



State of Ohio

**THE OHIO RADIOLOGICAL
EMERGENCY PREPAREDNESS
(REP) OPERATIONS MANUAL**

2015

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Plan Overview

Introduction

1. Preparation for managing 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.
 2. This manual defines state roles, responsibilities, resources and identifies the interface that must exist between involved agencies at all levels.
 3. This manual 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.
 4. The purpose of this manual 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.
 5. This manual and related SOPs can be found on both the RADIOL and SEOC shared drives and SharePoint.
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Acronyms

Acronym		Description
AAR/IP	-	After Action Report/Improvement Plan
ACP	-	Access Control Point
ALARA	-	As Low As Reasonably Achievable
AMS	-	Aerial Measuring System (DOE)
ANI	-	American Nuclear Insurers
ARIO	-	Advance Radiological Incident Operations
ARCA	-	Area Requiring Corrective Action
Bq	-	Becquerel
BVPS	-	Beaver Valley Power Station
cc	-	cubic centimeter
Ci	-	Curie
CDE	-	Committed Dose Equivalent
CEDE	-	Committed Effective Dose Equivalent
CPM	-	Counts Per Minute
CPS	-	Counts Per Second
CST	-	Civil Support System
DBNPS	-	Davis-Besse Nuclear Power Station
DE	-	Dose Equivalent
DIL	-	Derived Intervention Level
DOC	-	Department of Commerce
DOE	-	U.S. Department of Energy
DOT	-	U.S. Department of Transportation
DPS	-	Department of Public Safety
DRD	-	Direct Reading Dosimeter
DRL	-	Derived Response Level
EAL	-	Emergency Action Level

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Acronyms, Continued

EAS	-	Emergency Alert System
ECL	-	Emergency Classification Level
EDE	-	Effective Dose Equivalent
EMA	-	Emergency Management Agency
EPD	-	Electronic Personal Dosimeter
EOC	-	Emergency Operations Center
EOF	-	Emergency Operations Facility
EPA	-	Environmental Protection Agency
EPZ	-	Emergency Planning Zone
ERDS	-	Emergency Response Data System
ESF	-	Emergency Support Function
ETE	-	Evacuation Time Estimate
FDA	-	Food & Drug Association
FEMA	-	Federal Emergency Management Agency
FENOC	-	First Energy Nuclear Operating Company
FMT	-	Field Monitoring Team
FNAMS	-	FEMA National Automated Message System
FNARS	-	FEMA National Radio System
FRMAC	-	Federal Radiological Monitoring and Assessment Center
FSA	-	Farm Service Agency
FTC	-	Field Team Center
GE	-	General Emergency
GM	-	Guidance Memorandum
HAB	-	Hostile Action Based
HHS	-	U.S. Department of Health and Human Services
HSEEP	-	Homeland Security Exercise and Evaluation Program
IA	-	Individual Assistance
IPZ	-	Ingestion Planning Zone

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Acronyms, Continued

IZRRAG	-	Ingestion Zone/Recovery and Reentry Advisory Group
JDF	-	Joint Dispatch Facility
JFO	-	Joint Field Office
JIC	-	Joint Information Center
JIT	-	Just in Time
KI	-	Potassium Iodide
MAELU	-	Mutual Atomic Energy Liability Underwriters
Met	-	Meteorological
mR	-	milliRoentgens
NARAC	-	National Atmospheric Release Advisory Center
NAWAS	-	National Warning System
NIMS	-	National Incident Management System
NIRT	-	Nuclear Incident Response Team
NOC	-	National Operations Center
NRC	-	U.S. Nuclear Regulatory Commission
NRCC	-	National Response Coordination Center
NRF	-	National Response Framework
NOC	-	National Operations Center
NOUE	-	Notice of Unusual Event
NUREG	-	Nuclear Regulatory Commission Guidance Document
ODH-BHP	-	Ohio Department of Health, Bureau of Health Preparedness
ODH-BRP	-	Ohio Department of Health, Bureau of Radiation Protection
ODH-LAB	-	Ohio Department of Health, Bureau of Public Health Laboratory
ODJFS	-	Ohio Department of Jobs and Family Services
ODOT	-	Ohio Department of Transportation
ONG	-	Ohio National Guard
ORC	-	Ohio Revised Code
ORO	-	Offsite Response Organization

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Acronyms, Continued

OSLD	-	Optically Stimulated Luminescent Dosimeter
OSU	-	Ohio State University
PA	-	Public Assistance
PAD	-	Protective Action Decision
PAG	-	Protective Action Guide
PAR	-	Protective Action Recommendation
PFO	-	Principal Federal Official
PVO	-	Private Voluntary Organizations
PNPP	-	Perry Nuclear Power Plant
PPE	-	Personal Protective Equipment
PRD	-	Permanent Reading Dosimeter
R	-	Roentgen
RAAC	-	Radiological Accident Assessment Concept Course
RAC	-	Regional Assistance Committee
RAD	-	Radiation Absorbed Dose
RAP	-	Radiological Assistance Program
REAC/TS	-	Radiological Emergency Assistance Center/Training Site
REM	-	Roentgen Equivalent Man
REP	-	Radiological Emergency Preparedness
RERO	-	Radiological Emergency Response and Operations Course
REVOG	-	Reentry Verification and Orientation Center
RI/M&C	-	Radiological Instrumentation/Maintenance and Calibration Facility
RIRP	-	Radiological Incident Response Plan
ROM	-	Radiological Operations Manual
RZ	-	Restricted Zone
SAE	-	Site Area Emergency
SEOC	-	State of Ohio Emergency Operations Center

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Acronyms, Continued

TCP	-	Traffic Access Point
TEDE	-	Total Effective Dose Equivalent
TLD	-	Thermoluminescent Dosimeter
μCi	-	microcurie
USCG	-	U.S. Coast Guard
USDA	-	U.S. Department of Agriculture

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I. Direction and Control

NUREG-0654-FEMA-REP-1 Criteria A

Overview

Primary responsibilities for emergency response by state and county agencies have been assigned. The responsibilities of various supporting organizations have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continual basis.

Each agency having an operational role has specified its concept of operations and its relationship to the total response effort.

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Agency Responsibilities

Purpose To provide a tabulation of the specific responsibilities for each state agency for a quick reference to general departmental functions.

- Authority**
1. Individual state agencies operate under authority granted by:
 - a. Ohio Emergency Management Agency (Ohio EMA); Ohio Revised Code (ORC), Section 5502.22 and Ohio Administrative Code (OAC), Section 4501:3
 - b. Ohio Environmental Protection Agency (OEPA); ORC, Chapter 6111 and OAC, Chapter 3745.
 - c. Ohio Department of Health (ODH); ORC, Sections 3701.03, 3701.04, 3701.14, 3748.02, and 3748.03(B).
 - d. Ohio Department of Agriculture (ODA); ORC, Chapters 901 and 3715 and OAC, Chapter 901
 - e. Ohio Department of Natural Resources (ODNR); ORC, Chapter 1533 and OAC, Chapter 1501
 2. Federal authority
US Department of Agriculture (USDA) – Farm Service Agency (FSA); Executive Order (E.O.) 12656 (amended by E.O. 13286), E.O. 11490 (amended by E.O. 11921 and 11953), and E.O. 13442, and Title 7 of the United States Code
 3. County authority
ORC, Sections 5502.21 through 5502.51 and OAC, Chapter 4501
-

- Designated Authority**
1. The Governor has authorized designated Ohio EMA officials to request federal assistance and make requests for federal emergency and disaster declarations.
 2. When warranted by plant conditions and other plant information, the Ohio EMA (on behalf of the Governor) will request federal assistance as needed; Ohio EMA may also request a Presidential Declaration of Emergency and/or Major Disaster when warranted by the extent of the incident, any evacuations, or a radiological release from an affected plant. Those people authorized to request federal assistance are the:
 - a. Executive Director
 - b. Assistant Director
 - c. Operations Administrator
 - d. Radiological Branch Chief
-

Utility

1. The commercial nuclear power plant operator provides timely notification to state, county and federal agencies of emergency incidents, pertinent data from onsite and offsite radiological monitoring and current accident assessment data.
2. The utility operator provides timely and appropriate recommendations to counties and the State Emergency Operation Center (SEOC) for offsite protective response actions in the plume exposure pathway.
3. The utility company provides and maintains equipment needed by the state, county and federal responders at the Emergency Operations Facility (EOF) and shall manage the operations of the Utility Joint Information Center (JIC).
4. The utility company provides a liaison to the SEOC to provide updates on plant status and to assist state officials in understanding technical information.

State

1. The State of Ohio has developed, and continues to maintain, emergency plans for response to radiological incidents involving licensed nuclear facilities.
2. The following pages contain a summary of the primary and support functions of the state departments/agencies with response roles.
3. These agencies will be National Incident Management System (NIMS) compliant.

County

1. For more information on county direction and control and 24-hour communication centers, refer to individual county plans.
 2. Counties and Incident Command Posts will be NIMS compliant.
-

Office of the Governor

Responsibilities The Office of the Governor shall:

1. Designate the Executive Director of the Ohio EMA to act for the Governor to provide direction and control, and to carry out the state's response to provide for public health and safety during an event or accident at a commercial nuclear power plant affecting Ohio.
 2. Provide direction and control of off-site emergency activities for the State of Ohio.
 3. Be responsible for the protection of Ohio's citizens and their property.
 4. Determine if the situation is beyond local resources for recovery or when the emergency at the power station reaches the Site Area Emergency level, consider if a state of emergency exists to be able to authorize the activation of the Ohio National Guard (ONG), to use state resources to assist local officials, and to activate the SEOC.
 5. Provide representatives to SEOC, EOF, and Utility JIC, if situation warrants.
 6. Determine if the emergency is beyond the state's resources for recovery, request disaster recovery assistance from the President through the FEMA, by requesting a federal "emergency" or "general disaster" declaration, or both, as appropriate for the specific event.
 7. Recommend protective actions for the public to county commissioners as developed by appropriate state agencies and executives. These recommendations shall be coordinated with the county commissioners prior to any formal issuance, if time permits.
 8. Ensure the public is kept informed throughout the emergency.
 9. Designate the Ohio EMA as the planning and implementing agency for radiological response.
 10. Participate (or provide representatives to participate) in periodic exercises to test response plans.
 11. Issue orders, directives and declarations appropriate to facilitate state support to local officials.
 12. Authorize designated officials in Ohio EMA to request federal radiological response assistance either through FEMA or from appropriate federal agencies.
-

Ohio DPS: Emergency Management Agency

Responsibilities The Ohio Department of Public Safety, Emergency Management Agency (EMA) shall:

1. The Executive Director, Ohio EMA acts for the Governor to provide direction and control, and to carry out the state's response to provide for public health and safety during an event or accident at a commercial nuclear power plant affecting Ohio.
2. Serve as the primary agency for (Emergency Support Function) ESF-2, Communications and Information Technology, ESF-5, Information and Planning, and ESF-6, Mass Care.
3. Operate and maintain the SEOC.
4. Assign the Radiological Branch Chief responsibility for maintaining 24-hour communication capabilities in conjunction with Ohio State Highway Patrol (OSHP).
5. Serve as the general coordination point for federal, state and local governments.
6. Request restriction of air, rail, and water traffic, as necessary.
7. Coordinate activities of reception and care centers by county counterparts, other public agencies and private relief organizations.
8. Coordinate activities of volunteer relief organizations during an emergency or recovery from an emergency.
9. Serve as a member of the Ingestion Zone Recovery & Reentry Advisory Group (IZRRAG).
10. Provide for exercises to test response plans at both the state and local levels.
11. Provide legal counsel and draft proclamations and requests.
12. Provide Resident Radiological Analyst as a liaison to the Utility EOF.

