

**OHIO EMERGENCY OPERATIONS PLAN
EMERGENCY SUPPORT FUNCTION #10**

HAZARDOUS MATERIALS

TAB B – REP INCIDENT RESPONSE PLAN

PRIMARY AGENCY: Ohio Emergency Management Agency (Ohio EMA)

SUPPORT AGENCIES: Ohio State Highway Patrol (OSHP)
Ohio Homeland Security (OHS)
Ohio Department of Health (ODH)
Ohio Department of Agriculture (ODA)
Ohio Department of Transportation (ODOT)
Ohio Department of Natural Resources (ODNR)
Ohio Environmental Protection Agency (OEPA)
Public Utilities Commission of Ohio (PUCO)
Ohio Department of Insurance (ODI)
Attorney General's Office (AG)
Ohio Department of Mental Health (ODMH)
Ohio Department of Administrative Services (DAS)
Adjutant General's Department, Ohio National Guard (ONG)

FEDERAL SUPPORT AGENCIES:

U.S. Coast Guard (USCG)
Federal Aviation Administration (FAA)
National Oceanic and Atmospheric Administration (NOAA)
U.S. Department of Interior (USDOJ)
U.S. Department of Agriculture (USDA)
U.S. Environmental Protection Agency (USEPA)

PRIVATE SECTOR SUPPORT ENTITIES:

Volunteer Radio Organizations (ARES/RACES/MARS, etc.)
Utility Companies

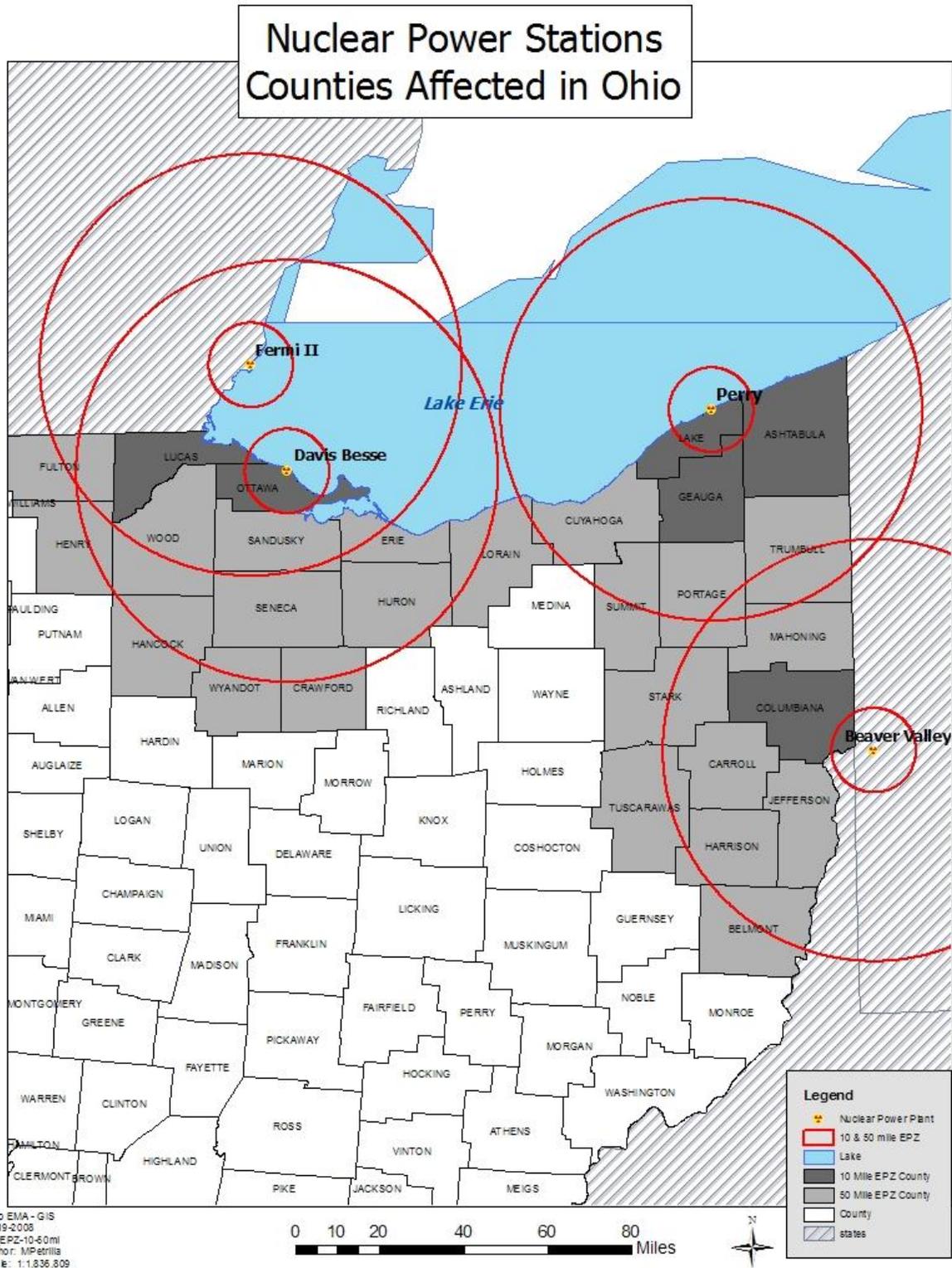
I. INTRODUCTION

A. The original REP plan has been parsed into three documents: The State of Ohio Emergency Operations Plan (state EOP), the REP Incident Response Plan, and the REP Operations Manual. The state EOP covers general emergency response actions. The REP Incident Response Plan covers issues specific to nuclear power incidents. The REP Operations Manual contains information that is procedural in format, but not contained within specific procedures. Information pertinent to Hostile Action may be found in the

Terrorism Incident Annex of the state EOP. The combination of these documents ensures compliance with the regulatory and guidance documents.

- B. For the purposes of emergency planning and incident response, there are three nuclear power facilities that have an impact upon the residents of Ohio. These facilities are the Davis-Besse Nuclear Power Station (DBNPS) in Ottawa County; the Beaver Valley Power Station (BVPS) in Shippingport, Pennsylvania, approximately four miles east of the Columbiana County line in Ohio; and the Perry Nuclear Power Plant (PNPP) in Lake County. (Ref. Figure 1 for a map of the locations.)
- C. Approximately 225,000 Ohio residents in six counties live within the 10-mile radius Emergency Planning Zone (EPZ) of these three facilities.
- D. In addition, a fourth nuclear power facility -- the Fermi-2 Nuclear Power Plant located near Monroe, Michigan -- impacts Ohio residents in the area of ingestion zone planning (Ref. Section IV in the REP Operations Manual).
- E. Because of their proximity to either Lake Erie or the Ohio River, which both cause seasonal flooding, all of the counties within the 10-mile EPZs have experience in dealing with evacuations and mass care -- aspects common to any type of an emergency or disaster.
- F. Lake, Geauga and Ashtabula counties are located in the Ohio Snow Belt and are subject to severe winter storms that create emergency situations of long duration with the requirement for 24 hour continuous operation.

Figure 1



II. AUTHORITY

- A. As the official responsible for the safety of Ohio's citizens and protection of property, the Governor is in charge of the State's response efforts in the event of a radiological emergency.
- B. In absence of the Governor, the Executive Director, Ohio EMA, will act on behalf of the Governor. All levels of government, public officials, elected or appointed, have an inherent legal and moral duty or responsibility to protect the lives and properties of their citizens, as well as to initiate damage recovery actions in an affected jurisdiction.

