combine their resources with those of the private sector to produce an efficiently functioning Preparedness Program. The Preparedness Program is based on NIMS and is a standard approach that is scalable and flexible. The goal is to enhance cooperation and interoperability for efficient resource coordination among agencies, jurisdictions, and organizations.

Technical Assistance - Technical assistance to communities will be provided. Many State agencies have specialized capabilities (i.e., engineering, and scientific expertise) and personnel to support local communities faced with potential radiological incidents. Due to the cost of such services, local governments cannot always provide them independently. This assistance includes providing for the testing of radiological instruments, equipment, warning systems, and communication systems.

Plans and Procedures - Preparing plans and procedures is vital to the preparedness phase of emergency management. Plans and procedures for all levels of governments must be coordinated and cohesive to ensure effective and unified activities are achieved.

Public Education - A key activity is the implementation of a public education program. A coordinated effort designed to provide information about radiological emergency planning. Included in this program is the preparation and distribution of pamphlets intended to inform the public of the steps needed to take in a radiological incident.

Public understanding of potential hazards and the Preparedness activities available to minimize the potential of an emergency is basic to the whole process of Public Education.

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Additionally, a news media education program is conducted at each site to acquaint the news media with relevant radiological emergency plans, radiation information and public protective measures.

Tests, Training, and Exercises – Scheduled testing of primary and backup systems are conducted to identify any potential concerns for correction. The State and Stakeholders develop and deliver a variety of REP specialized training. The State utilizes an exercise component as part of the planning process to test the effectiveness of the REP Annex.

The State has incorporated guidance from the Homeland Security Exercise and Evaluation Program (HSEEP). HSEEP consists of doctrine and policy for developing, conducting, and evaluating exercises and is a threat-based exercise program.

Radiological emergency preparedness requires trained personnel to implement the plans. Annual training and retraining of all stakeholders are essential. Biennial Federally evaluated exercises will be conducted at each nuclear facility site which will include emergency response agencies from the State and local level in conjunction with the Licensee.

Monitoring Radiation Exposure Levels – It is vital to monitor the radiation exposure levels of emergency workers in the field. Guidelines and parameters are set for acceptable radiation doses. Personal Monitoring kits are provided to all emergency workers to detect and record radiation levels. Decontamination facilities are required for emergency workers, vehicles, and equipment.

B. Roles and Resources

All levels of government and the private sector have key roles and responsibilities in the preparedness phase of the radiological emergency program. The State, local and Federal government work together in all aspects of emergency management.

Federal

The Federal Government's primary role in Preparedness is to enact laws or rules that will ensure the safest possible operation of a nuclear facility. Within the Federal government, FEMA and the NRC are the primary agencies responsible for radiological emergency preparedness activities. FEMA is responsible for assisting in and overseeing off-site emergency planning in accordance with Federal regulations. The NRC is responsible for the granting of nuclear facilities licenses and on-site emergency plans.

Federal agencies provide radiological emergency planning, guidance, and related training to State and local governments. These agencies support the State and nuclear facility operators in developing emergency plans for the public protection and assist in developing agreements with government agencies, to provide early public warning and implementation of protective actions.

The Radiological Assistance Program (RAP) and the Federal Radiological Monitoring and Assessment Center (FRMAC) provide for preplanned emergency operations to assist State and local governments in assessing potential consequences of radiological incidents of any kind. The National Response Framework (NRF) and the Nuclear-Radiological Incident Annex describe available Federal capabilities for radiological monitoring and assessment.

Local

All emergency events begin and end at the local level. Local government is responsible for creating and maintaining local Radiological plans and procedures. Working with all aspects of its jurisdiction

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(i.e.: schools, day cares, hospitals) to ensure all are trained on the plan procedures. The specific training courses and audience are specified in the training procedures in each respective County Radiological Emergency Preparedness Plan. Local jurisdictions participate in plan/procedure exercises annually. Local jurisdictions are responsible to ensure the public is informed and educated of steps needed to be taken should an incident occur. Each county conducts public education and information activities.

Private Sector

The Nuclear facility provides resources, such as specialized technical studies, reports and other facility information, specialized material and equipment, and personnel to reduce the probability and effects of a radiological incident. Population censuses, evacuation time estimate (ETE) studies, traffic management plans and public alerting/notification systems are maintained for each Licensee in accordance with NRC regulatory requirements. Licensees continually upgrade facility safety systems, radiological barriers, and personnel training to address industry operating experience and lessons learned.

The NFO/Licensee provides periodic training and retraining for local emergency services personnel located in the vicinity of the facility. Training and/or drills are typically provided on an annual basis for fire, hospital, and ambulance personnel. The nuclear facilities provide instructors at various training sessions and provide staff to assist in preparation of scenarios used in drills. Each licensee conducts various public education and information activities.

State

State preparedness activities are carried out before the incident and are directed by the DPC to minimize any adverse impact on public health. State agencies work together to coordinate resources and responsibilities. The State is responsible for assisting in and overseeing off-site emergency planning in accordance with Federal regulations. The State is responsible for overall development of the REP Annex, policies and programs. The State maintains a cache of radiological instruments and supplies for plume and ingestions activities. The State takes a primary role in the development, organization and conduct of drills and exercises. The State conducts specialized training in handling hazardous materials. The State maintains a stockpile of equipment available for loan during emergencies.

State DOH provides technical support for the assessment and evaluation of radiation incidents in areas such as: health physics expertise, laboratory analysis, environmental surveillance and monitoring, power plant systems and operations, and reactor hazards analysis. The State takes a lead role to provide technical recommendations and advice regarding potential radiological impacts, laboratory assistance and health advisory information on radioactive materials. DOH assists State OEM in conducting radiological training for local public health officials and assists with the preparation and conduct of drills and exercises.