Notification

1. Notify state agencies to initiate internal alert and mobilization procedures.
2. Notify applicable federal agencies.
3. Notify contiguous states and nations (Canada) of situation and provide for exchange of liaisons, if necessary.

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Ohio DPS: Emergency Management Agency, Continued

- Planning**
1. Serve as the lead planning agency for developing “The Ohio Radiological Emergency Preparedness (REP) Operations Manual,” “The REP Incident Response Plan,” and related plans and procedures.
 2. Assist and coordinate with county planning process to enable county officials to fulfill their responsibilities for pre-disaster planning, training and response.
 3. Serve as the coordinating and planning agency for the statewide Emergency Alert System (EAS).
 4. Maintain a personnel roster to contact and assign emergency response functions.
 5. Determine which state agencies should perform specific tasks within their capabilities and ensure assignment of responsibilities.
 6. Provide for updating the state plan.
-

- Training**
1. Conduct training courses developed by Ohio EMA and coordinate attendance for federal training programs.
 2. Conduct training for health care facilities in radiation emergency response planning.
 3. Develop statewide radiation monitoring capability by training local responders and providing equipment.
-

- Communication**
1. Provide communications for responding state agencies.
 2. Provide emergency communications support and other equipment to augment existing communication resources in affected area.
-

- Federal Coordination**
1. Request assistance through a federal “emergency” or “general disaster” declaration, or both, as appropriate for the specific event, on behalf of the Governor.
 2. Identify potential sites for possible use as the Federal Radiological Monitoring and Assessment Center (FRMAC) and the State's Field Team Center (FTC).
 3. Upon request, arrange for transport of federal response teams and equipment into the operational area.
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Ohio DPS: Emergency Management Agency, Continued

Executive Group

Ohio EMA coordinates the Executive Group, which consists of members of the Governor's cabinet or representatives of those departments directly involved in response to a nuclear power station accident. It may also include any cabinet member from any other department the Governor may request to be present. The Executive Group shall participate in the following:

1. Provide direction and control of offsite emergency activities for the state in consultation with the Governor.
2. Assist the Governor in making protective action recommendations to the county commissioners based on information provided by the Radiological Assessment Branch.
3. Coordinate protective actions for the general public via conference call with the County Executive Group for those actions occurring prior to the issuance of state recommendations.
4. Coordinate with the adjacent states of Michigan, Pennsylvania and West Virginia and the Province of Ontario for ingestion pathway protective action recommendations during emergencies at BVPS, DBNPS, PNPP or Fermi 2 Nuclear Power Plants.
5. Issue orders, directives, declarations, and advisories, in consultation with the Governor and/or through legislative authority, appropriate to the facilitation of state responsibilities and state support to county officials.
6. Review and approve news releases before dissemination to the public.
7. Identify the means for communicating with the utility company's corporate headquarters and the NRC.
8. Participate in exercises to test response plans and prepare for actual emergencies.

Liaisons

1. Provide liaison to SEOC.
2. Provide representatives to Utility EOF, county EOC and Utility JIC.
3. Provide a Resident Radiological Analyst to live and work full-time in the respective power plant host county as the state's liaison.

Dose Assessment

Ohio EMA is responsible with ODH-BRP to support the performance of dose assessment activities during the early, intermediate, and late phases of an emergency.

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Ohio DPS: Emergency Management Agency, Continued

Dosimetry & KI

1. Assist in the distribution of Direct Reading Dosimeters (DRD), Thermoluminescent Dosimeters (TLD) or Optically Stimulated Luminescent Dosimeter (OSLD), and Potassium Iodide (KI) to state responders as part of the exposure control program.
 2. Ensure an arrangement is in place to provide for the reading of emergency worker permanent dosimeters by a processor accredited by the National Voluntary Laboratory Accreditation Program or other accreditation program in accordance with American National Standards Institute, Standard N13.11-1983. Accreditation is for the specific type of dosimetry in use and is for the type of radiation for which the individual wearing the dosimeter is monitored.
 3. Provide necessary dose record forms to state and county agencies.
-

Field Monitoring Teams

1. During an emergency, provide prompt field radiological measurements and assist in the development of, and provision for, accident assessment information, the recommendation of protective responses, and recovery and reentry actions.
 2. Provide for the establishment of a FTC to coordinate the tracking and dispatching of the state's field sampling teams.
 3. Provide field monitoring teams (FMT) to track and characterize a plume or deposition from a plume.
-

Ohio DPS: State Highway Patrol

- Responsibilities** Ohio Department of Public Safety, State Highway Patrol (OSHP) shall:
1. Serve as the primary agency for ESF-13, Law Enforcement and receive the initial notification of emergencies involving the DBNPS, BVPS, PNPP and Fermi.
 2. Operate the National Warning System (NAWAS) for emergency communications and the Law Enforcement Automated Data System (LEADS) to disseminate nuclear incident information to local authorities if warranted; provide alternate for state notification, and confirm or secure information through its districts, posts or units regarding a radiological incident.
 3. OSP Hub, located in the State of Ohio Emergency Operations Center/Joint Dispatch Facility (SEOC/JDF) shall serve as the primary point of contact for notification of incidents involving DBNPS, PNPP, BVPS, and Fermi emergencies.
 - a. This location is staffed 24-hours/day.
 - b. It is located at 2855 W Dublin-Granville Road, Columbus, OH.
 - c. Contact will be made by the utility through dedicated phones.
 - d. Backup communications are available through MARCS radios, commercial phones and cell phones.
 - e. The Dispatcher Supervisor is responsible for managing this emergency response function.
 4. Provide for security at the EOC/JDF.
 5. Provide aerial transportation for State of Ohio Initial Response Team if resources are not available through Ohio Department of Transportation (ODOT).
 6. Instruct local posts to operate perimeter access points and assist in traffic control and local law enforcement.
 7. Provide transportation assistance, as necessary, to federal response teams.
 8. Provide security for state properties and facilities, as needed.
 9. Provide liaison to SEOC and local liaison to County EOCs.
 10. Coordinate access to the turnpike with the Ohio Turnpike Commission, should it become necessary to use this route.
 11. Provide aircraft to perform aerial perimeter/traffic control for the evacuated area, as necessary.
 12. Participate in exercises to test response plans.
-

Ohio DPS: Homeland Security

- Responsibilities** For a security related event, Ohio Department of Public Safety, Homeland Security shall be responsible to:
1. Furnish an activation order for the Strategic Analysis and Information Center (SAIC).
 2. Add personnel to mandatory/secondary EOC response.
 - a. OHS Executive Director
 - b. OHS Security Point of Contact
 3. Secure space at the EOC for OHS and OSHP Intelligence and Investigatory efforts.
 4. Notify uninvolved nuclear power plants for situational awareness of the hostile action at another facility, enabling them to take necessary steps to protect their facility against multi-staged attacks.
 5. Notify the FBI to ensure awareness and response.
 6. Notification of Transportation Security Administration (TSA) for on-site support of air domain awareness.
 7. Notification of Customs and Border Patrol (CBP) Sandusky station for maritime awareness.
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Ohio Department of Health

ODH-BRP

Ohio Department of Health Bureau of Radiation Protection (ODH-BRP) shall:

1. Serve as the primary State agency in radiological response and associated functions, including:
 - a. ESF-5
 - i. Radiological dose assessment; development and provision of protective actions for the public; advising the Executive Group with regard to radiological safety issues; development and provision of recovery and reentry guidance, and serve as the primary radiological technical liaison agency with federal, state and other government for the State of Ohio.
 - b. ESF-10
 - i. Provide radiation safety oversight for state response activities; coordinate with other state federal, and local agencies in the formulation of monitoring and sampling activities; coordinate with Ohio EPA in development of waste management decisions; provide oversight of recovery and mitigation functions.
2. Provide liaisons including:
 - a. A liaison to the primary County EOC.
 - b. A subject matter expert to the Utility JIC to address technical issues.
 - c. A liaison to the Utility EOF.
3. Assist in the development of health advisories.
4. Provide personnel to the area to screen and prepare radiological samples for transport to an approved radiological laboratory (e.g., ODH laboratory, Reynoldsburg).
5. ODH-BRP will provide staff to serve as the Chair of the IZRRAG.
6. Provide necessary training to emergency workers (e.g., dose assessment).
7. Participate in exercises to test response plans.

Dose Assessment

ODH-BRP is responsible for, with the support of Ohio EMA, the performance of dose assessment activities during the early, intermediate, and late phases of an emergency.

Continued on next page

Ohio Department of Health, Continued

Potassium Iodide (KI)

Establish criteria for the administration of radioprotective drugs and provide supplies of KI for use by emergency workers, the general public, and institutionalized individuals.

Dose Limits

1. Ensure, through the state FMT Coordinator, that emergency workers do not exceed dose limits established by federal guidelines.
 2. Specify radiation dose limits for emergency workers and others (e.g., volunteers.).
 3. Maintain dose records for an indefinite period.
-

ODH-Lab

Ohio Department of Health – Laboratory shall:

1. Provide laboratory facilities for evaluation of environmental samples.
 2. Ensure department lab personnel are trained in proper analytical techniques and procedures.
-

ODH-BEH

Ohio Department of Health – Bureau of Environmental Health shall:

1. Ensure that proper standards for private water systems; sewage treatment systems, recreation areas, and indoor environments are maintained.
 2. Ensure that proper environmental sanitation is maintained.
-

ODH-BHP

Ohio Department of Health – Bureau of Health Preparedness shall:

1. Maintain listings of hospitals and other facilities for use in radiation incidents.
 2. Coordinate provision of emergency medical supplies and health services to affected areas, as needed.
 3. Provide personnel to staff ESF-8, Public Health and Medical Services.
-

Ohio Environmental Protection Agency

Responsibilities Ohio Environmental Protection Agency (OEPA) shall:

1. Serve as the primary agency for ESF-10, Hazardous Materials (with the exception of radiological hazards for which ODH is the lead agency).
 2. Dispatch sampling teams to the FTC to take environmental samples.
 3. Coordinate activities with local/regional/federal counterparts.
 4. Provide a district level representative to serve as the agency's liaison in the host county EOC.
 5. Dispatch representatives to the SEOC to assist in establishing protective action recommendations.
 6. Dispatch a representative to the SEOC to act as the Field Team Communicator.
 7. Evaluate public water supplies in the affected area to ensure they are safe for consumption.
 8. Evaluate public waste water treatment facilities for the affected area to ensure they are functional.
 9. Serve as a member of the IZRRAG.
 10. Participate in exercises.
 11. Coordinate radioactive waste management disposal locations and practices, as well as contaminated material disposal with ODH.
 12. Participate in exercises to test response plans.
-

Ohio Department of Agriculture

- Responsibilities** The Ohio Department of Agriculture (ODA) shall:
1. Serve as the primary agency for ESF-11, Agriculture.
 2. Direct state-wide program for protection against radiological damage to livestock, foods and crops.
 3. Coordinate activities with federal and local counterparts.
 4. Assist local and federal counterparts in issuing advisories to the public on matters pertaining to foods within the ingestion pathway.
 5. Serve as the primary liaison for the United States Department of Agriculture (USDA) and the Food & Drug Association (FDA).
 6. Provide for a statewide program to ensure health and safety with regard to the consumption of all milk and milk products.
 7. Maintain a listing of all milk and milk product producers/processors, a general census of dairy stock, and other large amounts of food or agricultural products originating in the Ingestion Planning Zone (IPZ).
 8. Dispatch response team to SEOC.
 9. Participate in exercises to test response plans.
 10. Control through quarantine, confiscation, embargo, or destruction of contaminated crops and foods on the stalk or harvested.
 11. Dispatch sampling teams to FTC for the sampling of milk, milk products, and foods.
 12. Serve as a member of the IZRRAG.
-