III. PURPOSE

- A. Preparation for coping with an incident at a commercial nuclear power plant is a joint cooperative effort by state, county and local governments, Federal agencies, private organizations and the utility company.
- B. This plan defines state roles, responsibilities and resources and identifies the interface that must exist between involved agencies at all levels.
- C. This plan is supported by a set of Standard Operating Procedures (SOPs) with detailed instructions that explain when and how each of the response actions is to be performed.
- D. The purpose of this plan is to identify the ways and means to best protect citizens, their well-being and property in the event of an emergency at a commercial nuclear power plant.

IV. SCOPE

- A. This plan does not address incidents at the U.S. Department of Energy's facility (Portsmouth Gaseous Diffusion Plant), USEC, Inc.'s facility (American Centrifuge Plant) located in Ohio or natural disasters, such as tornadoes, floods, etc. For information on the State's response efforts to these types of emergencies, refer to the state EOP, which includes the ESF # 10 Hazardous Materials/Weapons of Mass Destruction. The state EOP is maintained by the Ohio EMA.
- B. In the case of a Hostile Action at a commercial nuclear power plant, parts of this plan may be utilized in a way that does not follow typical actions (i.e. actions for an Alert declared for Hostile Action may utilize some Site Area Emergency actions as necessary).

V. ASSUMPTIONS

- A. Varying types of radiological emergencies can arise in conjunction with operations of a nuclear power facility.
- B. State departments and agencies and, in turn, Federal agencies, will respond to assist county/local governments and execute the state's responsibilities in an emergency to its citizens.

- C. The utility company personnel will comply with established procedures for notification and information exchange.
- D. Problems presented for solution by the planning process will involve a considerable degree of interagency coordination, planning and cooperation at all levels of government and in all stages of response activity.
- E. This plan will encompass all of the state departments and agencies that are cognizant of, or are capable of planning for and responding to radiological emergency incidents at a commercial nuclear power plant. Responsibilities, duties and activities will be set forth in this plan to permit maximum flexibility and development of separate response capabilities but will also establish the parameters for a coordinated response effort.

VI. CONCEPT OF OPERATIONS

A. Direction and Control - Notification

1. Notification includes all initial actions necessary to alert county, state, Federal and private sector response agencies to the occurrence of a nuclear power facility emergency and an estimate of the area on- or off-site that may be involved. Also, the initial information should provide primary response agencies with enough information to permit assessment of the magnitude, nature and consequences of the incident to permit appropriate, timely and skilled responses.
2. When an incident occurs that causes, or may cause, an off-site release, the plant operator will alert the following primary response agencies that have 24 hour capability:
 - a. County sheriff or other designated authority, who in turn, will notify county agencies and other response organizations, as identified in the county plan.
 - b. Ohio EMA
 - c. U.S. NRC
 - d. All other involved response organizations as identified in the utility company's emergency plan.
3. Upon notification of an incident involving protective actions (actual or potential offsite release), the primary response agencies will take the following actions:
 - a. The county commissioners or designated authority (sheriff) will alert the population in the 10-mile EPZ.
 - b. Ohio EMA will alert ODH and other state departments and agencies whose resources may be required. In addition, Ohio EMA will alert contiguous governmental entities that may be affected by the incident.

- c. Ohio EMA will alert FEMA and other Federal agencies, as appropriate in accordance with provisions of the Federal Radiological Emergency Preparedness Program and/or National Response Framework (NRF).

B. Planning Standard D - Emergency Classification System

1. Objectives

- a. Emergency Phase – The Emergency Phase (early phase in EPA 400) is the period at the beginning of a nuclear power plant incident when immediate decisions are made for effective use of protective actions (such as evacuation and/or sheltering).
- b. Intermediate Phase – After the conditions of an incident that escalated to a General Emergency have stabilized, the source of radioactive release has been brought under control, and environmental radiological measurements are available for use as a basis for decisions on additional protective actions, then off-site response agencies transition to the Intermediate Phase. The Intermediate Phase extends until additional actions are completed. It may overlap both the Emergency and the Recovery Phase to some extent. The Intermediate Phase consists of four major efforts: (a) ensuring people remaining in the defined restricted area are relocated, (b) initiating preliminary advisories to limit or prevent exposure for the 50-mile ingestion pathway, (c) assisting people who need re-entry into the affected area, and (d) returning the public to the areas that were previously evacuated, but now are deemed safe enough for unconditional occupancy or use.
- c. Recovery Phase – After the emergency has ceased and the intermediate actions have commenced, off-site response agencies begin recovery planning. To accomplish recovery planning, additional radiation surveys and sampling are performed and data are collected. The Recovery Phase (late phase in EPA 400) is the period beginning when recovery actions designed to reduce radiation levels in the environment below acceptable levels are commenced, and ending when the recovery actions have been completed. The Recovery Phase consists of actions taken to ensure a return of the environment to acceptable levels for return by the general public for unconditional occupancy or use in the affected areas. In order to transition to the Recovery Phase, the following must be completed: (a) emergency conditions on-site have stabilized; (b) off-site release of radioactive material has ceased, and there is little or no potential for further unintentional offsite releases; (c) off-site contamination is characterized, its extent determined, and the immediate consequences are assessed; (d) immediate protective actions for public health and safety have been accomplished; and (e) an initial long-range monitoring plan has been developed in conjunction with the affected state and local governments, and appropriate Federal agencies.

C. Emergency Classification Level Descriptions

1. A standard emergency classification system and/or action level scheme is used by utility operators and the off-site response agencies of state and county government for response measures. For the EMERGENCY PHASE of a power plant event/incident, these classifications (by NUMARC or NEI 99-05 Revision 5 standard).
 - a. Notice of Unusual Event
 - i. Licensee emergency classification level indicating that unusual events are in process or have occurred that indicate a potential degradation in the level of plant safety 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.
 - b. Alert
 - i. Licensee emergency classification level indicating that events are in process or have occurred that involve an actual or potential substantial degradation in the level of plant safety or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of intentional malicious dedicated efforts of a hostile act. Releases are expected to be limited to small fractions of the Environmental Protection Agency protective action guide exposure levels.
 - c. Site Area Emergency
 - i. Licensee emergency classification level indicating 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. Releases are not expected to exceed Environmental Protection Agency protective action guide exposure levels beyond the site boundary.

d. General Emergency

- i. Licensee emergency classification level indicating 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 Environmental Protection Agency protective action guide exposure levels offsite for more than the immediate site area.

D. Planning Standard F - Emergency Communications

1. Objectives

- a. The purpose of the emergency communications system for the State of Ohio is to provide for reliable communications among principal responders and organizations, as well as between the various levels of government.

2. Primary Communications

- a. The telephone will be utilized as a primary means of communications between licensees and state/county governments in the event of an emergency at the Beaver Valley Power Station (BVPS). For incidents involving the Davis-Besse Nuclear Power Station (DBNPS) and the Perry Nuclear Power Plant (PNPP), dedicated telephone lines are used as the primary means of communications.
- b. Once initial notification of an Alert emergency classification is given to the state, the state may activate the Assessment Room. Once initial notification of a Site Area Emergency or General Emergency classification is given to the state, the state will activate the Assessment Room if not already done so. Verifying calls will be placed (via the Radiological Branch) and a multilevel, conference style, telephone communication system will be established. This, in turn, will be supported by a backup fax machine to verify voice traffic and meteorological data. This system will remain open and operational until the incident is declared terminated by appropriate authority. Operational communication links are graphically portrayed in Figure 2.