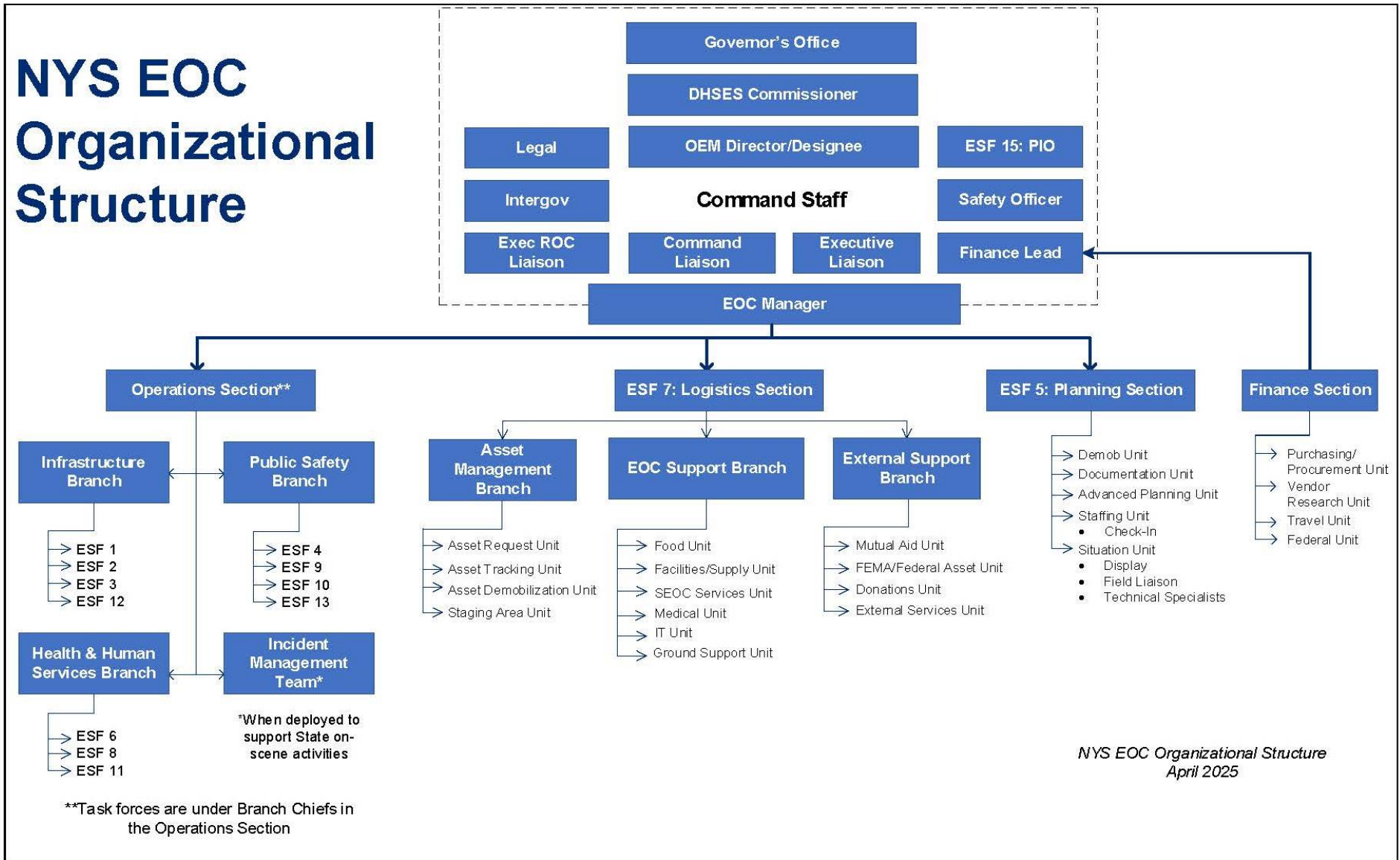
C. After Action Reports

Following an exercise or incident, an After-Action Report is completed by all staff involved. This report identifies areas of excellence as well as areas in need of improvement. The information gathered from these reports will provide vital insight for future planning and refinement of the REP Program.

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D. State EOC Organizational Structure

NYS EOC Organizational Structure



Section III: Response

A. Alert, Notification and Plan Activation

A radiological incident is defined as a series of events at a nuclear power facility which leads to an actual or potential release of radioactive materials into the environment that warrant consideration of protective actions. Protective actions are those actions taken which are intended to minimize radiation dose to the general population.

As stated in 10 CFR Part 50, the licensee must have the capability to notify offsite organizations within fifteen minutes of declaring an incident. The State and radiological counties continuously operate warning points, watch centers, and/or 911 dispatch centers that house emergency notification systems directly from each nuclear facility called the Emergency Off-Site Notification System (EONS) or the Radiological Emergency Communications System (RECS). This system will notify the State and the county immediately of an incident at a fixed nuclear facility any time of the day, any day of the week. The State and the counties also have systems in place to make or receive additional alerts and notifications to key essential executives and staff.

Upon notification of an incident to the SWC, State OEM will assess the potential needs and demands of the incident and determine the need to activate or the level of activation necessary to effectively manage the response required. Based on the level of activation, capabilities that are needed to support the incident will be identified and agencies are notified by NY-Alert System to staff the State EOC using the ESF construct.

Not all incidents require every ESF or the full activation of each ESF, flexibility is key when activating ESF's. Once the determination has been made to activate the State EOC, the appropriate ESF agencies will be notified and requested to send representative to the State EOC. An additional measure of alerting is the use of a Multi-Agency Coordination (MAC) group conference call for situational awareness, updating, and activation as warranted.

The Radiological Hazards for Fixed Nuclear Facilities Annex will be implemented based on the radiological incident in progress.

B. State Response Activation

The State EOC implements several activation levels based upon the severity and extent of an incident. Each State EOC level has a host of operational functions and mechanisms. As an incident's severity increases, so will the activation level of the State EOC.

The State EOC has four levels of activation that are beyond the day-to-day steady state operations. Within each activation level, there are varying degrees of staffing required. During any activation of the State EOC, consistent assessment and evaluation of the situation occurs, and staffing levels will increase or decrease as warranted.

Level 4 – Enhanced Monitoring:

- Minimal to no ESF support required in the State EOC.
- ESF agencies may be requested to provide status updates.

Level 3 – Partial Activation:

- OEM staff reporting to the State EOC.
- Minimal ESF support required in the State EOC.

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- Operational coordination may occur with ESF agencies external to OEM.

Level 2 – Full Activation:

- ESF support required in the State EOC.
- The Director of State OEM will determine which ESFs and which agencies from each ESF are required to report to the State EOC.
- The State Command Room will be operational, and a communication hotline will be established.
- A Joint Information Center will be established.
- Staff may be deployed or mobilized.

Level 1 – Full State/Federal Response:

- Activities of the State ESFs will be integrated with those of their Federal counterparts.
- Director of OEM will determine which agencies of each ESF are needed to support the response activities.
- The State Coordinating Officer will work in unison with the Federal Coordinating Officer.

C. Public Warning and Emergency Information

Article 2-B states that local governments are responsible for providing public warning to their populations. The State can support the dissemination of emergency information and may establish a Joint Information Center (JIC). The JIC will serve as the sole source of official public information regarding the incident response.

Effective public warning or alerting may require the use of multiple systems. The REP Counties utilize a siren system as their primary public warning. An internet-based infrastructure is key for issuing a WEA EAS, or NOAA alerts. NY-Alert is a system used for mass notifications.

The Wireless Emergency Alert (WEA) delivers emergency messages sent by authorized authorities through mobile carriers onto a cellular device.

The Emergency Alert System (EAS) is a national public warning system that requires broadcasters to provide communications capability to address the public. REP Counties use National Weather Service (NWS) and/or local radio stations to broadcast important radiological EAS information. EAS stations must maintain a 24-hour capability to interrupt broadcasts to provide official information and emergency instructions to people in the plume exposure pathway. Press releases and press briefings can also be utilized to get vital emergency instructions to the population.

If the notification to the State and REP County or Counties indicate protective actions are required, the county will activate their public notification system and release a prearranged EAS message to the public. NY-Alert may be utilized for notification purposes. In the case of multiple county involvement, a lead county has been selected to activate the EAS system and has authorization and procedures to activate the siren system immediately. Procedures are contained in each county plan.

D. Direction and Control

The State supports the one response organizational structure, which includes all responding stakeholders. State agencies and ESFs will function under the framework of the NIMS ICS as required by NIMS Executive Order 26.1.