Ohio Department of Natural Resources

- Responsibilities** The Ohio Department of Natural Resources (ODNR) shall:
1. Serve as the primary agency for ESF-3, Engineering and Public Works and ESF-9, Search and Rescue.
 2. Provide for alerting and evacuation of staff and visitors on ODNR owned, controlled or maintained recreational areas within the EPZ.
 3. Provide access to Lake Erie islands including notification and evacuation assistance and assist in areas where a segment of the population is isolated by providing watercraft or aircraft as needed.
 4. Maintain information on waterways (e.g., lakes, streams and rivers).
 5. Provide liaisons to SEOC and local unified command.
 6. Participate in exercises to test response plans.
 7. Dispatch sampling teams to the FTC for the sampling of fish and wildlife.
 8. Serve as a member of the IZRRAG.
 9. Provide alternate pilots and aircraft for waterway notification of recreational boaters on Lake Erie, as well as personnel, watercraft and equipment in order to augment U.S. Coast Guard efforts. ODNR responders shall also assist in marina traffic control.
 10. Close navigable or ODNR maintained waterways, as needed.
-

Adjutant General's Office/Ohio National Guard

- Responsibilities** The Adjutant General's Office/Ohio National Guard (ONG) shall:
1. The ONG can be called upon to provide support for a wide variety of missions during an emergency at a nuclear power plant affecting Ohio. For ONG support other than the Civil Support Team (CST), a Governor's Proclamation either in writing and/or confirmed verbally by the Director of Ohio EMA or an appointed representative will be required. The following is a list of support functions likely to be requested of the ONG. These support functions must be coordinated through the appropriate ESF.
 2. Assist local officials in area patrol (ESF-13), traffic and access control activities (ESF-13), notification, and public information.
 3. Provide logistical support in air or ground transport of radiological samples and dosimeters from sample screening point to designated laboratories, as coordinated through ESF-1.
 4. Provide liaisons to both the state and local EOCs.
 5. Provide transportation assets and drivers for evacuation missions in the event that local resources are overwhelmed or cannot respond. This function is coordinated through ESF-1.
 6. Provide appropriate transportation assets and drivers for medical evacuation missions in response to a radiological emergency at a nuclear power plant affecting Ohio.
-

Ohio Department of Insurance

- Responsibilities** The Ohio Department of Insurance (ODI) shall:
1. Dispatch a representative to the SEOC to address public concerns regarding insurance.
 2. If necessary, a representative may be dispatched to the affected area outside the Restricted Zone.
-

Ohio Department of Transportation

- Responsibilities** The Ohio Department of Transportation (ODOT) shall:
1. Serve as the primary agency for ESF-1, Transportation.
 2. Determine and designate both available and prohibited routes of travel in the area affected by the radiological incident based on inputs from Radiological Assessment and ODOT resources.
 3. Provide personnel, equipment, supplies, traffic control devices and heavy equipment (for snow, ice or other road impediment removal) to support local traffic control efforts.
 4. Assist in other conditions requiring department resources.
 5. Provide liaison to both SEOC and county EOC.
 6. Participate in exercises to test response plans.
 7. Develop and maintain survey plans that project traffic flow patterns and capacities on evacuation routes.
 8. Provide for aerial transportation of the state's Initial Response Team, as required.
-

Public Utilities Commission of Ohio

- Responsibilities** The Public Utilities Commission of Ohio (PUCO) shall:
1. Serve as the primary agency for ESF-12, Energy.
 2. Coordinate overall information flow on status of public utilities in an affected area.
 3. Ensure appropriate actions are taken in restoration of services (public utilities).
 4. Provide manpower and vehicles from districts to supplement other resources during an emergency.
 5. Provide liaison to SEOC.
 6. Act as a referral service to provide SEOC phone numbers (through Consumer Services Department) in the event Ohio EMA rumor control resources become overwhelmed.
 7. Participate in exercises to test response plans.
-

Ohio Department of Job and Family Services

- Responsibilities** The Ohio Department of Job and Family Services (ODJFS) shall:
1. Coordinate activities of interagency operations when more than one county is involved.
 2. Provide liaison to SEOC.
 3. Participate in exercises to test response plans.
 4. If requested by ESF-6, assist with staffing reception and/or care centers.
-

Ohio Department of Mental Health & Addiction Services

- Responsibilities** The Ohio Department of Mental Health and Addiction Services (Ohio DMHAS) shall:
1. Dispatch a representative to the SEOC to coordinate mental health operations.
 2. If requested by ESF-6, assist Job and Family Services in staffing reception and care centers.
-

Department of Administrative Services

- Responsibilities** The Ohio Department of Administrative Services (DAS) shall:
1. Serve as the primary agency for ESF-7, Resource Support and Logistics.
 2. Dispatch a representative to the SEOC to coordinate logistical and resource support to state and local entities involved in emergency response and recovery.
 3. Assist in locating, procuring, and issuing resources including equipment, supplies, and services required by emergency responders and disaster victims, and support resources for the recovery phase.
-

County Direction and Control

Ashtabula County

The Ashtabula County Emergency Operations Center Executive Group has primary Direction and Control responsibilities in response to an emergency situation. The succession of authority in Ashtabula County is: 1) Commissioners (President, Member, then Member); 2) Emergency Management Agency (EMA) Director; 3) EMA Director's designee; 4) Sheriff; 5) Sheriff's designee.

Columbiana County

The Columbiana County Commissioners have primary Direction and Control responsibilities in response to an emergency situation. The succession of authority in Columbiana County is: 1) Commissioners; 2) EMA Director; 3) Deputy EMA Director.

Geauga County

The County Commissioners have primary Direction and Control responsibilities in response to an emergency situation. The succession of authority in Geauga County is: 1) Commissioners (President, Vice President, then Member); 2) Department of Emergency Services (DES) Director; 3) DES Director's designee; 4) Sheriff; 5) Sheriff's designee.

Lake County

The County Commissioners have primary Direction and Control responsibilities in response to an emergency situation. The succession of authority in Lake County is: 1) Commissioners (President, Member, then Member); 2) EMA Director; 3) EMA Director's designee; 3) Sheriff; 4) Sheriff's designee.

Lucas County

The Lucas County Commissioners have primary Direction and Control responsibilities in response to an emergency situation. The succession of authority in Lucas County is: 1) Lucas County Commissioners; 2) County Administrator.

Ottawa County

The County Commissioners have primary Direction and Control responsibilities in response to an emergency situation. The succession of authority in Ottawa County is: 1) Commissioners (President, Vice President, then remaining Commissioner); 2) County Administrator.

Basic Plan Functions

Command & Control The Office of the Governor and the counties are responsible for primary command and control. However, all agencies must have a person in charge of the emergency response and an agency mission to accomplish.

Alert & Notification Every agency is responsible for the alert and notification of their emergency workers. Counties are responsible for the alert of the public through sirens or public address systems. Notification of the public is accomplished through the EAS message broadcast.

Communications Communications need to be maintained throughout the event. Alternates to commercial telephone and MARCS radio, include cell phone, satellite phone, and amateur radio.

Public Information Each agency is responsible for establishing public information through press releases or briefings to keep the public informed of plant conditions and protective action decisions.

Radiological Assessment Radiological assessment analyzes dose projections and other data to provide PARs to the counties during the emergency phase. During the ingestion phase, the assessment process is used to determine which areas need to remain restricted to the public and any advisories from the results.

Public Health & Sanitation Public health and safety is maintained. Environmental sanitation is also provided.

Social Services Social services-related organizations are responsible for staffing care centers and shelters and providing the needs of the displaced public.

Fire & Rescue Fire departments may be tasked with performing route verifications after sirens have sounded to verify that people heard the sirens and have turned to the TV or radio for more information. Some fire departments will also be responsible for monitoring and decontamination of the public or emergency workers.

Traffic Control Traffic and access control points are designed to assist people in evacuation and to prevent unauthorized access to areas that have been restricted.

Continued on next page

Basic Plan Functions, Continued

**Emergency
Medical
Services**

In addition to assisting with the evacuation of nursing homes, hospitals, and homebound individuals, EMS is responsible for transporting contaminated, injured persons to a hospital.

Hospitals are responsible for the decontamination and care for contaminated, injured persons, keeping in mind that medical emergencies take priority over decontamination.

**Law
Enforcement**

Law enforcement provides staffing for traffic and access control points. They also provide security at locations such as EOCs and care centers.

Transportation

Transportation is provided for schoolchildren, transportation dependent, hospitals, nursing homes, and jails when the protective action to evacuate is implemented.

**Exposure
Control**

Every emergency worker is responsible for their exposure control. Personnel monitoring is required to be used and contamination surveys are performed after every shift. Decontamination is performed, if necessary.

Table I-A: Basic Plan Summary Functions & Responsible Agencies

Basic Plan Summary Functions & Responsible Agencies P - Primary S - Support	Command/ Control				Logistics			Operations				Planning			
	Command/Control	Warning	Notifications	Communications	Public Information	Health/Sanitation	Transportation	Social Services	Fire & Rescue	Traffic Control	Emergency Medical	Law Enforcement	Accident Assessment	Protective Response	Exposure Control
STATE															
Office of the Governor	P				S									P	
Ohio Emergency Management Agency	S	S	P	P	P			P					S	S	S
Ohio National Guard	S		S	S	S		S			S	S	S			S
Ohio Dept. of Health	S			S	S	P				S			P	S	P
Ohio Dept. of Agriculture	S		S		S	S							S	S	S
Ohio DPS: State Highway Patrol	S		S	S	S			S	P			P			S
Ohio Dept. of Transportation	S		S	S	S		P		S	S					S
Ohio Dept. of Natural Resources	S	S	S	S	S							S	S		S
Ohio Environmental Protection Agency	S		S	S	S	S							S	S	S
Ohio Dept. of Job & Family Services	S				S	S		S							S
Public Utilities Commission	S			S	S										
Ohio Dept. of Mental Health & Addiction Services	S				S	S		S							
Ohio Dept. of Insurance	S				S										
Ohio Homeland Security	S	S	S	S											
COUNTY															
County Commissioners/EMA	P	P												P	
Local Law Enforcement (See County Plans)										P		P			S
Local Fire Departments (See County Plans)									P		P				S
FEDERAL															
US Dept. of Homeland Security	P			S	S								S	S	
US Nuclear Regulatory Commission	P		S		S								P	S	S
DHS: US Coast Guard	S	S	S	S	S				S		S				S
National Oceanic Atmospheric Admin.	S	P	S	S	S										
US Dept. of Interior	S		S		S										S
US Dept. of Justice: FBI	P	S	S	S	S							P			
DHS: FEMA	S		S	S	S								S	S	S
US Dept. of Energy	S			S	S								P	P	S
US Dept. of Agriculture	S				S	S									S
Consolidated Farm Service Agency	S		S		S									S	S
US Dept. of Defense	S		S	S	S	S							S	S	S
US Environmental Protection Agency	S				S	S				S			S	S	S
US Dept. of Transportation	S				S		S								S
US Dept. of Health & Human Services	S				S			S							
US Dept. of Housing & Urban Dvlpmnt.					S			S							
US DOT: Federal Aviation Admin.	S	S											S		
PRIVATE															
American Red Cross	S				S	S		S			S				S
ARES/RACES/MARS	S			S	S										
American Nuclear Insurers					S										
UTILITIES															
BVPS	S		P	S	P						P		P	S	S
PNPP	S		P	S	P						P		P	S	S
DBNPS	S		P	S	P						P		P	S	S
Fermi 2	S		P		P								P	S	S