3. Twenty-Four (24) Hour Notification/Communications

- a. The initial notification will be received by OSP Hub of the Ohio State Highway Patrol (OSHP) located at the State of Ohio Emergency Operations Center/Joint Dispatch Facility (SEOC/JDF), which is manned 24 hours.
- b. For BVPS incidents, initial notification calls will be received over the Initial Notification Conference (INC) line.

- c. For DBNPS and PNPP incidents, initial notification will be received over their specific dedicated line.
 - d. For FERMI incidents, initial notification (all except Unusual Event) will be received through Ohio EMA 24-hour contact number or Law Enforcement Agencies Data System (LEADS).
 - e. Upon receipt of a radiological emergency notice, the OSHP will begin alerting appropriate Ohio EMA officials via procedures outlined in the Ohio EMA Duty Officer Handbook.
 - f. Should the telephonically based communications/notification system become inoperable or left unanswered, it is the responsibility of the notifying licensee to contact OSP Hub via the most appropriate means of communications such as cellphone, satellite phone, or MARCS to request that an emergency message be relayed to Ohio EMA Duty Officer per Dispatch Procedures.
 - g. For notifying counties located within an ingestion pathway, an e-mail message will be used as the primary means of communications/notification and will be verified by telephone. This system may also be backed up by using the MARCS or LEADS.
4. Secondary Communications
- a. Once the notification has been made and communication links are established, a radio net will serve as a backup (or secondary) means of communications between the licensee's Emergency Operations Facility (EOF) and the state/county EOCs.
5. Mobile Communications Van
- a. Upon declaration of an Alert at a power station, a mobile communications van may be dispatched to the affected area. This vehicle will provide radio redundancy with the existing MARCS radio links between the EOF, state and county EOCs. In addition, it has the capability of establishing and maintaining emergency communication links with response/support agencies via VHF or MARCS radio systems, and serves as a secondary radio backbone with radiological monitoring teams within the affected jurisdiction.
6. Communications with Contiguous States
- a. Upon notification of radiological emergency, the Ohio EMA will inform contiguous states by using the state's 24-hour duty number (contained in established procedures). The National Warning System (NAWAS) will be used as a secondary means of contacting these states. FEMA National Radio System (FNARS) shall serve as a back-up to NAWAS for contacting contiguous states.
7. Communications With Federal Agencies

- a. Primary communications with Federal agencies will be made via telephone with radio as a supporting, or backup system when available. County governments may communicate with Federal response organizations through Ohio EMA.
8. Notification of Other Nations (Canada)
- a. Notification of radiological/nuclear emergencies affecting Canada will be made to the Ministry of Community Safety and Correctional Services by telephone. Should telephones be inoperable, Ohio EMA shall contact FEMA Region V by NAWAS or FNARS. FEMA Region V shall contact the Ministry of Community Safety and Correctional Services through Camp Borden, which serves as the primary warning center for Canada.
9. Local Fire and Rescue Units (Ambulances)
- a. Radio communications to hospitals and their respective base stations are outlined in each county plan. At the State level, the ONG may have limited communication with deployed evacuation and medical transportation assets outside of internal communications systems, which are not compatible with MARCS. Communication with any ONG assets is directed through the ONG EOC Liaison, who will have MARCS capability, unless otherwise directed. Communications with medical facilities is relayed from the county EOC by commercial telephone or by other means.
10. Communication Tests and Drills
- a. Communication systems necessary to support the operations cited in this plan shall be tested on a regular basis as shown in Figure N-1 in the REP Operations Manual.
11. Emergency Telephone Numbers and Radio Frequencies
- a. In the event of a nuclear power plant incident, Ohio EMA maintains a 24-hour telephone number.
 - b. The 24-hour telephone numbers of neighboring/continuous governmental entities are maintained in procedures for the following:
 - i. Michigan
 - ii. Pennsylvania
 - iii. Beaver County, Pennsylvania
 - iv. West Virginia
 - v. Hancock County, West Virginia
 - vi. Ontario (Canada)
 - c. The telephone numbers and e-mail addresses for all designated ingestion zone counties within the State of Ohio are maintained by Ohio EMA.

- d. Radio frequencies and equipment are in place to link: (Ref. Planning Standard F of the REP Operations Manual)
 - i. SEOC and local EOCs
 - ii. Communications van; utility EOF; Field Monitoring Teams; Joint Information Center (JIC)
 - iii. LEADS
 - iv. SEOC and FEMA
 - v. SEOC and OSHP
 - vi. SEOC and ONG

- e. The Ohio State University (OSU) Extension establishes and maintains communications with county OSU Extension agents in affected and adjacent counties.

12. Communications During Waterway Clearing Operations

- a. In the event waterway clearing operations are in progress, each responding agency shall utilize departmental radio networks to establish and maintain communications between their headquarters and on-scene coordinators. At times, it may be necessary for an agency to use another's radio net in order to coordinate actions and response. This action is intended to be kept at minimum usage.