The direction and control of a radiological incident at the state level is managed from the State EOC Command Room. The command room is staffed with executive leadership which may include the

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following personnel (or their representative) based on the severity of the incident: DOH Commissioner, DHSES Commissioner, State OEM Director, State OEM Executive Deputy Director, State OEM Deputy Director, Agency Legal Counsel, Public Information Officer, NYSP liaison, State OEM REP Liaison, and Governor's Office liaison.

Direction and control of radiological incident at the county level is managed from the County EOC command room. Their command room is staffed based on the severity of the incident with County Executives, County Chief Elected Official, Emergency Manager, Director, Deputy Director, County DOH Official, Legal Counsel, and Public Information Officer.

Communication between command room personnel is vital for the direction and control of an incident. In radiological incidents, a command executive hotline between State and county command rooms is established and maintained for the duration of the incident.

State command room leaders will begin by obtaining a clear and thorough understanding of the incident and which localities may be affected. Opening an executive hotline will be completed as proper communication with local leaders is crucial. Command room leaders will aid in the decision of which level of activation is appropriate for the State EOC and will be directing State OEM staff and ESFs with missions and briefings. Command room leaders will also brief their own superiors with the status of the incident. Any decisions will be made by following plans and procedures defined by State, local and nuclear entities. Under the components of direction and control, command room leaders will coordinate briefings, confer with partner agencies, review, and communicate all decisions necessary for public safety, and assist with directing required resources to appropriate locations.

The DHSES Commissioner or the Director of State OEM will report any pertinent information directly to the Governor's Office designated representative.

State Emergency Operations Center

State response activities will be a coordinated effort from the State EOC located in Building #22 on the State Office Campus in Albany. When activated, response operations are managed by the DHSES Commissioner or the State OEM Director. The State OEM also maintains options for an alternate State Emergency Operations Center (ASEOC) at the New York State Traffic Management Center (TMC) in Hawthorne, New York State Preparedness Training Center in Syracuse, DHSES Building #7A in Albany, and the Guilderland Stockpile.

If warranted, the State OEM will activate the State EOC and notify the appropriate State agency personnel and the State OEM field staff through the State Watch Center (SWC). County warning points will notify the appropriate county officials according to their procedures. For incidents classified as Alert, Site Area Emergency or General Emergency, FEMA Region 2 will be notified by the REP Section Chief or the State EOC, as appropriate. If Federal radiological monitoring and assessment assistance is needed, it will be requested by the Commissioner of Health or designee through the Radiological Assistance Program. If specific assistance from EPA is required, the assistance will be requested either directly by the Bureau of Environmental Radiation Protection or through USDOE.

For a Notification of Unusual Event classification, all involved ESFs and State agencies may utilize their normal working quarters for any necessary response activities.

A county may choose to activate limited staff at the NUE or utilize normal working quarters based on the incident circumstances.

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For an Alert, Site Area Emergency, and General Emergency classification, the State OEM will, according to its alerting procedures, notify specific pre-designated State personnel of the incident. If the decision to activate the State EOC is made, State personnel and selected ESFs will be notified to report to the State EOC. Also, pre-designated State personnel may report to the Licensee's Emergency Operations Facility (EOF), the affected States, Counties, local EOCs and the JIC.

For an Alert, Site Area Emergency and General Emergency classification, there may be full activation of County EOCs within the plume exposure EPZ. Host counties may also activate at these ECLs, and County pre-designated personnel may report to the Licensee's EOF.

Upon activation of the State EOC, appropriate County EOC's, and the Licensee's EOF will communicate with each other and confirm that each emergency response facility has been activated and is operational.

Joint Information Centers

Each Fixed Nuclear Facility has a physical JIC location but can also be activated virtually. The Licensee owns and/or maintains the physical JIC location.

Activation of the JIC, is a joint effort made by all stakeholders. JICs will be accessible to all media sources. The JIC is staffed by pre-designated personnel from the Licensee, local, State, and Federal governments. State media/press releases are approved by State command room executives, and media briefings are conducted by the NYS Spokesperson.

E. Response Roles

The Response phase of a radiological incident deals with the reaction to an incident which encompasses the Federal, State, local and private sector response roles and how the activities of these organizations will be coordinated. This effort minimizes the impact of the incident on the health and safety of those in the affected areas.

The Response phase to a radiological incident within a nuclear facility begins with the Licensee. The Licensee has the first line responsibility for assessing the magnitude of a radiological incident and its potential consequences and for taking immediate actions to mitigate or terminate the situation.

FEMA will serve as the primary point of contact for non-technical aspects of the Federal response. At the direction of the State Commissioner of Health or designee, the Department of Energy (DOE), through the Federal Radiological Monitoring and Assessment Center (FRMAC), will coordinate all off-site monitoring, evaluation, and assessment as outlined in the FRMAC Operations Plan. Federal radiological emergency response roles and responsibilities are outlined in the Nuclear/Radiological Incident Annex (NRIA) to the NRF.

The NRC and DOE will coordinate on and off-site data and will jointly advise the State A&E staff on the Federal assessment and evaluation of the incident and the availability of support. The State Coordinating Officer is the designated State liaison to Federal agencies that have been requested to provide response support to the State.

State EOC response roles are complex and are based on the needs and requirements of each incident. As an incident progresses or begins to stabilize, the response roles will shift to meet the current demands. The State EOC functions with Command and General Staff as well as ESF staff.

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- Command Staff may consist of Executives, Safety, Legal and a Public Information Officer. Additional roles may be assigned as needed.
- General Staff consists of EOC Manager, Operations, Planning (ESF #5), and Logistics (ESF #7) Section Chiefs.
- In every State EOC activation for a radiological incident, the Assessment and Evaluation, and the GIS sections of ESF #5 will be activated.
- All other ESFs and ESF agencies are activated as the incident response activities dictates the need.

The DOH, as the State lead agency for response to radiological incidents, and by order of the Commissioner of Health, under the auspices of the DPC, may request necessary monitoring and activate assessment and evaluation personnel, equipment, and other resources. Upon evaluation and after consultation with the local Chief Elected Official, the Commissioner will recommend appropriate protective action response options. Protective action decisions are coordinated between the State and affected REP counties via the Executive Hotline. After a State Declaration of Disaster Emergency pursuant to Executive Law, section 28, the Commissioner may order appropriate protective actions. State agencies are responsible for support. The State OEM, as staff arm to the DPC, is the State coordinating agency for State and local operational resources and will perform this function from the State EOC. There will also be an ongoing exchange of information between local and State agencies.

Reception/Congregate Care Centers

The special needs of the evacuated population will be assessed and addressed. These needs include monitoring, decontamination, reception/registration, lodging, feeding, and clothing.

Activities to register and monitor evacuees at Reception Centers and to house, feed and clothe them at Congregate Care Centers will be implemented by local agencies and the American Red Cross. These agencies share the primary responsibility for this response activity.