Figure I-B: State Organization for Emergencies

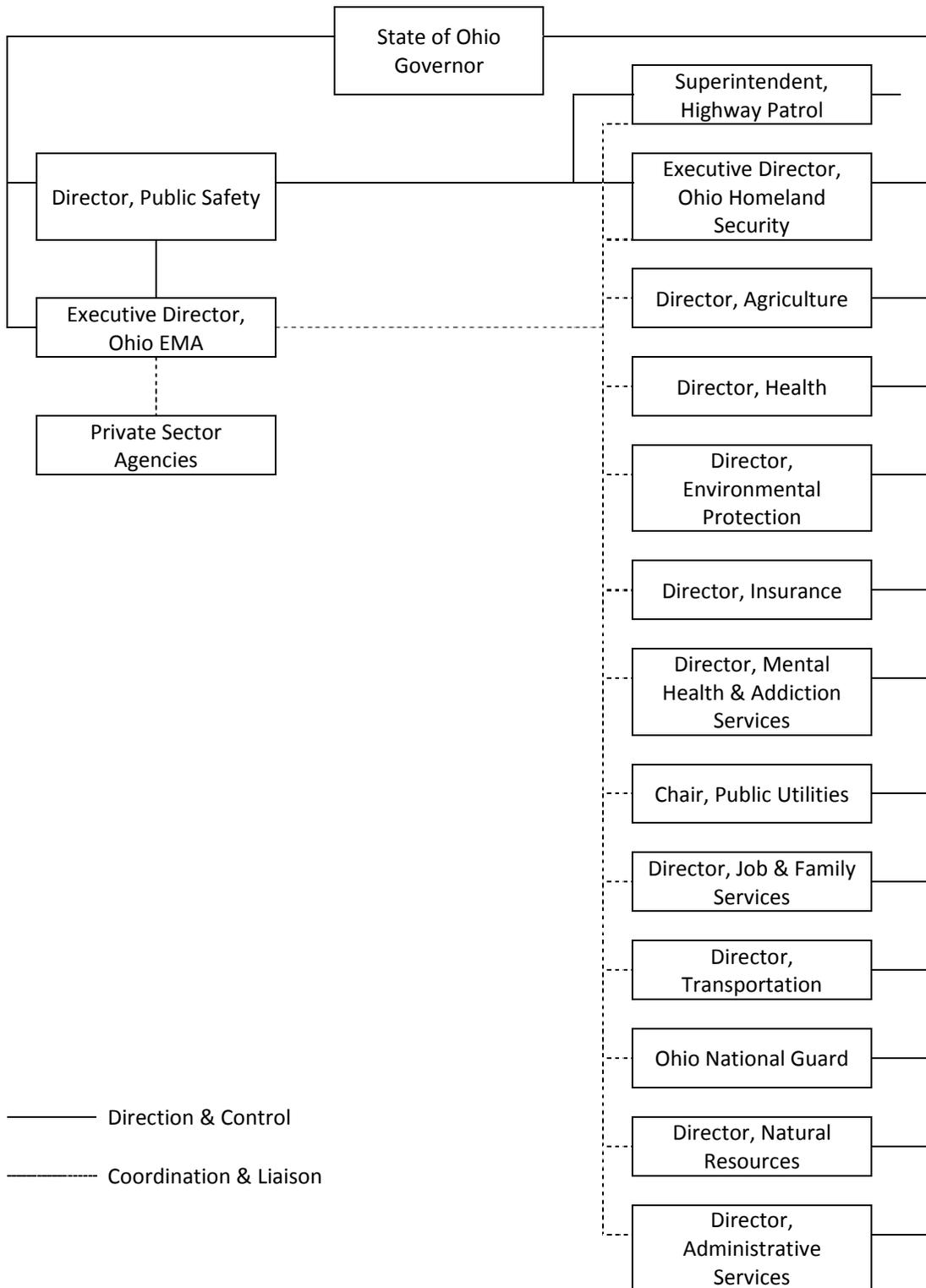
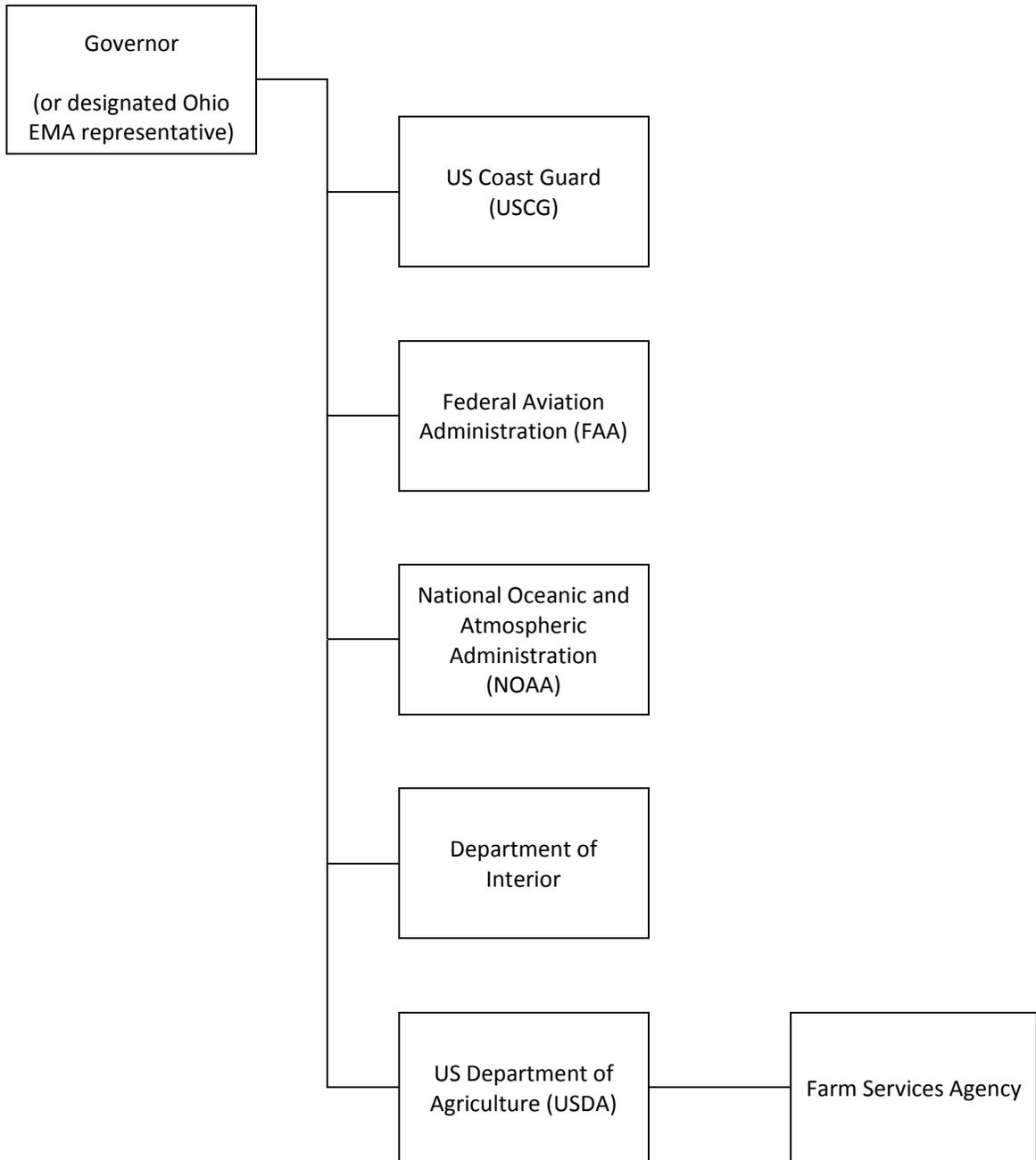


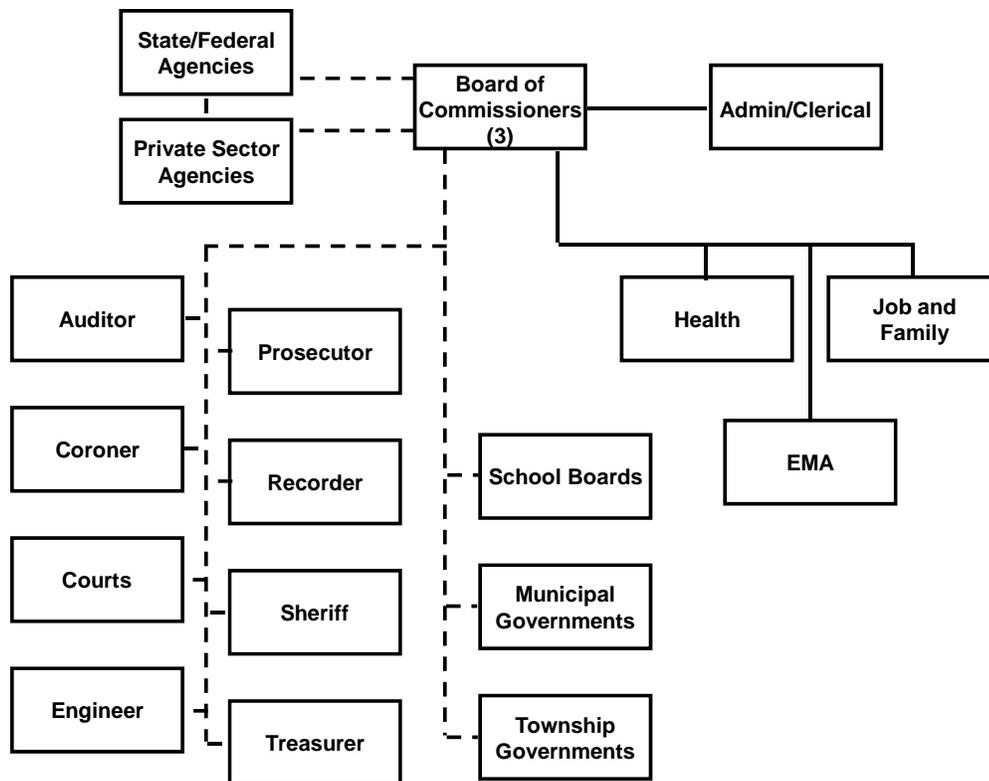
Figure I-C: Federal Organization Support¹



¹ Federal agencies that provide specific support to the state in areas outside of their NRF responsibilities.

Figure I-D: Typical County-Level Governmental Structure

TYPICAL OHIO COUNTY-LEVEL GOVERNMENTAL STRUCTURE AND RELATIONSHIPS FOR EMERGENCIES



Key:

— Direct appointive or administrative authority

- - - Coordination or fiscal relationship

Table I-E: State Emergency Operations Center Activation

Responding Agency	Emergency Phase			Intermediate Phase
	Alert	SAE	GE	IZRRAG
Emergency Management	X (Note 1)	X	X	X
Environmental Protection	X (Note 2)	X	X	X
Health	X (Note 3)	X	X	X
Homeland Security	X (Note 4)	X	X	
Administrative Services		X	X	
Agriculture		X	X	X
Farm Service Agency		X	X	X
Governor's Office		X	X	
Highway Patrol		X	X	
Insurance		X	X	
Job and Family Services		X	X	
Mental Health & Addiction Services		X	X	
National Guard		X	X	
Natural Resources	(Note 5)	X	X	X
OSU Extension		X	X	X
Public Utilities		X	X	
Red Cross		X	X	
Transportation		X	X	

- Note 1: Emergency Management Agency may only activate the Assessment and Executive Rooms.
- Note 2: Environmental Protection Agency will only provide personnel for the Assessment Room.
- Note 3: Department of Health, Bureau of Radiation Protection will only provide personnel for the Assessment Room.
- Note 4: Homeland Security activates at Alert if the event involves a credible security threat or actual security event/incident at the utility.
- Note 5: If necessary, to clear Lake Erie waterways.