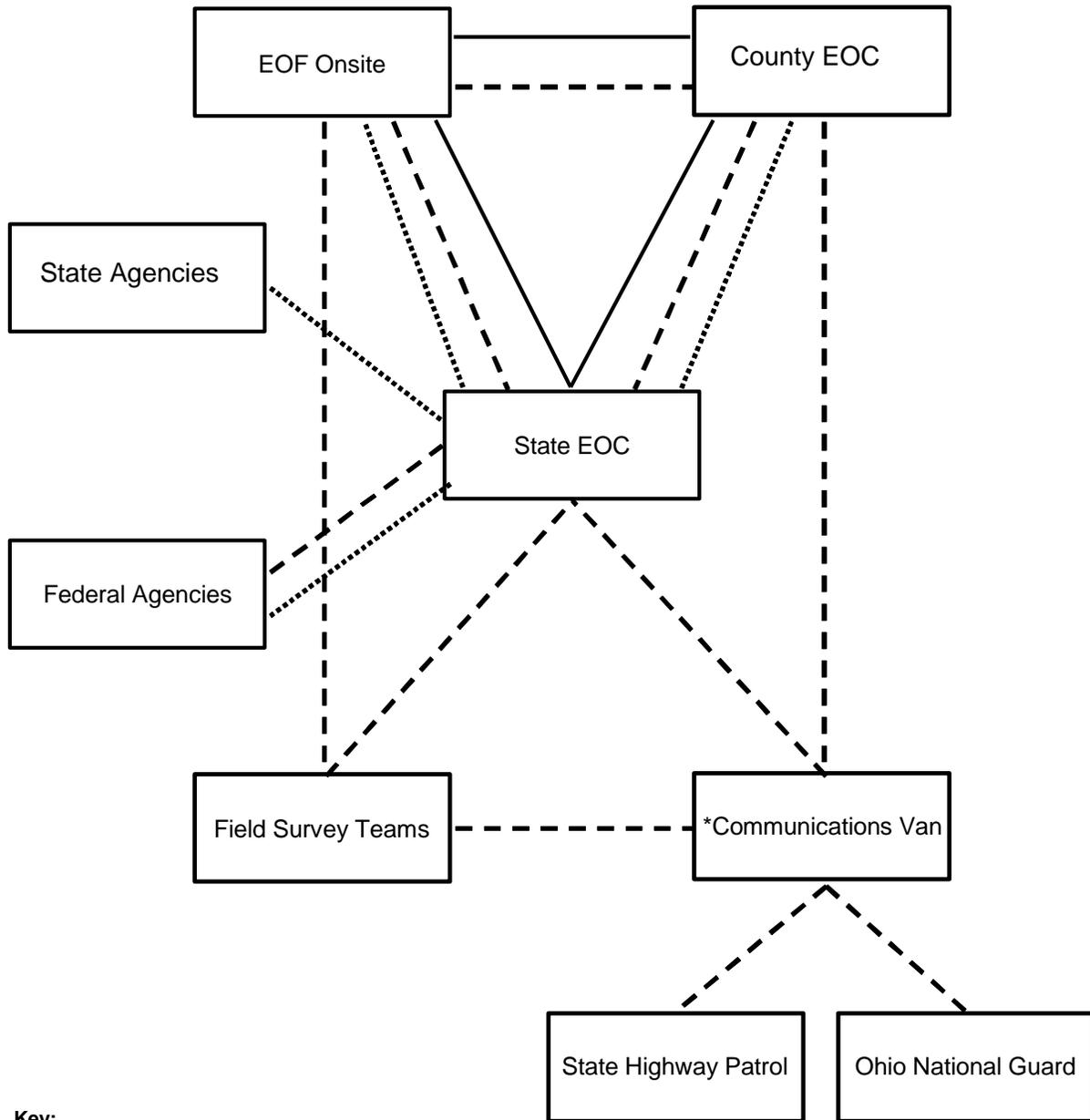
- b. The Search-and-Rescue (SAR) Mission Commander utilizes U.S. Coast Guard (USCG) frequencies to communicate with:
 - i. Headquarters, Ninth District (USCG)
 - ii. Sector Detroit (USCG)
 - iii. Sector Buffalo (USCG)
 - iv. USCG helicopter air crew
 - v. USCG responding vessels and crew

- c. The Ohio Department of Natural Resources (ODNR) Division of Watercraft Supervisor utilizes departmental radio frequencies to communicate with:
 - i. Division of Watercraft responders
 - ii. Division of Wildlife responders

- d. Upon a change in the emergency classification level at the nuclear power facility, responders shall be notified of this change through MARCS, telephone, or back-up communications and advised of actions to be taken, if any:
 - i. Representatives at the SEOC shall notify the ODNR offices nearest the plant of the situation and coordinate with the Division of Watercraft Law Administrator or Northern Regional Manager.
 - ii. Agency regional offices shall notify their on-scene coordinator, who shall relay the message by radio to all responders.

FIGURE 2

PRIMARY AND SECONDARY COMMUNICATION LINKS



E. Planning Standard G - Public Education and Information

1. PURPOSE – This will establish the guidelines for official release of accurate and timely news bulletins and public information in conjunction with a nuclear incident. This section does not include the release of an EAS Message over the Emergency Alert System (EAS) by county officials. EAS messages are located in respective county plans as required.

F. Planning Standard I - Accident Assessment

1. PURPOSE – The State of Ohio will assure that assessment will be made independently from the nuclear power plant in the event of a radiological emergency condition. This section will specify equipment, systems and methods for making a rapid, accurate assessment.

- a. Organization – The Ohio EMA will assemble the Radiological Assessment Branch to make initial assessments of the situation. As soon as Ohio Department of Health Bureau of Radiation Protection (ODH-BRP) personnel arrive at the State EOC, Ohio EMA personnel will brief them on status and actions. At that point, ODH-BRP will assume control of dose assessment operations. Ohio EMA personnel will support in the performance of dose assessment per established procedures, to include operation of computer systems with a dose assessment program.

- b. The Radiological Assessment Branch will consist of the following:

- i. Radiological Assessment Branch Director (OEMA)
- ii. Radiological Assessment Support Unit Leader (OEMA)
- iii. Dose Assessment Group Supervisor (ODH-BRP)
- iv. Formal Line Communicator (ODH-BRP)
- v. Informal Line Communicator (ODH-BRP)
- vi. Dose Assessment Unit Leader (ODH-BRP)
- vii. Dose Assessment QA Systems Operator (ODH-BRP)
- viii. State Dose Assessment Systems Operator (OEMA)
- ix. Field Monitoring Team Communicator (OEPA)
- x. The state will organize three Field Monitoring Teams that will operate in the affected area.
 - a. Field Monitoring Team (1) (OEMA/ODH-BRP)
 - b. Field Monitoring Team (2) (OEMA/ODH-BRP)
 - c. Field Monitoring Team (3) (OEMA/ODH-BRP)

- c. There will be four state representatives at the primary county EOC to advise on protective action recommendations. They are:

- i. Health Physicist (ODH-BRP).
- ii. Resident Radiological Analyst (Ohio EMA).
- iii. Designated district staff (OEPA).

- iv. Field Monitoring Team Coordinator (Ohio EMA)
- d. An Ohio EMA Radiological Analyst and a Health Physicist from the ODH-BRP will be present at the utility near-site EOF to serve as liaisons.
- e. Notification of Assessment Personnel – The Ohio EMA will receive notification of an incident involving a nuclear power facility. Via telephone, Ohio EMA will notify the directors or assigned EOC representatives of ODH-BRP, OEPA and other agencies as needed following established procedures.
- f. Declaration of An Alert or Higher Emergency Classification
 - i. Upon activation of the SEOC Assessment Room, personnel staffing those positions will report to the State EOC for assignment.
 - ii. When directed by the SEOC management, the Field Monitoring Teams will report to the Radiological Instrument Maintenance and Calibration Laboratory, perform equipment inventory and prepare to be dispatched.
 - iii. When directed by the SEOC management, the Field Sample Screening Teams will perform equipment inventory and prepare to be dispatched.
 - iv. Information and instructions for the dispatch and assignment of other personnel not directly involved in accident assessment are provided in the applicable section of this document or the REP Operations Manual.
 - v. All designated personnel shall report to assigned location for issue of equipment and possible assignment.
- g. Transportation
 - i. Request for aerial or ground transportation of Initial Response Team will be submitted to Ohio EMA and assigned to ESF-1 for implementation. The manner and method of transport will be adjusted due to availability of resources and weather conditions.
 - ii. ESF-1 shall provide transportation of radiological samples from the sample screening point to designated sample testing laboratories.
- h. Communications – The SEOC Assessment Room will establish communications via phone with the state representative at the licensee’s EOF to obtain data needed for assessment. The state Field Monitoring Teams (FMTs) will be equipped with vehicles containing radios. They will transmit data to the Ohio EMA FMT Coordinator located in the host county EOC. The FMT Coordinator will then relay information to the Ohio FMT Communicator located in the SEOC Assessment Room and to the licensee's EOF, and the JIC, when requested.