At the request of local government, the ESF #6 may be requested to provide assistance with the registration of evacuees at the reception centers. This support will be coordinated by ESF #6 based on the Disaster Assistance Center plan. Mass Care support will provide services in accordance with the Mass Care Support plan. Mental Health support can be available at reception centers and may facilitate the Emergency Assistance core function. Provisions will be made for the needs of those affected by the incident, including individuals with access and functional needs. Other services which will be available are crisis counseling, psychiatric counseling, information, legal, and referral casework services, and other welfare services.

In the event of a presidential disaster declaration the Federal government may provide mass shelters, emergency supplies and potable water, sell government-owned feed grains to livestock owners at reduced prices, assign personnel to screen contaminated food, and provide emergency clothing.

Emergency Worker Personnel Monitoring Center (EWPMC)

Response activities may be necessary to protect lives and reduce escalation of the radiological incident. It is possible that involved emergency response personnel may be exposed to radiation and become contaminated while carrying out their duties. The underlying radiation protection principle is to limit their exposure to as low as reasonably achievable, within the whole-body limits prescribed for radiation workers, which is 5 rem total effective dose equivalent per year.

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Emergency response personnel include individuals engaged in incident assessment, rescue of endangered or injured personnel, lifesaving activities, evacuation of affected populations, and protection or prevention of property damage or loss within the 10-mile emergency planning zone.

The EWPMC provides emergency response personnel, instructions to wear necessary dosimetry, provides potassium iodide (KI), and provides for monitoring and decontamination of personnel as well as instructions for the persons performing the decontamination. The A&E Section of ESF#5 activates the EWPMC.

F. ESF Roles

ESFs that are activated in support of a State response to a radiological incident will utilize any resources available that are pertinent to the response required.

ESF Coordinating Agencies will manage activities of the ESF in conjunction with the Member Agencies when activated. ESFs will activate in situations where their expertise and resources can assist with the mission.

Not all ESFs will be activated, and not every agency in an ESF will be activated. As the magnitude of an incident expands or decreases, the ESF support will also expand or decrease.

In an incident requiring federal assistance, the State ESFs will interoperate and coordinate with their federal ESF counterparts. This allows for a unified and efficient management and reporting construct for response activities.

ESF scope of support is specialized to each hazard in which the response activities are focused on. Below is a brief description of the broad responsibilities of each ESF.

- **ESF #1 – Transportation**

DOT is the coordinating agency for ESF #1. This ESF is responsible for all modes of transportation response, information, planning, restoration, and debris clearance. This ESF includes the Air Operations Group.

- **ESF #2 – Communications**

OIEC is the coordinating agency for ESF #2. This ESF is responsible for establishing, coordinating, and stabilizing emergency communications between all vital stakeholders for response activities.

- **ESF #3 – Public Works and Engineering**

DEC is the coordinating agency for ESF #3. This ESF is responsible for technical and engineering expertise, as well as debris and construction management for critical infrastructure.

- **ESF #4 – Firefighting**

OFPC is the coordinating agency for ESF #4. This ESF is responsible for fire-based assets for response to Radiological, Nuclear, Chemical, and biological incidents.

- **ESF #5 – Information and Planning**

State OEM is the coordinating agency for ESF #5. This ESF is responsible for coordinate multi-agency planning for the State EOC once activated. This ESF includes Assessment and Evaluation (A&E), which is vital to a radiological incident. A&E is responsible for monitoring radiation levels, communicating with the Licensee, relaying information to command, and obtaining radiological and

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meteorological data and the use of such data to determine the actual or potential impact on public health in order to recommend the appropriate protective action.

The A&E Section within ESF #5 also obtains real-time data from each License which permits independent, parallel, evaluation of potential problems. After the initial notification, technical personnel from the Licensee will remain in continual contact with technical personnel from the State A&E staff for consultation and continued assessment and evaluations of the incident consequences.

- **ESF #6 – Mass Care, Emergency Assistance, Housing and Human Services**
DHSES-IA and State OEM are the coordinating agencies for ESF #6. This ESF is responsible for the coordination of vital mass care, emergency assistance, housing, and human services to minimize the impact on populations. In a Radiological incident, this ESF is responsible for emergency assistance at Reception Centers, activate and support shelter sites or congregate care centers, provide logistical support for family reunification, identify need for pet sheltering, and provide mental health assistance.
- **ESF #7 – Logistics**
State OEM is the coordinating agency for ESF #7. This ESF is responsible for locating, procuring, issuing, and transporting requested resources.
- **ESF #8 – Public Health and Medical Services**
State DOH is the coordinating agency for ESF #8. In general, this ESF is responsible for public health emergencies, emergency medical services, fatality management, disease surveillance, and radiation monitoring. In a radiological incident, this ESF is responsible for coordination of protective actions, coordination of medical resources, provide public health needs for impacted population, coordinate support for emergency worker monitoring, provide environmental and water quality testing, provide food and livestock monitoring and safety, and support the reception centers.
- **ESF #9 – Search and Rescue**
DHSES OFPC is the coordinating agency for ESF #9. This ESF is responsible for the deployment of search and rescue resources to provide lifesaving assistance.
- **ESF #10 – Oil and Hazardous Materials Response**
DEC is the coordinating agency for ESF #10. This ESF is responsible for supporting discharge of hazardous materials, as well as support of CBRNE and decontamination. This ESF supports storage, treatments, and disposal of hazardous materials to include contaminated debris.
- **ESF #11 – Agriculture and Natural Resources**
DAM is the coordinating agency for ESF #11. This ESF is responsible for protecting the State's food supply, and the well-being of agricultural animals. In a radiological incident, this ESF is responsible for determining the level of contamination to agriculture, coordinate closure of state parks, obtain radiation protection measures for animals and other natural resources, provide access to food storage, handling, and disposal, and support the implementation of programs to reduce radiological contamination.
- **ESF #12 – Energy**
DPS is the coordinating agency for ESF #12. This ESF will provide the collection, evaluation, and information sharing of energy system damage and estimations on the impact of energy systems.

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- ESF #13 – Public Safety and Security

DSP is the coordinating agency for ESF #13. This ESF is responsible to protect citizens throughout the State. This ESF will provide support to traffic and access control points and provide evacuation assistance.

- ESF #15 – External Affairs

DHSES PIO is the coordinating agency for ESF #15. This ESF is responsible to write, coordinate, and distribute all public information related to the incident including emergency public information. This ESF will provide accurate and well-timed information to the public and media. ESF #15 will work closely with federal, State, local, and non-governmental partners to ensure its outreach is effective through the establishment, management, and support of the JIC.

Section IV: Recovery

A. Overview

The late phase of a fixed nuclear facility incident consists of recovery activities aimed at reducing radiation levels in the environment to permit unrestricted, long-term use of property. This phase of the incident, which may last from months to many years, ends when all recovery activities have been completed.

As an incident begins to transition from the response to the recovery phase, the focus begins shift to rebuilding the communities and demobilizing State response activities and resources. Although there is no clear delineation of when response activities transition into recovery activities, typically the recovery phase begins when the immediate emergency condition is stabilized and no further significant releases into the environment are anticipated. Significant exposure or contamination to previously unaffected areas is not predicted and all evacuation, sheltering and initial protective action have been accomplished. It is important to note that response and recovery activities may be conducted simultaneously.