II. Emergency Response Support & Resources

NUREG-0654-FEMA-REP-1 Criteria C

Overview

Arrangements for the following have been made:

1. Request and use of assistance resources.
 2. Accommodation of state and local staff at the licensee's Emergency Operation Facility.
 3. Identification of other organizations capable of augmenting the planned response.
-

Contents

Topic	See Page
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Robert T. Stafford Disaster Relief & Emergency Assistance Act	46
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General Resources

State Agencies The state agencies which comprise ESF #1 through ESF #15 can be relied upon in an emergency to provide assistance.

**Local
Resources**

Refer to individual county plans and procedures for:

1. Resources available for Federal partners.
 2. Provisions to allow law enforcement and other initial first responders prompt access to the utility's site.
 3. Provisions for coordination between in-bound response resources and evacuation efforts.
 4. Activating qualified alternate personnel.
-

Sample Laboratories

Introduction Samples will be transported to the appropriate laboratories for analysis.

Commercial Laboratories The following laboratories may be available to perform radiological testing in the event of a nuclear power plant accident:

1. Summit Environmental Technologies, Inc., 3310 Win Street, Cuyahoga Falls, Ohio 44223.
2. GEL Laboratories, LLC., 2040 Savage Road, Charleston, SC 29407.

State Laboratories

1. The primary laboratory available for the analysis of air, soil, water, meat, fish, and vegetation field samples is the ODH Laboratory, 8995 East Main Street Bldg. 22, Reynoldsburg, Ohio 43068.
The ODH-Lab will send the sample analysis results to the Radiological Branch.

2. Presently, there are no state-owned mobile laboratories available for sample analysis.

Note: Transportation to state laboratories can be performed using the Ohio National Guard or State Highway Patrol resources.

Federal Laboratories

1. Additional laboratory capabilities are available at Argonne National Lab, 9700 S. Cass Ave., Argonne, IL 60439.
2. The U.S. EPA has laboratories in Las Vegas that are capable of providing the following services and resources:
 - a. Equipment
 - i. Nine (9) germanium detector gamma analysis systems.
 - ii. Noble gas separation and analysis.
 - iii. Whole-body counter.
 - iv. Lung-burden counter.
 - v. Mobile gamma detection van with portable lung-burden system.
 - vi. Atmospheric tritium and strontium separations.

Continued on next page

Sample Laboratories, Continued

**Federal
Laboratories,**
continued

- vii. Two (2) support vehicles (one serves as command post and the other as a sample-separation facility).
 - viii. A transportable eight-detector sodium iodide system.
 - ix. Enough equipment for five (5) mobile field teams.
 - b. Mobile Laboratory
 - Radiation programs available at the Las Vegas facility can supply a mobile laboratory that contains:
 - i. an alpha and beta system,
 - ii. a liquid scintillation system, and
 - iii. two (2) germanium detectors.
 - c. The U.S. EPA can provide information on relocation, dose reduction methodology, and disposal of contaminated materials.
 - 3. The National Air and Radiation Environmental Laboratory in Montgomery, Alabama has:
 - a. The capability to put 10 equipped teams in the field.
 - b. A mobile counting facility with:
 - i. 2 gamma spectroscopy systems,
 - ii. A mobile communications vehicle,
 - iii. 12 gamma analysis systems,
 - iv. Alpha spectroscopy, and
 - v. Alpha, beta, and liquid scintillation counting systems.
-

**Average
Sample Run
Times**

- At the ODH Laboratory:
- 1. Emergency phase samples (air filter) count time for gross alpha and beta analysis is 5-10 minutes, unless otherwise specified.
 - 2. Emergency phase samples (cartridge and other samples) count time for gamma analysis is 20 minutes, unless otherwise specified
-

Price-Anderson Act

Description

The **Price-Anderson Act** (42 USC § 2210) provides for prompt handling, investigation, and settlement of claims for legal liability arising out of or resulting from a nuclear incident or precautionary evacuation. Price-Anderson is administered by the NRC to ensure the public that is affected by the event has adequate financial assistance to address most emergency needs.

1. In compliance with this Act, two insurance pools -- American Nuclear Insurers and Mutual Atomic Energy Liability Underwriters (ANI/MAELU) -- provide nuclear power reactor operators with nuclear energy liability coverage.
 - a. In the event of a properly declared evacuation or precautionary evacuation, ANI/MAELU will establish one or more claim offices near the area to provide emergency financial assistance for housing, food, and transportation to people who were evacuated as a result of the incident.
 - b. An ANI/MAELU staff member will be deployed to the Utility Joint Information Center (JIC) to coordinate release of information on the locations of the claim offices and appropriate documentation required and procedures for obtaining assistance.
 2. Covered environmental cleanup costs under Price-Anderson include costs directly incurred for monitoring, testing for, cleaning up, neutralizing or containing contamination of the environment.
 3. The state and/or local government will be reimbursed by the insurer for reasonable costs incurred by the state or local government while providing emergency food, shelter, transportation or police services in evacuating the public. Coverage applies only to additional costs incurred during the period of time the evacuation order was in effect and for an additional 30 days immediately thereafter.
-

Robert T. Stafford Disaster Relief & Emergency Assistance Act

Description

The **Robert T. Stafford Disaster Relief and Emergency Assistance Act** (42 USC §§ 5121-5208) provides guidance to state and local organizations requesting a Presidential Declaration of Emergency or Major Disaster. Title V of the Act gives the President authority to take appropriate actions through the federal agencies to address the accident response and ensure that the full complement of federal resources can be brought to bear on the response (see NUREG 1457).

1. Direct or cost-shared financial assistance may be provided to state and local governments for actions associated with response to a nuclear incident.
 2. Federal response assistance under the Stafford Act can be provided only in conjunction with a Presidential (federal) emergency or major disaster declaration.
 3. Since this is a technological (man-made) event, a federal declaration of emergency is the appropriate declaration. However, federal assistance under the Stafford Act is very limited in a Presidential emergency declaration. Therefore, it will most likely be necessary to either request a Presidential “declaration of disaster” at the onset of a radioactive release, or, sometime later, amend the “emergency” declaration request to an application for Presidential declaration of disaster. Both requests will require detailed justification.
 4. There would be no duplication of monetary assistance provided under the Price-Anderson Act.
 5. This plan will employ Ohio EMA’s full resources in submitting requests for Presidential declarations of emergency and/or disaster.
-

Figure II-A: National Response Framework Federal Organization Participation



Table II-B: Federal Laboratory Response Times

ORGANIZATION	CAPABILITIES	DRIVE TIMES (Hours)		
		BVPS	DBNPS	PNPP
Argonne National Lab 9700 S. Cass Ave. Argonne, IL 60439	Alpha, beta, gamma, tritium & neutron monitoring Air, soil, water & vegetation sampling Mobile laboratory with multi-channel analyzer, surface barrier (alpha) detector, NaI detector, liquid scintillation detector & gas proportional detector	7.5	6	9

Table II-C: Federal Technical Assistance and Response Times

U.S. DOE Activity	Place of Origin	Operational Time	Radiological Assistance
FRMAC	Las Vegas, NV Washington, D.C.	Phase I: 4-8 Hours Phase II: 7-11 Hours Phase III: 24-36 Hours	Coordinate radiological monitoring and assessment from federal agencies providing technical assistance
NARAC	Lawrence Livermore National Laboratory Livermore, CA	1-2 Hours	Computer modeling of dose projections
AMS Aircraft	Las Vegas, NV or Washington, D.C.	4-8 Hours	Flyover of the area to determine concentration of isotopes and yield early isopleths
DOE Region V Radiological Assistance Program Team	Chicago, IL	2-6 Hours	Provide monitoring and sampling teams
Mobile Laboratory	Chicago, IL	10 Hours	Lab analysis of isotopic concentration in collected samples
REAC/TS	Oak Ridge, TN	24-36 Hours	Provides direct support

Table II-D: Federal Radiological Monitoring and Assessment Center (FRMAC) Airport Accessibility

Plant	Airport-Cargo-Area	Aerial Monitoring Support (AMS)
DBNPS	Toledo Express Airport Swanton, OH Time: 15 minutes Alt: Cleveland-Hopkins Airport Cleveland, OH	Toledo Express Airport Swanton, OH
PNPP	Cleveland-Hopkins Airport Cleveland, OH Time: 35 minutes Alt: Youngstown-Warren Airport Vienna, OH	Lost Nation Airport Mentor, OH Alt: Cuyahoga County Airport Highland Heights, OH
BVPS	Greater Pittsburgh Airport Pittsburgh, PA	Greater Pittsburgh Airport Pittsburgh, PA

Table II-E: Potential Federal Radiological Monitoring and Assessment Center (FRMAC) and Field Team Center Locations

Plant	Location
DBNPS	U. S. Army Reserve Center 983 rd Engineer Battalion 9825 Garden Road Swanton, OH
PNPP	Lake Catholic H. S. 6733 Reynolds Road Mentor, OH
BVPS	Greater Pittsburgh Airport Air National Guard Facility Pittsburgh, PA

III. Emergency Classification System

NUREG-0654 FEMA-REP-1 Criteria D

Overview

Upon receipt of a notification of an emergency classification situation, state and local response agencies and organizations will mobilize to provide the manpower, equipment and expertise needed to accomplish the following actions as shown below. This guide also assists state agencies in transitioning to and carrying out the actions of both intermediate and recovery phases of an event, serving as an outline of required actions.

A standard Emergency Classification System forms the basis for determining the level of response to a nuclear incident that will be consistent with the licensee.

Contents

Topic	See Page
Unusual Event	52
Alert	53
Site Area Emergency	55
General Emergency	58
Intermediate Phase	61
Recovery Phase	64

Unusual Event

Definition 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.

Emergency Worker Notifications Notifications will be by commercial telephone, cell phone, satellite phone, or MARCS radio.

County Actions Refer to the individual county plans and procedures.

<u>STEP</u>	<u>STATE ACTIONS</u>	<u>RESPONSE AGENCY</u>
1.	Notify key response agencies.	Ohio EMA ODH-BRP OEPA
2.	Provide fire/security assistance if requested.	County EMA County Sheriff Local Township Fire Dept.
3.	Provide news releases, as required.	Ohio EMA County EMA

Alert

Definition 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.

Emergency Worker Notifications Notifications will be by commercial telephone, cell phone, satellite phone, or MARCS radio.

Hostile Action Based The State EOC Executive Group may choose to use Supplemental Action Form – Actions Requiring Executive Approval to recommend advanced precautionary actions.

County Actions Refer to the individual county plans and procedures.