- i. Equipment – Radiological monitoring and assessment equipment is available through the Ohio EMA. (Ref. Planning Standard H of the REP Operations Manual for list.)
- j. Assessment
 - i. The Radiological Assessment Branch will use the U.S. EPA 400-R-92-001, the U.S. Department of Health and Human Services/Food and Drug Administration (HHS/FDA) Accidental Radioactive Contamination of Human Food and Animal Feeds: Recommendations for State and Local Agencies, and the U.S. NRC Response Technical Manual (RTM-96) as guidelines for calculations and recommendations. These documents will be used in conjunction with Ohio EMA dose assessment procedures.
 - ii. Projected doses in specific areas will be compared to U.S. EPA and U.S. FDA PAGs in determining appropriate actions.
 - iii. The Executive Group will coordinate any protective actions with the affected jurisdictions that have occurred prior to issuance of any state recommendations. This coordination will occur in the form of a conference call.
 - iv. ODH-BRP will develop recommendations for the protection of the public in the affected area (i.e. evacuation and/or sheltering).
 - v. ODH-BRP shall issue recommendations for emergency workers, institutionalized individuals, and the general public to take Potassium Iodide (KI).
 - vi. Except in the case of a fast-breaking event or a hostile action event, ODA shall recommend precautionary actions be implemented for livestock and poultry within a ten mile radius upon declaration of a Site Area Emergency and consider an extension at General Emergency. During a hostile action event, this recommendation may need to be made at a lower ECL.
 - vii. The Radiological Assessment Branch will consider issuing a recommendation on clearing the waterways to the Executive Group. The Executive Group will consider the recommendation based on, but not limited to, the following factors in consultation with the counties and ODNR to reach the decision to initiate such actions:
 - Plant Emergency Actions Levels (EALs)
 - Current and projected meteorological conditions
 - Time of day
 - Season of the year

- viii. The state's Protective Action Recommendations shall be transmitted to the counties and utility using the "State Protective Action Recommendation" form (Ref. REP Plan Forms Binder). The protective actions taken shall be transmitted using the "County Protective Action Decision" form (Ref. REP Plan Forms Binder).

- ix. Information provided through the E-Data system from BVPS, DBNPS, and PNPP, will be transmitted to and monitored by Ohio EMA Radiological personnel. The E-Data system is updated every 30 seconds and the system provides information for the following three areas:
 - Meteorological Data (Met Data) - This data helps determine what areas of the EPZ would be affected due to a release.
 - Release Data - This data provides readings from monitored release points and is used in accident assessment. When coupled with meteorological data, it allows the state dose assessment team to make offsite dose projections. This data also verifies verbal information provided by the affected nuclear power plant.
 - In-plant Parameters - This data can be used to determine the nature and extent of plant problems to aid in determining the potential risk to the public.

- x. The Field Team Center (FTC) will be the dispatch point for the Field Sampling Teams. Ohio EMA will provide escorts to accompany sampling teams from ODA into the Restricted Zone if needed and, if requested, collect air samples while in the ingestion zone to check for possible re-suspension.
 - The ODA will sample various foods including (but not exclusive to) meat and meat products, vegetables, fruit, poultry, animal feed, grain, milk and milk products, and honey products.
 - The OEPA will sample soil, water, snow, and vegetation.
 - The ODNR will sample fish and wildlife that may be consumed by the public that is located within and acquired from the ingestion zone.

- xi. After laboratory analysis, sample radionuclide concentration data shall be sent to the state Radiological Assessment Branch for dose calculations, following established procedures. Results of sample calculations shall be compared against U.S. EPA and FDA PAGs to determine further actions to be taken. These actions may include:
 - Isolation of agriculture and related food products
 - Restriction of shipping and distribution (embargo) of milk and food products
 - Diversion of milk, crop and food products to long-term storage and deferred marketing

- Condemnation and disposal, at a site approved by concurrence of OEPA and ODH (Ref. Planning IPZ of the REP Operations Manual.)
- xii. Drinking water radionuclide concentration data will be compared with Table IV-2a, EPA 570/9-76-003 to determine the safety of public drinking water in accordance with Ohio Administrative Codes 3745-81-15 and 3745-81-16.
- xiii. Soil radionuclide data shall be calculated by the state Dose Assessment Team to determine the return or relocation of the evacuated populace. Criteria for relocation shall be based on PAGs for exposure to deposited radioactive materials if:
 - Projected dose exceeds 2 REM TEDE in the first year from exposure to ground deposition and the inhalation of re-suspended particles utilizing radioactive decay, weathering, and normal part-time occupancy in structures. Relocation to avoid exposure of the skin to beta radiation is warranted at 50 times the numerical value of the relocation PAG.
 - Projected dose exceeds 0.5 REM TEDE in any single year after the first year utilizing radioactive decay, weathering, and normal part-time occupancy in structures.
 - Projected dose exceeds 5 REM TEDE cumulative dose in a 50-year period utilizing weathering, radioactive decay, and normal part-time occupancy in structures.
- xiv. Each sampling agency will regulate and enforce actions upon foods, water, milk, and related products as authorized by statute, and in accordance with U.S. EPA and FDA guidelines. (Ref. Planning IPZ of the REP Operations Manual.)

G. Planning Standard L - Medical and Public Health Support

1. Purpose – The purpose of this section is to assure that arrangements are made for medical services for contaminated individuals following a radiological emergency at a nuclear power plant.
2. Scope - This portion of the plan addresses those functions to be performed at the state level. Detailed information concerning specific sites will be found in county emergency plans under separate cover.
3. Background Data
 - a. ODH is charged with coordinating local health department planning for radiation emergencies at licensed nuclear facilities. With regard to the provision for medical services for contaminated individuals, ODH is responsible for the following:
 - i. The primary agency to coordinate ESF-8 activities

- ii. Coordinating the provision of emergency medical supplies and health services to the affected areas
- iii. Developing and maintaining a listing of hospitals and other medical facilities with a response capability in radiation incidents
- iv. Establishing supplies and procedures for use of Potassium Iodide (KI) for emergency workers, the general public, and institutionalized individuals (i.e., patients who cannot be moved from evacuated hospitals and medical staff needed to care for such patients)

4. Assumptions

- a. On-site first aid capability will be provided by the licensee.
- b. County government entities will arrange for transportation of contaminated individuals to appropriate medical facilities using local resources, and will request assistance from the state only when their resources have been exhausted or are deemed inadequate.
- c. Medical resources of contiguous states will be available for use as required and coordinated through the SEOC.
- d. All accredited hospitals shall have an extended disaster plan to include provisions for radiological emergencies.

5. Medical Facilities

- a. Medical Care – Medical facilities or institutions having emergency rooms and nuclear medicine departments, and having expressed a willingness to participate in the State REP Program (per Figure L-1 in the REP Operations Manual), are capable of receiving and caring for most radiological accident cases. Specific letters of agreements for services between designated medical facilities and counties are contained in appropriate county plans.
- b. Monitoring of Contaminated Individuals
 - i. Medical facilities identified in Figure L-1 in the REP Operations Manual have emergency rooms, diagnostic and/or therapeutic radioisotope facilities with the capability of monitoring radiation exposure to the thyroid.
 - ii. They also meet the following additional criteria:
 - Located within 50 miles of a nuclear power station
 - Certified by the Joint Commission of Accreditation of Healthcare Organizations (JCAHO) and/or the American Osteopathic Association
 - Licensed by the ODH – BRP as a medical facility for radioactive materials

- iii. Additional Support – Additional assistance may be obtained through the U.S. Department of Energy (DOE) and other agencies (Ref. Federal Register, Vol. 49, No. 178 of September 12, 1984) and by utility-contracted medical consulting firms. (Ref. Utility Emergency Plans)

6. Transportation

- a. Victims of radiological incidents will be transported to medical facilities by the most accessible local means, as predetermined in the county plan. In the event it is determined that local resources cannot adequately respond to this requirement, assistance will be requested from the state through ESF-8, Public Health and Medical Services.
- b. Assistance in supplying transportation (medical evacuation mission) of injured or injured and potentially contaminated individuals to designated hospitals can be provided by the ONG. Due to the varying missions of the ONG and support of military operations outside of the U.S., specific ONG units are not designated to supply a fixed or minimum number of assets. The resources used will be coordinated through ESF-8 following a Governor's Proclamation issued either in writing and/or confirmed verbally by the Executive Director of Ohio EMA or an appointed representative.