The scope of the State's involvement will be based on the level and severity of the incident. As the scope of the incident increases, and the financial impact exceeds local abilities, State and federal assistance will also increase.

The recovery process typically includes short-term and long-term recovery activities to restore a community to pre-incident state. Short-term activities include actions that will restore essential services vital to the community. Long-term activities involve rebuilding and restoration of whole communities, including but not limited to infrastructures, public services, business, and employment, as well as remediation of the contamination.

Recovery is accomplished through timely restoration, strengthening and revitalization of various types of infrastructure. Specifically, recovery from a radiological incident refers to the process of reducing radiation exposure rates and concentrations of radioactive material in the environment to acceptable levels for the safe return of the general public to an area for unconditional occupancy. The recovery process will require much of the same information, data, and resources as in the response activities.

In the recovery phase, additional cleanup is targeted to areas that were not a priority or were identified as too contaminated to remediate immediately following the incident. Decontamination and disposal of radioactive waste may be a long process and ongoing throughout the recovery.

Recovery will involve continued and extensive field sampling, damage and impact assessments, remediation of contaminated areas, ongoing management of radioactive wastes generated by those remedial activities, and coordination of federal assistance and nuclear insurance benefits. Radiation protection is not the only concern to be addressed in the management of long-term recovery. Recovery operations will be in accordance with the NYS CEMP with added considerations for radiation protection. The risks from radiation exposure are only one of the many risks to be considered in developing and implementing recovery plans. Cleanup criteria and standards will ultimately be developed for long-term recovery, but they need not be developed prior to taking initial cleanup actions. Decision makers and locally affected stakeholders should approach the site with a "clean slate" and derive cleanup levels through a site-specific optimization process, a unique solution to the specific problem at hand.

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Some general steps can be taken to clean contaminated areas to help reduce dose levels. There are also passive actions that will lessen contamination over time, such as decay of radionuclides and weathering. Cleanup actions should be considered iteratively with ongoing monitoring and stakeholder consultation. The cleanup will continue until stakeholders find the monitored dose levels acceptable, meeting the established cleanup criteria set by a process involving local government, federal agencies, and all other stakeholders affected by the incident. Implementation of interim stabilization or removal actions during the development of goals and strategies may be warranted if they pose clear short or long-term benefits and delaying implementation could result in unnecessary delays in recovery or the significant spread of environmental contamination.

Short-Term Recovery: Following a radiological incident, the response organization must at some point transition from response to short-term recovery.

- Preliminary remediation activities during the intermediate phase—such as emergency removals, decontamination, resumption of basic infrastructure function and some return to normalcy in accordance with intermediate phase PAGs—should not be delayed for the final site remediation decisions.
- The term “reentry” is temporary access with stay times determined by site specific conditions. These conditions will vary depending on many factors such as: indoors, outdoors, sensitive population and of course, radiation levels. As contamination levels reduce during cleanup, stay times will increase. Reentry is necessary for multiple reasons, emergency workers to perform additional emergency response activities, residents to retrieve needed personal items, farmers to provide essential care for livestock. All reentry is conducted under controlled conditions.
- The term “return” refers to the permanent resettlement in evacuation or relocation areas with no restrictions, based on acceptable environmental and public health conditions. To return, a restricted area must be below determined safe radiation levels. Vital services and infrastructure such as schools, medical, water, and electricity must be restored.
- The term “reoccupancy” refers the return of household and communities to relocation areas during the cleanup process, at radiation levels acceptable to the community. Reoccupancy is possible when interim cleanup can reduce the short-term exposures to acceptable levels, while work continues to reach long term recovery goals.
- The term “relocation” refers to the removal or continued exclusion of household from contaminated areas to avoid chronic radiation exposure. Land use may need to be changed when it is not feasible for pre-incident land use to continue due to health and safety concerns.

Long-Term Recovery: In the case of a major radiological accident, the long-term recovery phase will involve continued coordination with federal and local agencies for restoring essential services and functionality to the affected areas.

- Measures the State will take in managing long-term recovery efforts are described in Volume 3 of the State CEMP. To assist in recovery efforts, the DPC may create a disaster Recovery Organization and may assign responsibilities to State agencies that are above and beyond an agency's normal, day to day obligation. The delineation of these activities will be coordinated through the MAC.
- A long-range monitoring plan including important exposure pathways will be developed in conjunction with the affected State, tribal, and local governments, and appropriate Federal agencies.
- The Recovery Organization will be established by the DPC in accordance with the New York State CEMP, Volume 3, Long-Term Recovery Plan.
- Designated participants in the disaster Recovery Organization will be comprised of

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representatives of the Commission's membership, and such other agencies as the Commission Chairman may designate.

- The Recovery Organization will be responsible for directing State resources and intermediate and late phase activities and for assisting in the total cooperative effort involving any or all of the other organizations having recognized roles in intermediate and late phase operations. During intermediate and late phase operations the Recovery Organization is responsible for developing practical time parameters and activities consistent with this plan and ensuring that there are adequate communications systems and processes for all State activities. The Recovery Organization keeps the DPC apprised of all matters relating to the recovery effort.
- The technical working group provides multi-agency, multi-disciplinary expert input to local governments developing and implementing radiological recovery plans in accordance with the New York State CEMP, Volume 3, Long-Term Recovery. The technical working group would not be a decision-making body.

B. Assistance

State Disaster Emergency:

Whenever the Governor, on their own initiative or pursuant to a request from one or more chief executive, finds that a disaster has occurred or may be imminent for which local government will be unable to respond adequately, may declare a State Disaster Emergency by executive order.

Whenever the Governor finds that a disaster of such severity and magnitude that effective response is beyond the capabilities of the State and the affected jurisdictions, may make an appropriate request for federal assistance available under Federal law, and may make available out of any funds provided in the governmental emergency fund or such other funds as may be available, sufficient funds to provide the required State share of grants made under any federal program meeting disaster related expenses.

Federal Disaster Assistance:

As part of the request for the declaration process, it is necessary to conduct Preliminary Damage Assessment (PDA). A PDA consists of combined State and federal team inspecting damages to develop an estimate of the cost to restore to pre-disaster condition. These PDA figures are then used to demonstrate to FEMA that federal assistance is warranted. If a disaster escalates to the point of a Federal Disaster Declaration, there are a range of federal assistance programs made available to aid in the recovery process. Once an incident escalates to the point of a Federal Disaster Declaration, a wide range of assistance become available.

C. Roles and Responsibilities

State Role

The New York State Commissioner of Health continues to have the primary responsibility for recommending protective actions i.e. relocation; for modifying, and relaxing protective actions including allowing the reentry of evacuated or restricted areas; and discontinuing protective actions allowing the return of the evacuated population.

Responsibility for cleanup of radioactive material in the environment falls under the auspices of the Department of Environmental Conservation.

State OEM coordinates State and Federal assistance and programs in support of the local jurisdictions.