<u>STEP</u>	<u>STATE ACTIONS</u>	<u>RESPONSE AGENCY</u>
1.	Complete Unusual Event actions.	All Concerned Agencies
2.	Notify key response agencies.	Ohio EMA Ohio HS (if security event)
3.	Consider activating the SEOC Assessment Room, monitor plant data and establish communications with local EOC.	Ohio EMA ODH-BRP OEPA
4.	Consider dispatching representatives to:	
a.	EOF	Ohio EMA ODH-BRP
b.	Utility JIC	Ohio EMA ODH-BRP
c.	County EOCs	Ohio EMA ODH-BRP OEPA

Continued on next page

Alert, Continued

<u>STEP</u>	<u>STATE ACTIONS</u>	<u>RESPONSE AGENCY</u>
5.	Consider dispatching field monitoring and sample screening teams (FMTs) from state agencies to affected area.	Ohio EMA ODH-BRP County EMA
6.	Consider dispatching mobile communications support.	Ohio EMA
7.	Inform contiguous government officials/agencies.	Ohio EMA
8.	Consider sending representatives to contiguous state EOCs.	Ohio EMA
9.	Consider vacating visitors from state/federal lands.	Ohio EMA ODNR
10.	Consider notifying Ingestion Zone counties informing them of the situation.	Ohio EMA - Radiological Branch
11.	Consider clearing waterway in 10-mile EPZ.	Ohio EMA - Radiological Branch County EMA
12.	For DBNPS and PNPP only: If decision is made to clear waterways:	Ohio EMA - Radiological Branch
a.	Contact USCG Operations Center, Cleveland, and request they broadcast message to mariners and provide resources for waterway notification.	Ohio EMA County EMA
b.	Dispatch state agency watercraft as necessary to clear waterways. Coordinate with USCG to assist clearing waterways.	ODNR
13.	Provide news releases and information to the public.	Ohio EMA Governor's Office County EMA
14.	Maintain ALERT status until closeout, reduction, or escalation of emergency classification.	All Concerned Agencies

Site Area Emergency

Definition 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 boundaries.

Emergency Worker Notifications Notifications will be by commercial telephone, cell phone, satellite phone, or MARCS radio.

County Actions Refer to the individual county plans and procedures.

<u>STEP</u>	<u>STATE ACTIONS</u>	<u>RESPONSE AGENCY</u>
1.	Complete actions under Alert.	All Concerned Agencies
2.	Notify all EOC staff and agencies.	Ohio EMA
3.	Consider requesting a Governor's declaration of a "state of emergency." Notify appropriate state agencies when issued.	Governor's Office Ohio EMA
a.	Consider revising the Governor's Declaration to include downwind Ingestion Zone counties.	Governor's Office Ohio EMA
4.	When it is determined that the event is beyond the ability of state and local capabilities, consider requesting implementation of the National Response Framework and a Presidential Emergency Declaration.	Governor's Office Ohio EMA
5.	Notify affected counties, and contiguous state and county officials of the Governor's declaration and request of Presidential Declaration of an Emergency.	Ohio EMA
6.	When appropriate, activate the public emergency alert system (EAS), and provide recommendations determined necessary by local authorities. Coordinate EAS activation with bordering counties & contiguous states, to limit public confusion.	County EMA County Executive Group Governor's Office Ohio EMA

Continued on next page

Site Area Emergency, Continued

<u>STEP</u>	<u>STATE ACTIONS</u>	<u>RESPONSE AGENCY</u>
7.	Provide news releases and information to the public. Any message issued as the result of a HAB incident should be vetted through the Incident Command (IC) or law enforcement for security sensitive information before being released.	Governor's Office Ohio EMA County EMA
8.	Provide representatives to the State EOC to coordinate response efforts.	Governor's Office Ohio EMA ODH-BRP ODH-BHP OEPA Ohio Homeland Security ONG ODNR PUCO ODJFS ODA OSHP ODOT Attorney General ODI Ohio DMHAS DAS American Red Cross OSU Extension USDA-FSA Affected Utility (FENOC)
9.	Request FAA restricts air space within the 10-mile EPZ.	Ohio EMA
10.	Request rail traffic to be restricted within an approximate 25-mile radius of the plant.	Ohio EMA
11.	Determine background radiation levels for field monitoring in accordance with Field Monitoring Team (FMT) procedures, and at contamination monitoring points using appropriate local monitoring procedures.	ODH-BRP OEPA Ohio EMA County EMA
12.	Continuously assess the information from the affected utility and from other available federal, state and local resources with regard to protective actions already initiated for the public.	Governor's Office Ohio EMA - Radiological Branch
13.	Except in the event of a "fast breaking event," recommend placing livestock and poultry within 10-mile radius on stored feed and protected water.	ODA

Continued on next page

Site Area Emergency, Continued

<u>STEP</u>	<u>STATE ACTIONS</u>	<u>RESPONSE AGENCY</u>
14.	If not already accomplished, consider vacating visitors from state/federal lands.	Ohio EMA ODNR
15.	If not already accomplished, consider clearing waterway in 10-mile EPZ. For DBNPS and PNPP only: If not already accomplished under ALERT, and if decision is made to clear waterways:	Ohio EMA Ohio EMA - Radiological Branch County EMA
a.	Contact USCG Operations Center, Cleveland, and request they broadcast message to mariners and provide resources for waterway notification.	Ohio EMA County EMA
b.	Dispatch state agency watercraft as necessary to clear waterways. Coordinate with USCG and ESF-9 to assist clearing waterways.	ODNR
16.	Consider a precautionary relocation of persons with disabilities and access/functional needs (including schoolchildren).	Ohio EMA - Radiological Branch State Executive Group County Executive Group
17.	Notify DOE to coordinate assistance, if necessary.	Ohio EMA
18.	Notify 50-mile IPZ downwind counties.	Ohio EMA
19.	Consider sending Animal Advisory to downwind Ingestion Zone counties.	Ohio EMA ODA
20.	Consider distributing radiological emergency information to farmers, food processors, and distributors.	OSU Extension ODA
21.	Maintain "Site Area Emergency" status until verbal closeout, reduction, or escalation of emergency classification.	All Concerned Agencies

General Emergency

Definition 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.

Emergency Worker Notifications Notifications will be by commercial telephone, cell phone, satellite phone, or MARCS radio.

County Actions Refer to the individual county plans and procedures.

<u>STEP</u>	<u>STATE ACTIONS</u>	<u>RESPONSE AGENCY</u>
1.	Complete actions under Site Area Emergency.	All Concerned Agencies
2.	When conditions warrant, activate immediate notification through the public emergency alert system (EAS), and provide recommendations determined necessary by local authorities. Coordinate EAS activation with bordering counties & contiguous states, to limit public confusion.	County EMA County Executive Group Governor's Office Ohio EMA
3.	Consider protective actions that may include a precautionary evacuation of affected populations based on the utility's recommendation and state/local accident assessment.	Governor's Office Ohio EMA ODH-BRP County EMA County Executive Group

Continued on next page

General Emergency, Continued

STEP	STATE ACTIONS	RESPONSE AGENCY
4.	For actual or projected offsite release: recommend evacuation for 2-mile (360 deg.) radius & 5-mile downwind sector, unless: (1) very dangerous travel conditions exist, or (2) there is assurance from the utility that the impending release(s) is a controlled release(s) of short duration (puff release) and the area near the plant cannot be evacuated before the plume arrives, or (3) a security event has occurred and the actual impact is unknown or not immediately available; in these three instances, sheltering may be the appropriate immediate protective action (see NUREG-0654, Supp. 3, Fig. 1, note 3 & 5). Using dose assessment, determine the need to extend distances. Advise the remainder of plume EPZ to listen to EAS.	Governor's Office Ohio EMA Ohio EMA - Radiological Branch County EMA County Commissioners
5.	Consider recommending the administration of Potassium Iodide (KI).	ODH-BRP
6.	When it is determined that the event is beyond the ability of state and local capabilities, consider requesting implementation of the National Response Framework and a Presidential Emergency Declaration.	Governor's Office Ohio EMA
7.	Provide offsite monitoring results to utility and DOE (federal teams) for joint accident assessment.	Ohio EMA - Radiological Branch ODH-Lab
8.	If not already completed, distribute radiological emergency information to farmers, food processors, and distributors in the projected plume pathway.	OSU Extension ODA
9.	Continuously assess information from utility and offsite monitoring teams (utility, state and federal) with regard to changes to protective actions already initiated for public and mobilizing evacuation resources.	Ohio EMA – Radiological Branch State Executive Group County Executive Group
10.	Provide news releases and information to the public.	Governor's Office Ohio EMA County EMA
11.	Consider a request for a Federal (Presidential) Major Disaster Declaration based on offsite contamination and extent of event. This may require amending a previous request for a declaration of emergency.	Ohio EMA Governor's Office

Continued on next page

General Emergency, Continued

<u>STEP</u>	<u>STATE ACTIONS</u>	<u>RESPONSE AGENCY</u>
12.	After the release has stopped, and the plant is in a “stable” condition, convene the Ingestion Zone Recovery and Reentry Advisory Group (IZRRAG). Transition to the intermediate phase.	Ohio EMA - Radiological Branch ODA IZRRAG

Intermediate Phase

<u>STEP</u>	<u>ACTIONS</u>	<u>RESPONSE AGENCY</u>
1.	Maintain “General Emergency” status until verbal closeout or reduction of emergency classification.	IZRRAG All Concerned Agencies
2.	Initiate temporary bans and precautionary advisories on foodstuffs per DHHS/FDA guidance and Ohio IZRRAG procedures to advise township/county officials and the public in those townships lying within, and counties lying either wholly or partially within the 50-mile ingestion pathway.	IZRRAG
3.	Assess the need to extend the livestock and poultry advisory beyond 10 miles.	ODA IZRRAG
4.	Consolidate data collected in the emergency phase pertaining to:	IZRRAG
a.	Definition of the contaminated areas based on plume path (using deposition model),	
b.	Levels of radiation within and bordering the affected areas, and	
c.	Size of population evacuated or relocated.	
5.	Define the Restricted Zone.	IZRRAG County Executive Group County EMA
a.	Use a default Derived Response Level (DRL) of 2.5 mR/hr to define a recommended Restricted Zone for the first 24 hours.	
b.	Adjust Restricted Zone boundaries to employ definable barriers.	
6.	Recommend additional relocation of populations affected by the defined Restricted Zone.	IZRRAG County EMA
7.	Distribute radiological emergency information to farmers, food processors, and distributors in the affected ingestion pathway.	OSU Extension ODA
8.	Using initial radiation surveys and any available samples issue additional and/or revise advisories and precautionary restrictions.	IZRRAG
9.	Staff the Field Team Center (FTC). When the Federal Radiological Monitoring and Assessment Center (FRMAC) is operational, consider co-locating the FTC with FRMAC to facilitate coordination.	IZRRAG Ohio EMA ODA OEPA ODNR
10.	Direct continued monitoring and sample analysis to define contaminated areas and hot spots.	IZRRAG

Continued on next page

Intermediate Phase, Continued

<u>STEP</u>	<u>ACTIONS</u>	<u>RESPONSE AGENCY</u>
11.	Direct or request samples to characterize the deposition.	IZRRAG
12.	Establish liaison with the federal monitoring and assessment teams at the FRMAC. Share state, local and utility survey and sampling results (as applicable), and request federal team radiation survey and sampling results.	IZRRAG
13.	Using sample analysis results, calculate an accident specific DRL. Update Restricted Zone.	IZRRAG
14.	Assist/ensure local officials employ reentry control guidelines for Restricted Zones to protect public health & safety, but allow continued operation of critical utilities and safeguarding of farm livestock. Ensure Reentry Verification and Orientation Center (REVOC) locations are identified and release public information as necessary.	IZRRAG County EMA County Executive Group
15.	Review and assess radiation surveys and sample results from all local, state, and federal monitoring teams to determine whether previously evacuated populations may return to areas that were not significantly impacted by contamination from the plume. Ensure recovery, reentry, and return actions are being employed to control the return of populations.	IZRRAG Executive Group County Executive Group
16.	Initiate data collection for decision making concerning return of populations to previously impacted & evacuated areas.	IZRRAG
17.	Initiate data collection to record public costs (state and local) from losses and response actions resulting from plant release.	Ohio EMA County EMA
18.	Commence Recovery planning; formulate initial recovery plans in cooperation with local agencies and the Federal Advisory Team.	IZRRAG Executive Group
19.	Transition to the Recovery phase when:	IZRRAG Executive Group
a.	Emergency conditions on-site have stabilized;	IZRRAG Executive Group
b.	Offsite radioactive release has ceased, and there is little or no potential for further unintentional offsite releases;	IZRRAG Executive Group