7. Training

- a. Radiological training for medical and medical support personnel will be a joint effort where state personnel will provide the technical portion, local personnel will provide the local specifics, and utility personnel will provide utility specifics. (Ref. Planning Standard O of the REP Operations Manual.)

H. Planning Standard M - Intermediate and Recovery Phases

1. Purpose

- a. The purpose of this section is to assure an efficient and orderly return to an environment of unconditional occupancy and use for the affected areas as soon as possible. The intermediate phase is arbitrarily defined as the period beginning after the source and releases have been brought under control and environmental measurements are available for use as a basis for decisions on protective actions and extending until these protective actions are terminated. This phase may overlap the Emergency Phase and the Recovery Phase. The Recovery Phase is the period beginning when recovery actions designed to reduce radiation material in the environment to levels safe enough for unconditional occupancy or use are commenced and ending when all recovery actions have been completed.

- b. The Intermediate/Recovery Phases will take the form of four major efforts. The first, Relocation, will be to ensure people have been removed from the restricted area. The second, Ingestion, is primarily a State and Federal agency function. It will concentrate on intermediate phase efforts in the 50-mile ingestion pathway (Ref. Planning IPZ of the REP Operations Manual). The third effort, Re-entry, is to assist people who need entrance into the affected area(s). Finally, the fourth, Return, is to return people to the areas deemed safe enough for unconditional occupancy or use.
 - c. During the Intermediate and Recovery Phases, the Ingestion Zone Recovery, Re-entry Advisory Group (IZRRAG) will make recommendations for protective actions, based on information from and in consultation with assessment, to the Governor and/or the Executive Group. The Governor and/or the Executive Group will determine the protective actions to recommend to county officials. The counties will determine the protective actions to take, inform state officials and the public, and implement appropriate actions.
2. Restricted Zone
- a. The Restricted Zone (RZ) is defined by EPA 400 as an area with controlled access from which the population has been relocated. EPA 400 further defines the Restricted Zone as an area where projected doses are equal to or greater than the relocation PAGs (Planning Standard M of the REP Operations Manual).
 - b. The RZ is established through coordination by the State of Ohio and county personnel. The RZ may include areas that are beyond the area that meets or exceeds relocation PAGs. The boundary is established on the basis of difficulty or ease of implementation. The use of convenient features such as roads should be used in determining the RZ boundary.
 - c. The RZ is initially the evacuated subareas. If it is found that the area radiation levels are lower than the relocation PAGs the boundaries may be reduced.
 - d. The State of Ohio uses a default Derived Response Level (DRL) of 2.5 mR/hr. This DRL is used in the time period shortly after reactor shutdown and after the plume has passed (approximately 24 hrs.) for the RZ.
 - e. For periods much greater than 24 hours after reactor shutdown and plume passage, the RZ boundary will be determined and/or adjusted based on actual deposition and other radiological assessment of samples from the affected area. The RZ can change many times during the course of the incident. Each change in the RZ should be labeled with a revision number and a reason for the change (e.g. isodose lines or sampling).

VII. ORGANIZATION AND ASSIGNMENT OF RESPONSIBILITIES

A. This section identifies the primary organizations participating in the response to a radiological incident at a nuclear power facility. It summarizes the individual responsibilities for specific emergency response functions and the basic structure for the state's emergency response effort (Ref. Figure A-1 in the REP Operations Manual).

1. Ohio Emergency Management Agency (Ohio EMA)

- a. Provide prompt field radiological measurements.
- b. Assist in the development of and provision for accident assessment information, and the recommendation of protective responses and recovery, reentry, return, and relocation actions.
- c. Dispatch a representative to the utility EOF and to the county EOC to serve as the state's liaison during an emergency.
- d. Dispatch a representative to the JIC to serve as the state's spokesperson.
- e. Coordinate with county agencies through Ohio EMA's resident Radiological Analyst.
- f. Coordinate the statewide Emergency Alert System (EAS).
- g. Receive initial notification of emergencies involving DBNPS, BVPS, PNPP, and Fermi-2 facilities by OSP Hub at the SEOC/JDF, who immediately notifies Ohio EMA.
- h. Upon receipt of notification, initiate an immediate call-down to appropriate personnel and agencies, to include the Governor
- i. Coordinate through ESF-6 the activities of all volunteer relief organizations during an emergency or recovery from an emergency.
- j. Organize an accident assessment capability to be used immediately after notification of an ECL of Alert, or higher, at a commercial nuclear power plant.
- k. Organize and operate field monitoring and response teams for the plume exposure pathway.
- l. Establish a centralized command and control facility at the State EOC for state governmental agencies to effect liaison and assistance operations with county EOCs.
- m. Provide space in the State EOC for the Radiological Assessment Branch.

- n. Provide for communications and data transfer between the nuclear power plant, state and county EOCs and the Field Monitoring Teams via dedicated telephone line or radio net. (Ref. Planning Standards E and F, this plan.)
 - o. Maintain the capability, instruments and expertise necessary for field radiation monitoring to confirm dose projection; detect concentration levels for Iodine-131 (I-131) as low as 10^{-7} uCi/cc (3.7E-3 Bq/cc); and perform other field survey operations in the plume or effluent pathway, per established procedures.
 - p. Provide an operator to monitor the Emergency Response Data System (ERDS). The ERDS is a real-time data system that allows direct transmission of plant data from onsite computers at the nuclear power plant to the U.S. NRC Operations Center in Rockville, MD. The data link is initiated by licensees during emergencies that cause declaration of an Alert or higher ECL. The users of this data link include the NRC Operations Center, NRC Region III, and the State of Ohio Radiological Assessment Branch. Information from ERDS may be utilized in determining protective actions for the public.
 - q. Provide access to E-Data system, an operator and a computer program designed to take the various measured parameters obtained from field monitoring team data and the utility, and translate the information into dose rates for key isotopes and gross radioactivity measurements. Using a dose assessment computer program, estimate integrated dose from the projected and actual dose rates and compare these estimates with PAGs. The operation and management of the computer program shall be by established procedures. Once ODH-BRP arrives, provide the projections for interpretation to determine protective action recommendation.
 - r. After the plume has been deposited on the ground and no further release of radioactive material is expected, Ohio EMA will establish and coordinate the operations of a Field Team Center (FTC) near the affected area to serve as a dispatch point for the ingestion pathway sampling teams. The FTC will be co-located with the Federal Radiological Monitoring and Assessment Center (FRMAC), established by DOE. (Ref. Planning Standard C of the REP Operations Manual)
2. Ohio Department of Public Safety (ODPS)
 - a. Upon activation of the SEOC, the ODPS Legal representing the Ohio EMA shall be present to address legal questions that may arise.
 3. Ohio State Highway Patrol (OSHP)
 - a. OSHP operates both NAWAS for warning and emergency communications and LEADS, a notification system for OSHP posts and other law enforcement agencies that may be used as a backup to disseminate nuclear incident information to and from county authorities as required. OSP Hub (located in the SEOC/JDF) serves as the primary point of contact for initial notification of incidents involving DBNPS, PNPP, BVPS, and FERMI incidents.