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Section IV

During emergency and intermediate phase operations, when public health is a priority, the NYSDOH is the lead technical agency, with support from the NYS DEC. When emergency operations have largely been completed environmental remediation and restoration efforts become the priority, DEC becomes the lead technical agency with support from DOH. Environmental remediation and waste management fall under the purview of DEC. Initial remediation and waste management decisions will start during the emergency phase of the incident.

Federal Role

If requested by New York State, federal support will be provided in accordance with the National Disaster Recovery Framework and appropriate federal agency technical, advisory, and other required assistance.

The U.S Environmental Protection Agency (EPA), Department of Energy (DOE), Army Corps of Engineers and their private contractors have extensive experience in the characterization, demolition, stabilization and decontamination of radioactively contaminated facilities and land area. Their advice and assistance will be requested.

Local Government

Local Chief Elected Officials assess the needs of their affected areas in conjunction with the State OEM. They direct intermediate and late phase operations in their jurisdictions. State directed intermediate and late phase operations and protective actions are coordinated with the respective jurisdictions and the federal government as warranted.

D. Activation of Recovery Support Functions

During a large-scale radiological incident, the State ESFs will activate and support the needs of the incident. As the State EOC activation scales back and the Joint Field Office (JFO) activates, the federal government will transition from ESFs to Recovery Support Functions (RSFs). The RSF structure builds upon the ESF, the mission, skill set, and time frames are different. The NYS CEMP Volume 3, Long-Term Recovery sets the foundation for the RSFs to effectively interoperated with their federal disaster recovery components.

Abbreviations And Acronyms

ACP – Access Control Points
 ALARA – As Low As Reasonably Achievable
 A&E – Assessment and Evaluation
 ALC – Annual Letter of Certification
 ARC – American Red Cross
 ASEOC – Alternate State Emergency Operations Center
 BERP – Bureau of Environmental Radiation Protection
 BWR – Boiling Water Reactor
 CDE – Committed Dose Equivalent
 CED – Committed Effective Dose
 CEMP – Comprehensive Emergency Management Plan
 CFR – Code of Federal Regulations
 CPM – Counts Per Minute
 DAM – New York State Department of Agriculture and Markets
 DEC – New York State Department of Environmental Conservation
 DHS – U.S. Department of Homeland Security
 DHSES – Division of Homeland Security and Emergency Services
 DOE – United States Department of Energy
 DOH – New York State Department of Health
 DOT – New York State Department of Transportation
 DPC – Disaster Preparedness Commission
 DPS – New York State Department of Public Service
 DSP – New York State Division of State Police
 EAL – Emergency Action Level
 EAS – Emergency Alert System
 ECL – Emergency Classification Level
 EOC – Emergency Operations Center
 EOF – Emergency Operations Facility
 EONS – Emergency Off-Site Notification System
 EPA – United States Environmental Protection Agency
 EPZ – Emergency Planning Zone
 ERPA – Emergency Response Planning Area
 ESF – Emergency Support Function
 ETE – Evacuation Time Estimate
 EWPMC – Emergency Worker Personnel Monitoring Center
 FDA – United States Food and Drug Administration
 FEMA – United States Federal Emergency Management Agency
 FRMAC – Federal Radiological Monitoring & Assessment Center
 GE – General Emergency
 GIS – Geographic Information System
 HSEEP – Homeland Security Exercise and Evaluation Program
 HSGP – Homeland Security Grant Program
 ICS – Incident Command System
 JFO – Joint Field Office
 JIC – Joint Information Center
 KI – Potassium Iodide
 LOA – Letter of Agreement
 LOCA – Loss of Coolant Accident
 MAC – Multi-Agency Compact

RADIOLOGICAL HAZARDS ANNEX FOR FIXED NUCLEAR FACILITIES
Appendix A – Abbreviations and Acronyms

MOA – Memorandum of Agreement
NFO - Nuclear Facility Operator
NIMS – National Incident Management System
NRIA – Nuclear Radiological Incident Annex
NRC – United States Nuclear Regulatory Commission
NRF – National Response Framework
NYSERDA - New York State Energy Research and Development Authority
NUE – Notification of Unusual Event
NWS – National Weather Service
PAD – Protective Action Decision
PAG – Protective Action Guide
PAR – Protective Action Recommendation
PDA – Preliminary Damage Assessment
PIO – Public Information Officer
PWR – Pressurized Water Reactor
R – Roentgen
RAP – Radiological Assistance Program
RECS – Radiological Emergency Communications System
REM – Roentgen Equivalent Man
REP – New York State Radiological Emergency Preparedness
SAE – Site Area Emergency
State EOC – State Emergency Operations Center State
State OEM – State Office of Emergency Management State
SWC – State Watch Center
TED – Total Effective Dose
THIRA – Threat Hazard Identification Risk Assessment
TCP – Traffic Control Point
TMC – Traffic Management Center
TSC – Technical Support Center
USDA – United States Department of Agriculture
USDOE – United States Department of Energy
WEA – Wireless Emergency Alert

(End of Appendix A)

Definitions

Access Control: All activities accomplished for the purpose of controlling entry or re-entry into a restricted zone to minimize the radiation exposure of individuals. This function is needed to prevent the general public from entering the restricted zone and permitting only emergency workers with essential missions and limited members of the general public to enter a restricted zone.

Action Level: A radiation level (usually in counts per minute) above which a person or object is considered to be contaminated and should be referred for decontamination. The action level is incident-specific and may be modified or adjusted by the Exposure Control Coordinator at the State EOC.

Activation: A process by which a facility is brought up to emergency mode from a normal mode of operation. Activation is completed when the facility is ready to carry out full emergency operations.

Acute Exposure: A large dose of radiation that occurs over a short period of time, usually less than an hour.

Alert: Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life-threatening risk to site personnel or damage to site equipment because of intentional malicious dedicated efforts of a hostile act. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

Alert System: The hardware system(s) used to get the attention of the public within the plume exposure pathway EPZ. An alert system may include a combination of sirens; IPAWS; tone activated radios; loudspeakers/sirens on vehicles (including boats and airplanes); and other equipment/technology that provides an alert signal.

Alert and notification system (ANS): The system used to alert and notify the public, including the physical means (equipment and methods) and administrative means (organizational responsibility and interaction of responsible organizations for alert and notification).

Assessment: The compilation and analysis of all available accident data and information in order to determine actual and projected radiation doses to the affected population that may result from the accident.

Boiling Water Reactor (BWR): A nuclear reactor in which water, used both as coolant and moderator, is allowed to boil in the reactor vessel. The resulting steam is used directly to drive a turbine.

Buffer Zone: An area adjacent to a restricted zone, to which residents may return, but for which protective measures are recommended to minimize exposure to radiation.

Calibration: The check or correction of the accuracy of a measuring instrument to ensure proper operational characteristics.

Check Source: A radioisotope with a relatively fixed activity level used to determine the responsiveness of survey instruments.

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Appendix B Definitions

Chief Elected Official: A County Executive, the Chairman or other presiding Officer of the county legislative body, the Mayor of a city or village, or the Supervisor of a town.

Chronic Exposure: A small doses of radiation over a long period of time.

Committed Dose Equivalent (CDE): The dose equivalent to a single organ from an intake of radioactive material during the 50-year period following the exposure.