Continued on next page

Intermediate Phase, Continued

<u>STEP</u>	<u>ACTIONS</u>	<u>RESPONSE AGENCY</u>
c.	The offsite contamination is characterized, its extent determined, and the immediate consequences are assessed;	IZRRAG Executive Group
d.	Immediate protective actions for public health and safety, and for property, have been accomplished; and	IZRRAG Executive Group
e.	An initial long-range monitoring plan has been developed in conjunction with the affected state and local governments and appropriate federal agencies.	IZRRAG Executive Group

Recovery Phase

<u>STEP</u>	<u>ACTIONS</u>	<u>RESPONSE AGENCY</u>
1.	Establish temporary, and then permanent boundaries to restricted areas that cannot be re-inhabited.	IZRRAG County Executive Group
2.	Establish criteria for security of restricted areas. Establish controls for access and egress to restricted areas.	IZRRAG County Executive Group All Concerned Agencies
3.	Develop a prioritized list of restoration activities for affected areas, identifying state and federal agencies available for assistance.	IZRRAG
4.	Coordinate any FRMAC requests requiring assistance from state agencies including FRMAC's long-term operational needs and transition from DOE to US EPA.	Ohio EMA
5.	Continue to provide a liaison to monitor federal agency actions.	IZRRAG Ohio EMA
6.	Develop decontamination and restoration plans, including establishing decision levels that preclude decontamination due to excessive cost.	IZRRAG County Commissioners
7.	Provide return and/or relocation technical assistance for local and county governments aiding evacuated / relocated residents, businesses, and industries.	IZRRAG
8.	Provide information for state and federal assistance to affected public and government entities.	Ohio EMA
9.	Establish and implement a method (system) to track costs incurred in state, county, and local activities.	Ohio EMA
10.	Local officials will carry out reentry using locally developed procedures in coordination with the state.	IZRRAG County EMA
11.	Determine needs for decontamination of possessions, vehicles, property, and people. Assist local officials with decontamination and restoration projects.	IZRRAG
12.	Determine limitations on hunting and fishing; issue orders or protective action advisories as appropriate.	IZRRAG ODNR
13.	Develop and maintain an ongoing public information outreach effort. Provide continuing information about the recovery actions, activities, and timetables to the public.	Ohio EMA
14.	Assist local officials in providing for personal needs for those contaminated individuals (residents and emergency workers) remaining at care centers, medical facilities, and FRMAC locations.	Ohio EMA

Continued on next page

Recovery Phase, Continued

<u>STEP</u>	<u>ACTIONS</u>	<u>RESPONSE AGENCY</u>
15.	Determine temporary actions for property that was not able to be decontaminated.	IZRRAG
16.	Develop plans and guidelines for disposal of contaminated property, food, and soils.	IZRRAG
17.	Assist local officials in determining the relocation and housing needs of the evacuated population. Coordinate ANI insurance and federal disaster assistance.	Ohio EMA
18.	Establish requirements for temporary reentry and permanent return into restricted areas.	IZRRAG
19.	Develop a radiological dose assessment, total dose commitment, and integrated dose computation; assess the health effects to the public resulting from the accident.	IZRRAG
20.	With federal assistance, provide support to persons, property and business owners, and government entities in the affected areas with respect to financial restitution for losses and costs.	Ohio EMA
21.	Continue to monitor radioactive contamination of both humans and animals; make recommendations and issue advisories needed to control contamination.	IZRRAG

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IV. Alert & Notification

NUREG-0654 FEMA-REP-1 Criteria E

Overview

This chapter will:

1. Provide for the prompt notification of:
 - a. State and county response organizations by the operating utility.
 - b. State and county support agencies by appropriate response organizations.
 2. Establish a means of standardization for both initial and subsequent notification messages.
 3. Establish a means of non-standard communications, where the plant is not the entity to provide initial notifications and means of caller verification.
 4. Establish a means of providing the populace with easy, clear instructions regarding all protective actions that may be required in an incident.
-

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General Notification

Overview

1. In the event of a declaration of a radiological emergency at a commercial nuclear power plant, initial and follow-up notifications shall be made by the nuclear power plant to state and county agencies.
2. A determination as to the radiological emergency classification scheme and action levels shall be made per NRC Guidance Document NUREG-0654 Revision 1, Appendix 1, and Supplement 3.
3. Immediate notification of state and county governments shall be implemented.

Note: If initial notification is made by the nuclear power plant via a means other than dedicated phone lines, state and county radiological response agencies will verify emergency notifications through confirming calls with the next highest, or initiating, organization.

4. These organizations shall then begin alerting and mobilizing respective support agencies.
-

Initial Notification Process

1. In the event of a radiological incident involving a nuclear power facility, the nuclear power plant has 15 minutes from the time of an emergency declaration to notify offsite officials.²
 - a. The nuclear power plant will provide state and county response agencies with initial dose assessment projection, release rates and recommended protective action information in an orderly, predetermined format.
 - b. Updates or revisions of this information will also follow a predetermined format.
 2. The primary means of notification between the nuclear power plants, county governments and the State of Ohio will consist of those systems that are agreed upon by the nuclear power plants and the governments involved.
 3. In a majority of instances, the warning points will be at the office of the county sheriff or 911 centers and the OSHP Hub located at the State of Ohio Emergency Operations Center/Joint Dispatch Facility (SEOC/JDF), which are manned 24 hours a day. OSHP Hub receives the initial notification of emergencies involving the DBNPS, PNPP, BVPS, and Fermi 2 and will immediately contact Ohio EMA.
-

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² Ref. NUREG-0654/Federal Emergency Management Agency [FEMA] Radiological Emergency Planning [Rep.] Document 1, Appendix 1; 10 Code of Federal Regulations [CFR] 50, Appendix E

General Notification, Continued

**Initial
Notification
Process,**
continued

4. The initial notification may not come from the nuclear power plant. When another agency receives vital information such as hostile actions, it is important that lines of communications go both ways. It is expected that the plant would require caller verification which they can do by contacting the agency's warning point directly by phone or radio.
-

**Follow-up
Process**

1. Follow-up notifications may be made to locations other than the 24-hour point at an agency. For example, initial notification may be made to the 911 center, but once the county and state EOCs are activated, then communications will continue from there. It is the agency's responsibility to let the plant know when the secondary location is ready to receive communications.
 2. Secondary systems will consist of two-way radio over amateur or governmental band radios. A "net" is to be established between the licensee and the local governmental warning point.
-

State and County Agency Notification

IPZ Counties

1. For those counties located within the IPZ of a nuclear power facility, the primary means of notification is by phone or by the most appropriate means.
2. Alternate methods can be used as necessary – to include but not limited to fax, e-mail, MARCS, or cell phone.
3. Alternate means of notification shall include, but not be limited to the following radio networks:
 - a. Emergency Management.
 - b. Ohio State Highway Patrol (OSHP).
 - c. Ohio Department of Transportation (ODOT).
 - d. Ohio Department of Natural Resources (ODNR).
 - e. Radio Amateur Civil Emergency Services (RACES).
4. Based upon wind direction, the counties will be identified and informed of the incident.
5. The counties will be provided a status update of the incident and advised of any protective action recommendations.
6. Local broadcast media will be relied upon to disseminate information to the public in the IPZ.
7. Individual notifications may be made at the discretion of the county EMA director, use of mobile public address systems and/or door-to-door notification by emergency services personnel.
8. Copies of the Radiological Emergency Information for Food Producers, Processors, and Distributors brochure shall be distributed annually.

State of Ohio and Federal Agencies

1. Upon receipt of notification of a nuclear power plant emergency, Ohio EMA will notify appropriate state and federal agencies in accordance with established procedures.
2. The affected nuclear power plant is responsible to notify the NRC, the coordinating agency under the National Response Framework (NRF). Ohio EMA will establish communications with the NRC during an event or incident as appropriate. Consistent with the notification requirements of the NRF, the NRC will notify the National Operation Center (NOC).

Continued on next page

State and County Agency Notification, Continued

State of Ohio and Federal Agencies, continued

3. When the State of Ohio learns of an event or incident that affects a nuclear power plant before notification from the nuclear power plant, such as a credible threat against the nuclear power plant learned through law enforcement or intelligence, the Ohio EMA will:
 - a. Contact the affected nuclear power plant and counties to notify them of the credible threat.
 - b. Notify the Coordinating Agency (NRC or DHS), and the NOC, in accordance with the notification requirements of the NRF (NRF: NUC-17).
-

State Responders

1. The Radiological Branch Chief is responsible for notification of the Ohio EMA Director, Ohio EMA Deputy Director, and State Assessment responders. He will delegate the responsibility when staffing allows. Contact will be made with commercial telephone or cell phone.
 2. The Ohio EMA Director will notify the Division Administrators and Branch Chiefs. Branch Chiefs would then notify their personnel needed to respond.
 3. Ohio EMA will also contact the lead and support agencies for the Emergency Support Functions (ESFs) to staff the SEOC.
 4. See Table IV-A and Figure IV-B for detailed information flow.
-

Contiguous States

1. 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).
 2. The National Warning System (NAWAS) will be used as a secondary means of contacting these states.
 3. FEMA National Radio System (FNARS) shall serve as a back up to NAWAS for contacting contiguous states.
-

Canada

Ohio EMA 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.

County Notification Information

Plans and Procedures

See individual county plans and procedures for:

1. Information flow
 2. Activation of county emergency workers
-

Public Notification

Alert

In those counties where a nuclear power station is located, the following procedures apply.

1. The 24-hour warning point will verify the incident with the utility nuclear power plant if notification did not come through the dedicated phone lines.
 2. If conditions warrant and time allows, the county board of commissioners and/or the county EMA director will consult with the Governor (or designated representative) to determine the best immediate protective action for the populace.
 3. Once a protective action decision has been reached which requires activation of the alert and notification system, the following criteria must be met:
 - a. The capability for: (1) providing an alert signal and beginning an informational or instructional message to the population in the 10-mile EPZ within 15 minutes and (2) providing protective action recommendations (PARs), if appropriate.
 - b. The direct coverage of essentially 100 percent of the population within 5 miles of the NPP site.
 - c. The coverage of essentially 100 percent of the population in the remaining areas of the 10-mile EPZ (i.e., from 5 to 10 miles from the NPP) who may not have received the initial notification. This notification must occur within 45 minutes.
 - d. A backup means of public alert and notification capable of covering essentially 100 percent of the population in the plume exposure EPZ in the event the primary method is unavailable. The backup means of alert and notification shall be conducted within a reasonable time, with a recommended goal of 45 minutes.
 4. If time does not permit consultation with the SEOC, the warning point will begin public notification based upon recommendations of the licensee.
-

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Public Notification, Continued

- Alert, continued**
5. County plans shall develop and include the Emergency Action Messages for their respective county's EAS announcements, and such plans shall include EAS Messages for the following situations:
 - a. System Test (or Test),
 - b. Limited Precautionary Actions (or Precautionary Messages to public),
 - c. Sheltering Required,
 - d. Evacuation Required (Necessary),
 - e. Precautionary Actions for Farm Animals,
 - f. Evacuation and/or Sheltering Required and Relocation (e.g. school children) if appropriate for that specific county plan.