4. Ohio Homeland Security (OHS)

- a. Coordinate the effort to enhance the protection of critical infrastructure and key resources in Ohio, including activities of state and local government agencies' to enhance security at nuclear power plants, and to provide notification of credible threats against these power plants when information becomes available to the Ohio Department of Public Safety.
- b. Provide assistance or a representative to the SEOC if DBNPS, BVPS, or PNPP declares any stage of Emergency Action Level (EAL) resulting from a credible threat against that power plant (EAL level typically an Unusual Event), or declares any higher EAL resulting from a suspected or direct act of terror or sabotage on the affected nuclear power plant.
- c. Provide leadership and expertise in the Executive Group of the SEOC, for any act requiring DBNPS, BVPS, or PNPP to declare an EAL of Alert or higher resulting from (1) actual or suspected act of sabotage or terror attack on the plant, (2) a site specific credible threat of imminent attack within the Protected Area of an affected nuclear power plant, (3) any actual or suspected credible threat affecting security, and/or (4) any more severe level of threat or attack requiring a higher EAL classification in accordance with the respective nuclear power plant's emergency notification plan/procedures.

5. Ohio Department of Health (ODH)

- a. Serve as the primary source of direction and control in the areas of radiological dose assessment, recovery, reentry, return, and relocation guidance. Provide the recommendation of protective actions for the public.
- b. Upon notification, dispatch personnel to the JIC (technical liaison), SEOC (Initial Response Team and Dose Assessment Team), primary county EOC (liaison), and utility EOF (liaison) as per established procedures.
- c. Provide personnel to the affected area to serve on the state FMTs.
- d. Develops and issue recommendations for the use of KI as a thyroid blocking agent. Supply the thyroid-blocking agent KI in advance of an incident to the Ohio EMA Resident Radiological Analyst for pre-distribution to emergency workers, and to county health departments for storage/distribution to institutions and to the general public.
- e. ODH-BHP is responsible for developing and maintaining a listing of hospitals and other medical facilities for use in radiation incidents. (Figure L-1 of the REP Operations Manual)

- f. Upon arrival at the SEOC, assume control of the state Radiological Assessment Branch, establish communications with site and affected counties, provide quality assurance (QA) check and interpretation of dose projections, and perform offsite dose projections/calculations as necessary for QA purposes.
 - g. Coordinate with county and Federal counterparts.
 - h. Provide rapid, accurate assessment of the consequences of a radiological release from a nuclear facility. After the Assessment Room is operational (and then as required), advise the Governor or governor's designee on appropriate protective action recommendations for the affected counties.
 - i. Provide personnel to the area to screen and prepare radiological samples for transport to a radiological analytical laboratory. For the case of BVPS incidents, West Virginia may also have samples screened and transported for analysis by ODH laboratory. An ODH Health Physicist will be present to ensure adequate safeguards are taken and proper chain of custody documents are maintained to assure radiological samples are received in optimal condition.
 - j. Provide personnel to support the IZRRAG as indicated in Planning Standard M – Intermediate and Recovery Phases in the REP Operations Manual.
 - k. Issue recommendations to emergency workers and to institutionalized individuals to take KI if the dose to the thyroid is projected to exceed U.S FDA Guidance (Ref. REP Operations Manual).
 - l. Issue recommendations for the general public to take KI.
6. Ohio Department of Agriculture (ODA)
- a. Assist Ohio EMA and other state agencies in the planning for and direction of a statewide program for protection against radiological damage to livestock, food, and crops.
 - b. Plan and direct a statewide program to ensure public health and safety with regard to the consumption of milk and milk products.
 - c. When necessary, issue Control Actions for quarantine, isolation, confiscation, embargo or destruction of crops, stock and food that might have been contaminated.
 - d. Issue livestock and poultry advisories within affected areas.
 - e. Coordinate with the USDA and county OSU Extension Agents in affected areas in making estimates of crop and livestock damages from radiation incidents.
 - f. Support state and county emergency boards in the area of retail food distribution and mass feeding supplies (by providing information to food and water suppliers).

- g. Control wholesale food distribution in accordance with USDA regulations and policies and state/Federal memoranda on this subject.
 - h. Recommend precautionary actions to implement for livestock and poultry.
 - i. Provide personnel support to IZRRAG as indicated in Planning Standard M – Intermediate and Recovery Phases in the REP Operations Manual.
7. Ohio Department of Transportation (ODOT)
- a. Provide traffic and roadway information to assist local authorities in the development and determination of the best available travel/evacuation routes prior to and during radiological emergencies.
 - b. Provide equipment and resources as needed to maintain the flow of traffic on State, US and Interstate Highways in cooperation with other support agencies, including snow/ice removal; necessary repairs to pavements/structures, and detours to allow traffic to proceed.
 - c. Through ODOT Aviation, provide for the transport of the Initial Response Team from the SEOC to the affected area weather permitting. This assistance should be coordinated through ESF 1.
8. Ohio Department of Natural Resources (ODNR)
- a. Ensure that provisions are in place for the alerting of staff and visitors on state recreational areas and provide for marine emergency access to Lake Erie islands.
 - b. Provide alternate aircraft and pilots for waterway notification of recreational boaters and mariners on Lake Erie, as well as personnel, watercraft, and equipment.
 - c. ODNR will coordinate with the U.S. Coast Guard (USCG) effort to assist in marine traffic control and lake clearing.
 - d. Through the Division of Wildlife, provide for the sampling of fish and wildlife within the ingestion pathway zone. ODNR may suspend fishing, hunting, and trapping in the affected area as needed.
 - e. Monitor recreational waterways and prescribed methods of use for areas affected by the radiological incidents.
 - f. Provide personnel support to IZRRAG as indicated in Planning Standard M of the REP Operations Manual.
9. Ohio Environmental Protection Agency (OEPA)

- a. Provide a liaison to the primary county EOC that will be responsible for OEPA operations at the local level and may provide guidance or interpretation of guidance to county commissioners as a member of the county EOC dose assessment group.
- b. Provide personnel to the SEOC to assist the ODH-BRP in establishing protective action recommendations based on projected radiation exposure levels or plant conditions with consideration given to PAGs developed by the U.S. EPA and FDA.
- c. Provide general assistance in the areas of protective action, recovery, reentry, relocation and return guidance.
- d. Evaluate whether public water supplies with sources in the affected areas are safe for consumption.
- e. Ensure waste water treatment facilities for the affected area are functional.
- f. Provide personnel to the SEOC when notified to serve on the state Radiological Assessment Branch to fulfill the role as the FMT Communicator.
- g. Upon activation of the FTC, provide personnel, equipment, and vehicles necessary to carry out the environmental sampling missions as listed in Planning IPZ of the REP Operations Manual for radionuclide concentration analysis and coordinate with local/regional/Federal counterparts.
- h. Provide personnel support to IZRRAG as indicated in Planning Standard M.