Committed Effective Dose (CED): The sum of the committed equivalent doses following intake (inhalation or ingestion) of a radionuclide to each organ multiplied by a tissue weighting factor.

Congregate Care Center: A facility for the temporary housing, care and feeding of evacuees.

Containment: The provision of a gas-tight shell or other enclosure around a reactor that confines fission products and prevents their release to the environment in an accident.

Contamination (Radioactive): Deposition of unwanted material on the surfaces of structures, areas, objects, or personnel.

Decontamination: The reduction or removal of unwanted radioactive material from a structure, area, object or person.

Decontamination Station: A building or location suitably equipped and organized where personnel and material are cleansed of chemical, biological, or radiological contaminants.

Direction and Control: The management of emergency functions within particular context (e.g., emergency operations center) through leadership and use of authority.

Dose: A generic term that means absorbed dose, dose equivalent, effective dose equivalent, committed dose equivalent, committed effective dose equivalent, or total effective dose equivalent.

Dose Equivalent: The product of the absorbed dose in tissue, factor, and all other necessary modifying factors at the location of interest. The unit for dose equivalent is the Rem (R).

Dose Limits for Emergency Workers: The allowable accumulated during the entire period of the emergency. Action to avoid exceeding the limit is taken based on actual measurements of integrated gamma exposure. In contrast, protection action guides are trigger levels of projected dose at which actions are taken to protect the public. These actions are taken prior to the dose being received.

Dose Rate: The radiation dose delivered per unit of time. Measured, for example, in Rem per hour.

Dosimetry: The measurement of radiation doses. It applies to both the devices used (dosimeters of legal record (DLR) and direct read dosimeters (DRD)) and to the techniques.

Effective Dose (ED): The sum of the products of the does equivalent to each organ on a weighting factor. Usually considered as the external dose to the whole body.

Emergency Action Level (EAL): A pre-determined, site-specific, observable threshold for an initiating condition that, when met or exceeded, places the plant in a given ECL.

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Emergency Alert System (EAS): A system which uses commercial radio and television stations to furnish an expedited means of furnishing real time communications to the public in the event of an emergency (i.e., storm warning, local crises, etc.).

Emergency Classification Level (ECL): Classifications used by the licensee to classify incidents. The four ECLs are Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency.

Emergency Operations Center (EOC): A secure area with a wide range of communications capability that provides an operating area for those agencies involved in emergency response to man-made or natural disasters.

Emergency Operations Facility (EOF): A facility operated by the licensee for the purpose of evaluating and controlling emergency situations and coordinating responses.

Emergency Planning Zone (EPZ): The area surrounding a nuclear power facility site for which offsite planning is required. For nuclear power facilities, the EPZ is defined as an area with a radius of about ten (10) miles for the plume exposure pathway and a radius of about fifty (50) miles for the ingestion exposure pathway.

Emergency Response Planning Area (ERPA): A subdivision of the plume exposure (10-mile) emergency planning zone.

Emergency Worker: An individual who has an essential mission within or outside the plume exposure pathway emergency planning zone to protect the health and safety of the public who could be exposed to ionizing radiation from the plume or from its deposition. Some examples of emergency workers are: radiation monitoring personnel; traffic control personnel; evacuation; vehicle drivers; fire and rescue personnel, including ambulance crews; medical facilities personnel; emergency operations center personnel; personnel carrying out backup alerting procedures; and essential services or utility personnel.

Evacuation: The urgent removal of people from an area to avoid or reduce high-level, short-term exposure, from the plume or from deposited radioactivity. Evacuation may be a preemptive action taken in response to a facility condition rather than an actual release.

Evacuation Time Estimate: An estimate, contained in emergency plans, of the time that would be required to evacuate general and special populations within the plume pathway emergency planning zone under emergency conditions.

Exercise: An event involving organizational response to a simulated commercial nuclear facility accident with radiological and other offsite consequences. The purpose of an exercise is to test the integrated capabilities of involved organizations to implement emergency functions set forth in plans and procedures.

Exposure: A measure of the ionization produced in air by X-ray or gamma radiation. The Roentgen (R) is the unit of exposure. The term "dose", sometimes used interchangeably with exposure, actually refers to absorbed radiation.

Federal Emergency Management Agency (FEMA): The agency responsible for establishing Federal policies for and coordinating all civil defense and civil emergency planning, management,

RADIOLOGICAL HAZARDS ANNEX FOR FIXED NUCLEAR FACILITIES

Appendix B Definitions

mitigation, and assistance functions of executive agencies. FEMA assists state, local, and tribal agencies in their emergency planning. Its primary role is one of coordinating Federal, state, local, tribal, and volunteer response actions.

Federal Radiological Monitoring Assessment Center (FRMAC): This center is usually located at an airport near the scene of a radiological emergency from which the DOE offsite FRMAC Director coordinates radiological monitoring and assessment assistance to the affected area. This center need not be located near the onsite or Federal-State centers as long as its operations can be coordinated with them.

Field Monitoring Team (FMT): Includes groups used to detect and monitor radiation in the environment (e.g., measuring the concentration of radiation in the air, water, vegetation, soil, etc.).

Fixed Contamination: Contamination that remains after loose contamination has been removed by decontamination.

Fixed Nuclear Facility: A facility licensed by the NRC to use a nuclear reactor to produce electricity.

General Emergency: Indicates that events are in process or have occurred that involve actual or imminent substantial core degradation or melting, with potential for loss of containment integrity or security events that result in an actual loss of physical control of the facility. Releases can reasonably be expected to exceed EPA PAG exposure levels offsite, beyond the immediate site area.

General Population: All people in the plume exposure emergency planning zone including residents and transients but not special facility populations in schools, camps, parks.

Homeland Security Exercise Evaluation Program (HSEEP): A capabilities- and performance-based exercise program that provides standardized policy, doctrine, and terminology for the design, development, conduct, and evaluation of homeland security exercises. HSEEP also provides tools and resources to facilitate the management of self-sustaining homeland security exercise programs.

Host Area: A geographical area outside the plume pathway emergency planning zones where functions such as congregate care, radiological monitoring, decontamination, and registration are conducted.

Ingestion Emergency Planning Zone: For planning purposes, the area surrounding a site, where the principal exposure from an accident would be from the ingestion of contaminated water or foods. For nuclear power facilities the ingestion EPZ is an area of about a fifty (50) mile radius around a nuclear plant.

Initial Notification: The first notification by a Nuclear Facility Operator to State and local offsite response organizations and the Nuclear Regulatory Commission of one of the four event classifications.

JIC Activation: JIC facility is available for use and systems tested to ensure facility is adequate to meet JIC objectives.

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Joint Information Center (JIC): The facility used as the central point for dissemination of information by county, State and licensee representatives to the news media. This facility is located offsite and is the only location which allows media access during an emergency.

KI (potassium iodide): A prophylactic drug that can be used effectively to block the uptake of radioiodine by the thyroid gland.

Licensee: Organization holding a license to conduct activities at a fixed nuclear facility in New York State.

Mitigation: Aimed at eliminating or reducing the probability of the occurrence of a radiological emergency, and in minimizing the impact of a radiological emergency on public health and property.

Monitoring: The measurement of radiation levels, usually with a portable survey instrument.

National Response Framework (NRF): This document establishes a comprehensive all-hazards approach on how the federal government coordinates with state, local and tribal governments and the private sector during incidents.

Notification of Unusual Event: Unusual events are in process or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

Nuclear Facility Operator (NFO): The entity licensed by the Nuclear Regulatory Commission to operate a nuclear facility.

Nuclear Radiation: The particulate and electromagnetic radiation emitted from atomic nuclei in various nuclear processes. The important types of nuclear radiation (from the weapons standpoint) are alpha and beta particles, gamma rays and neutrons. All nuclear radiations are ionizing radiations, but the reverse is not true.

Nuclear Reactor: A device in which nuclear fission may be sustained and controlled in a self-supporting nuclear reaction.

Off-Site: Area outside the site boundary of a particular nuclear power facility.

Offsite Response Organization (ORO): Any state, local, and tribal government; supporting private industry and voluntary organizations; and Licensee offsite response organizations (that are formed when state, local, and tribal governments fail to participate in the REP Program) that are responsible for carrying out emergency functions during a radiological emergency.

Operational: When a facility is activated, has appropriate staffing, the systems have been tested and it is ready to perform its functions.

Plume: Generally, a gaseous atmospheric release from a nuclear facility, in an accident or emergency, which may contain radioactive noble gases and volatile solids. While emergency plans/procedures must recognize the very low probability that particulates could be released in a serious accident, primary emphasis is given to the development of protective actions against the

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release of noble gases and volatiles such as radioiodine's. This cloud is not visible to the eye, but can be measured, or "seen" with radiation measurement equipment.

Plume Exposure Pathway: For planning purposes, the area surrounding a site where the principal exposure sources are: (a) whole body exposure to gamma radiation from the plume and from deposited material, and (b) inhalation exposure from the passing radioactive plume. For nuclear facilities the plume EPZ is defined as an area with a radius of about ten (10) miles.

Potential Dose: The radiation dose that could result from a particular set of plant conditions, not based on estimated or measured releases or environmental levels.

Pressurized Water Reactor (PWR): A power reactor in which heat is transferred from the core to the heat exchanger by water kept under high pressure. The primary system is pressurized to allow the water to reach high temperatures without boiling. Steam is generated in a secondary circuit.

Projected Dose: The estimated or calculated amount of radiation dose to an individual from exposure to the plume and/or deposited materials, over a period of time, in the absence of protective action.

Protective Action Area: A subdivision of the plume exposure (10-mile) emergency planning zone around the Indian Point Energy Center.

Protective Action Decision (PAD): Measures taken in anticipation of, or in response to, a release of radioactive material to the environment. The purpose of PADs is to provide dose savings by avoiding or minimizing the radiation exposure received by individuals, thereby minimizing the health risks resulting from radiation exposure. Sheltering and evacuation are the two PADs relied upon for limiting the direct exposure of the general public within the plume exposure emergency planning zone. Preventive and emergency PADs are two categories of PADs relied upon for limiting exposure from contaminated food and water in the ingestion exposure emergency planning zone.

Protective Action Guide (PAG): Projected dose to an individual in the general population that warrants the implementation of protective action. Specific PAGs have been recommended in terms of the level of projected dose that warrants the implementation of evacuation/sheltering, relocation, and limiting the use of contaminated food, water, or animal feed.

Protective Action Recommendation (PAR): Licensee recommended protective actions.

Radiation Absorbed Dose (RAD): The basic unit of absorbed dose radiation. One rad represents the absorption of 100 ergs of nuclear (or ionizing) radiation per gram of absorbing material or tissue

Radiation Safety Officer: A health physicist or other individual experienced in radiation protection who advises medical facility staff regarding the hazards associated with high levels of radiation.

Radioactivity: The property of certain nuclides of spontaneously emitting nuclear particles or gamma or X-ray radiation, or of undergoing spontaneous fission.

Radioactive Materials: Material containing atoms having excess energy. It contains excited, unstable atoms that are disintegrating, emitting radiation.

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Radiological Incident: A situation which may result in the loss of control of a radiation source causing a hazard, or potential hazard, to health or property.

Radiological Emergency Preparedness (REP) Exercise: An event involving organizational responses to a simulated commercial nuclear facility incident with radiological and other offsite consequences. The purpose of an exercise is to test the integrated capabilities of involved offsite response organizations to implement emergency functions set forth in offsite response organization radiological emergency response plans/procedures.

Radiological Monitoring: The detection and measurement of ionizing radiation from radiological releases by means of survey instruments.

Reception Center: A predesignated location outside the Plume Exposure Pathway through which evacuees will pass to receive assistance which may include registration, first aid, radiation monitoring and direction to a Congregate Care Center or medical facility.

Recovery: The process of reducing radiation exposure rates and concentrations of radioactive material in the environment to acceptable levels for return by the general public for unconditional occupancy or use after the emergency phase of a radiological emergency.

Reentry: Workers or members of the public going into a relocation or radiological contaminated areas on a temporary basis under controlled conditions.

Release: Escape of radioactive materials into the environment.

Relocation: A protective action, taken in the pose-emergency phase, through which individuals not evacuated during the emergency phase are asked to vacate a contaminated area to avoid chronic radiation exposure from deposited radioactive material.

Response: The emergency phase in which public protective actions are carried out.

Restricted Zone: An area of controlled access from which the population has been evacuated or relocated.

Return: Permanent resettlement in evacuation or relocation areas with no restrictions, based on acceptable environmental and public health conditions.

Roentgen (R): The unit of radiation exposure in air. Roentgens are the units for quantities of X-ray or gamma radiation measured by detection and survey meters. (For planning purposes 1 Roentgen is equivalent to 1 Rem).

Roentgen Equivalent Man (rem): One rem is the quantity of ionizing radiation of any type which, when absorbed by man or other mammals, produces a physiological effect equivalent to that produced by the absorption of 1 roentgen of X-ray or gamma radiation.

Sampling: Collecting specimens of materials (e.g. soil, vegetation, or radioiodine in the air) at field locations.

Shelter-In-Place: An action taken to minimize exposure to radiologically contaminated air by going indoors and limiting the intake of outside air.

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Site Area Emergency: Indicates that events are in process or have occurred that involve actual or likely major failures in the plant functions needed for protecting the public or security events that result in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or (2) prevents effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary.

Special Populations: Groups or individuals that may need assistance when protective actions are implemented.

State Watch Center (SWC): A location established at the New York State Office of Emergency Management for the purposes of receiving and promulgating warning information 24 hours a day, 7 days a week.

Thyroid Exposure: Exposure of the thyroid gland to radioactive isotopes of iodine which have been either inhaled or ingested.

Total Effective Dose (TED): Sum of the effective dose and the committed effective dose to the whole body.

Traffic Control: All activities accomplished for the purpose of facilitating the evacuation of the general public in vehicles along specific routes.

Transient (Population): Non-residents. Persons who do not permanently reside in the plume exposure pathway emergency planning zone but may be present during an emergency.

(End of Appendix B)