10. Public Utilities Commission of Ohio (PUCO)

- a. As outlined in Section 4905 of the Ohio Revised Code, the jurisdiction, supervision, power, and duties of the PUCO extend to every public utility and railroad whose plant or property lies wholly within the state.
- b. During an emergency, through the Commission Chair, coordinate the overall information flow on status of public utilities in an affected area and ensures that appropriate actions are taken in restoration of services, including requiring competing companies to link telephone lines until permanent repairs can be affected, when communications are crucial to the disaster response activities.
- c. Provide staff and vehicles from districts to supplement other state resources during an emergency, including radiological monitoring capabilities, as available.

11. Ohio Department of Insurance (ODI)

- a. Administer Ohio's insurance laws, licenses insurance companies and personnel.

- b. In the event of a nuclear power plant emergency severe enough to require activation of the SEOC, provide a representative to the SEOC to address public concerns regarding insurance.
- c. If necessary, provide a representative to the affected area outside the RZ.

12. Attorney General's Office (AG)

- a. The attorney general's office represents the various State of Ohio departments, commissions, boards, and department heads, state officers, and employees in any legal matters pertaining to the State of Ohio.
- b. If specific legal questions arise with regard to any particular departments or agencies, that department or agency shall have the responsibility to contact its own Assistant Attorney General or in-house counsel who can more readily and efficiently handle questions for that department or agency.

13. Ohio Department of Mental Health (ODMH)

- a. Provide a representative to the SEOC to coordinate mental health operations with the overall activities of the center and the activities necessary to provide staff, supplies, and facilities to treat victims suffering from psychological distress resulting from the emergency.
- b. If necessary, assist ODJFS in staffing and providing appropriate services to reception and care centers.
- c. Assist in training staff on signs and symptoms of stress that may occur during crisis periods.
- d. If necessary and available, provide access to facilities under direct control of the department for use as shelters, non-medical mass care centers, and as possible locations for temporary mobile shelters, as appropriate.

14. Ohio Department of Administrative Services (DAS)

- a. Provide logistical and resource support to state and local entities involved in emergency response and recovery, including resources for locating, procuring, and issuing resources including equipment, supplies, and services required by emergency responders and disaster victims, and support resources for the recovery phase.

15. Adjutant General's Department, Ohio National Guard (ONG)

- a. Provide aircraft transportation for ingestion pathway samples from the sample screening point to a designated sample testing laboratory. This assistance should be coordinated through ESF-1.

B. Federal Support Agencies (Ref. Figure A-3 in the REP Operations Manual)

The following Federal agencies have responsibilities within this plan that are not specifically addressed in the NRF. (For a listing of Federal agencies participating in the NRF and a brief description of their responsibilities, reference Planning Standard C of the REP Operations Manual.)

1. U.S. Coast Guard (USCG)

- a. The USCG will, upon request, broadcast an emergency notice to mariners. In addition to broadcasting the notice to mariners, the Ninth District USCG stations will provide available resources (i.e., vessels, aircraft, and personnel) to begin notifying boaters on Lake Erie.

2. Federal Aviation Administration (FAA)

- a. The FAA will restrict air traffic within a ten-mile radius of the affected area when requested by Ohio EMA.

3. National Oceanic and Atmospheric Administration (NOAA)

- a. Upon request, the NOAA National Weather Service (NWS), via NOAA weather radio, will instruct the public to refer to an EAS station for emergency information. In addition, the NWS shall provide weather information upon request to responding Federal, state or local agencies.

4. U.S. Department of the Interior (USDOl)

- a. The USDOl refuge manager, after receiving notification from the state, will ensure that appropriate actions are taken to notify the public and staff at the Ottawa National Wildlife Refuge Complex near DBNPS.

5. U.S. Department of Agriculture (USDA)

- a. The USDA, through Farm Service Agency (FSA), will assist the ODA in decision making, information gathering, and recommendations concerning agricultural activities.
- b. Through OSU Extension, the USDA will communicate advisories regarding food and agriculture safety to Extension agents in affected ingestion pathway zone counties.
- c. FSA and OSU Extension will provide representatives to the SEOC to serve as support agencies for the ODA in communicating with local level food producers and in determining embargos of food products.

C. County-Level Agencies (Ref. Figure A-4 in the REP Operations Manual):

1. County commissioners have decision-making authority over the entire county emergency response effort. Based upon state and utility recommendations, they decide major responses to be ordered to protect the public and major adjustments to the planned response. In addition, it is the commissioners' responsibility to ensure activation and manning of the county EOC and that response operations are coordinated with state, regional and Federal counterparts.

D. Private Sector Support Entities

1. American Red Cross (ARC)

- a. ARC conducts mass care shelter and feeding operations in designated care centers.
- b. ARC operations consist of:
 - i. Registration of evacuees who elect to go to mass care centers so that there is a census at all times of the individuals and families who remain there.
 - ii. Providing food and bedding.
 - iii. Emergency medical treatment (first aid station).
 - iv. Recreation services during extended activation.
 - v. Liaison representatives to state and county EOCs and reception centers.
- c. County ARC directors coordinate their activities and needs with regional chapter directors or the national organization. Authority to perform these functions is granted under U.S. Public Law 4 and the Disaster Relief Act of 1974 (Section III in the REP Operations Manual). A statement of understanding also exists between FEMA and the ARC.

2. Volunteer Radio Organizations (ARES/RACES/MARS, etc.)

- a. Volunteer radio organizations provide communications support at EOCs, at reception and care centers and on the highways, as needed.

3. Utility Companies

- a. First Energy Nuclear Operating Company (FENOC) is the operating company of the DBNPS, PNPP, and BVPS.
- b. The Fermi II Nuclear Power Plant is operated by the Detroit Edison Company. Since the impact on Ohio residents of an incident at this plant would be in the areas of protection of the food supply (ingestion planning), the interface for this function would not be with the utility but with state, local and Federal agencies involved with the response. (Ref. Planning LOA in the REP Operations Manual)

ATTACHMENT 1: State Emergency Response Personnel – Travel Time to/from Nuclear Power Station Counties

Origination Key:

- | | | | |
|----|-----------------------------|----|--------------|
| A. | Ohio EMA - Columbus | C. | Regional EPA |
| B. | Ohio EMA - Resident Analyst | D. | ODH |

Driving Time by Origination Location:

<u>Utility</u>	<u>Driving Time</u>	<u>Operational Time</u>
BVPS	A. 4.0 Hours	A. 5.0 Hours
	B. 0.5 Hours	B. 1.0 Hour
	C. 1.5 Hours	C. 2.5 Hours
	D. 4.0 Hours	D. 5.0 Hours
DBNPS	A. 2.5 Hours	A. 3.5 Hours
	B. 0.5 Hours	B. 1.0 Hour
	C. 1.0 Hours	C. 2.0 Hours
	D. 2.5 Hours	D. 3.5 Hours
PNPP	A. 3.5 Hours	A. 4.5 Hours
	B. 0.5 Hours	B. 1.0 Hour
	C. 1.0 Hour	C. 2.0 Hours
	D. 3.5 Hours	D. 4.5 Hours