Note: It is the responsibility of the county government to maintain these EAS announcements and to determine a means of entry into the broadcast networks.
 6. Immediately upon determining the protective response, the county's authorized representative will contact established broadcast outlets (EAS) to initiate public service announcements. Broadcasts will describe the immediate protective actions required.
 7. The county's representative will activate the county warning system to coincide with EAS announcements. The public, through the EAS, will receive official instructions and information.
 8. The initial message will include the following elements:
 - a. Identification of the ORO responsible and the official with authority for providing the alert signal and instructional message.
 - b. Identification of the commercial nuclear power plant and a statement that an emergency exists there.
 - c. Reference to REP-specific emergency information (e.g., brochures, calendars and/or information in telephone books) for use by the general public during and emergency.
 - d. A closing statement asking that the affected and potentially affected population stay tuned for additional information, or that the population tune to another station for additional information.
 9. Any EAS message, press release, or news briefing as the result of a HAB incident should be vetted through the Incident Command (IC) or law enforcement for security sensitive information before being released to the public.

Continued on next page

Public Notification, Continued

Broadcast Information

Refer to the individual county plans or procedures for:

1. A list of broadcast stations used to provide emergency instructions to the public.
 2. Individual LOAs between counties and EAS radio stations.
 3. A statement indicating the stations' capability to participate in the public notification process.
 4. Identification of points of contact who are accessible 24-hour.
 5. Establishment of the interval for broadcasting official information statements.
 6. Developed EAS message contents (e.g., relocation of school children).
 7. Content of followup EAS messages.
 8. Process for selecting, modifying, approving, and releasing messages.
-

Persons with Access/Functional Needs

For procedures concerning the alert and notification of persons with disabilities and access/functional needs, refer to the individual county plans.

NOAA

National Oceanic and Atmospheric Administration (NOAA) may broadcast instructions to the public to refer to an EAS station for emergency information. NOAA may also directly broadcast emergency information to the public, if necessary.

Route Verification

After the sirens have sounded and EAS messages broadcasted, the public is to hang a green card in the window to make responders aware that they have received the message. Local fire and police will travel through the EPZ to ensure homes that do not have the green card posted have heard the message as well. For travel routes, refer to the individual county plans and procedures.

Siren Failure

If a siren fails during an emergency, local fire departments will perform backup route alerting using public address systems mounted on their trucks. For information on travel routes, see the individual county plans or procedures.

Continued on next page

Public Notification, Continued

Periodic Siren Testing

1. BVPS performs one full cycle annual test, quarterly growl tests, and weekly silent tests.
 2. DBNPS performs an annual full cycle test, monthly tests, and weekly silent tests.
 3. PNPP performs a full cycle test quarterly and bi-weekly quiet tests.
-

Mariner Notification

Lake Erie Notification

1. For recreational boaters and mariners operating within 10 miles of DBNPS or PNPP, the following notification methods shall be applied in the most effective and efficient manner to alert and notify them of a declared emergency and to clear the area:
 - a. Broadcast Communications
 - i. Marine Band Channel 16 (156.8 MHz)
 - ii. AM/FM EAS Messages
 - b. Vehicle-Mounted Public Address Systems
 - i. Surface responders in watercraft shall utilize onboard public address systems to broadcast messages and/or give directions to boaters where to go after exiting the 10-mile EPZ.
 2. Surface responders shall also use revolving lights to identify themselves as responders and to serve as markers where boaters should follow should there be a need for safe harboring outside the EPZ. For notifying boating traffic within the affected area on Lake Erie, recreational boaters and mariners will be directed to:
 - a. Return to their port, marina or harbor from which they launched and evacuate by automobile or other transportation; or,
 - b. Seek safe harbors outside the 10-mile EPZ by following traffic control directions from responding watercraft officers. U.S. Coast Guard (USCG) shall broadcast a "Notice to Mariners" utilizing standard USCG broadcast procedures.
-

Ingestion Pathway Notification

50-mile EPZ Notification

1. Local broadcast media will be relied upon to disseminate information to the public in the IPZ.
 2. Individual notifications may be made at the discretion of the county EMA director, use of mobile public address systems and/or door-to-door notification by emergency services personnel.
 3. Copies of the Radiological Emergency Information for Food Producers, Processors, and Distributors brochure shall be distributed to the 10-mile EPZ annually. This information will be available for dissemination to the 50-mile agricultural community at Site Area Emergency or General Emergency.
 4. State and county authorities shall utilize electronic media and the Ohio State University (OSU) Extension Service to facilitate timely dissemination of ingestion pathway protective action recommendations to the public and the agricultural community.
 - a. Ohio Department of Agriculture (ODA) maintains lists of individuals and organizations to which preprinted emergency information for agriculture producers is distributed.
 - b. Preprinted emergency information for the agricultural community is stockpiled in each OSU Extension office in the counties that lie within the IPZ.
-

Table IV-A: State-Level Incident Notification Flow

Unusual Event

1. The nuclear power plant notifies Ohio EMA (through OSP Hub, who receives the initial notification and immediately notifies Ohio EMA).³
 2. Ohio EMA informs:
 - a. Appropriate EMA staff
 - b. Office of the Governor
 - c. Ohio State Highway Patrol
 - d. Ohio Department of Health, Bureau of Radiation Protection
 - e. Ohio Environmental Protection Agency
 - f. Ohio Homeland Security (for security, terrorism, or sabotage related event)
-

Alert

1. The nuclear power plant notifies Ohio EMA (through OSP Hub, who receives the initial notification and immediately notifies Ohio EMA).
 2. Ohio EMA updates information to those previously contacted and further informs:
 - a. Ohio Department of Transportation (for air transportation of initial response team)
 - b. Ministry of Community Safety and Correctional Services, Emergency Management Ontario (for PNPP and DBNPS emergencies)
 - c. State and Federal Land Managers (for DBNPS emergencies)
 - d. Commonwealth of Pennsylvania (for PNPP emergencies)
 - e. State of Michigan (for DBNPS emergencies)
 - f. USCG Operations Center, Cleveland (for broadcasting emergency notice to mariners if clearing of the waterway EPZ is necessary)
 - g. Ohio Department of Natural Resources (if necessary to clear Lake Erie)
 - h. FEMA, Region V (for notification purposes only)
-

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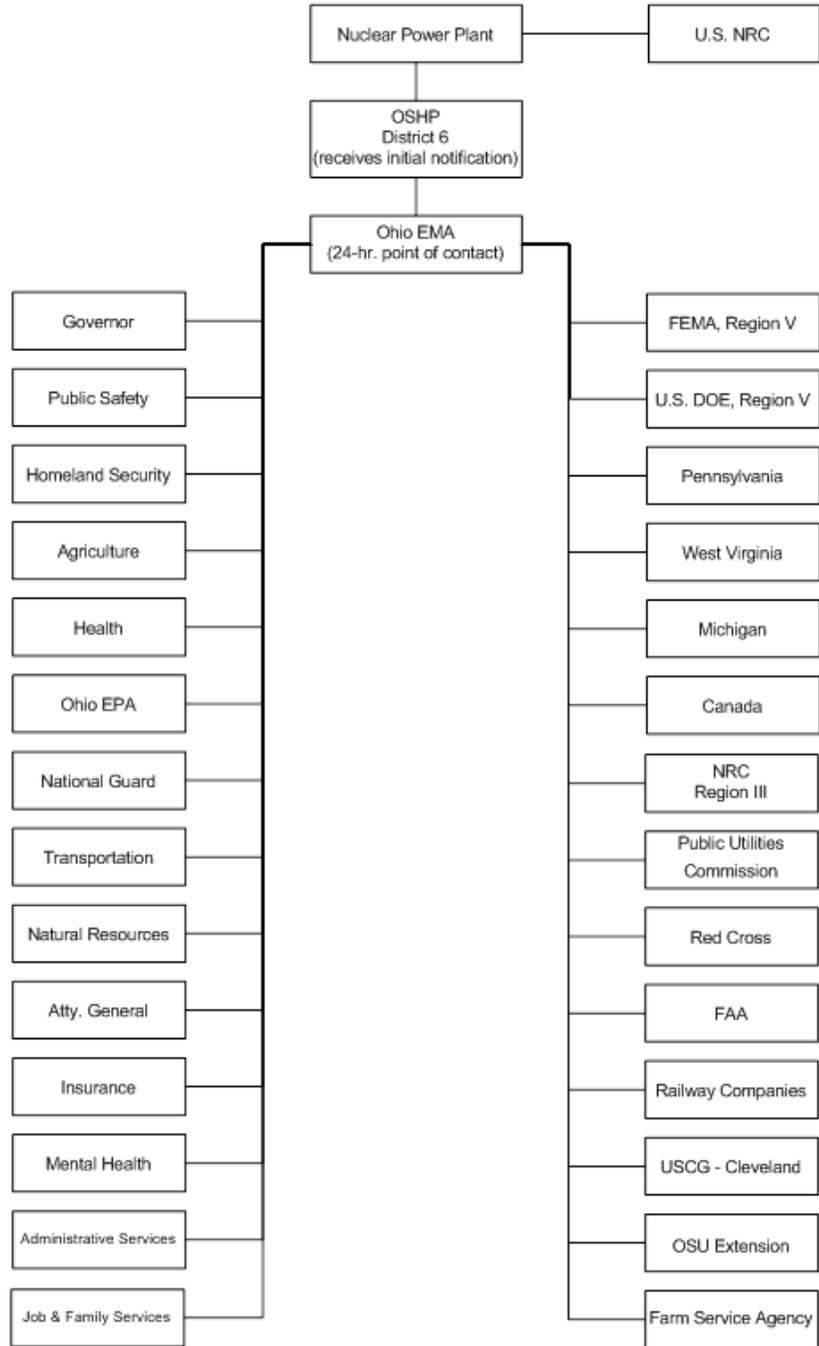
³ There are times when an agency other than the nuclear power plant can make the initial notification to the plant. This is most likely to occur if a county or state agency receives information of hostile actions before they have reached the plant. Communications are allowed to be multi-directional.

Table IV-A: State-Level Incident Notification Flow, Continued

Site Area Emergency/ General Emergency	<ol style="list-style-type: none">1. The nuclear power plant notifies Ohio EMA (OSP Hub if not already activated, who receives the initial notification and immediately notifies Ohio EMA).⁴2. Ohio EMA updates information to those previously contacted and further informs:<ol style="list-style-type: none">a. Ohio Department of Natural Resourcesb. Ohio Department of Transportationc. Ohio Department of Agricultured. Ohio Department of Job and Family Servicese. Ohio Department of Health, Bureau of Health Preparednessf. Ohio Department of Insuranceg. Ohio Department of Mental Health and Addiction Servicesh. Ohio Department of Administrative Servicesi. U.S. Department of Energyj. Federal Aviation Administrationk. Norfolk Southern Corp.l. CSX (DBNPS and PNPP emergencies)m. Ohio State University Extension (USDA)n. Farm Service Agency (USDA)o. FEMA, Region Vp. American Red Cross, Columbus Chapterq. Ohio National Guard - Military Supportr. Public Utilities Commission of Ohio
---	--

⁴ There are times when an agency other than the nuclear power plant can make the initial notification to the plant. This is most likely to occur if a county or state agency receives information of hostile actions before they have reached the plant. Communications are allowed to be multi-directional.

Figure IV-B: State of Ohio Nuclear Incident Notification Flow



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V. Emergency Communications

NUREG-0654 FEMA-REP-1 Criteria F

Overview

Provisions exist for prompt communications among principal response organization to emergency personnel and to the public.

Contents

Topic	See Page
Primary/Backup Communications	82
Functions of the SEOC Communications Facility	84
Communications Equipment	85
Potential Mobile Communications Asset Locations	86

Primary/Backup Communications

**24-Hour
Availability**

All EOCs have a 24-hour warning point, typically the 911 Center, to accept any event information received over the dedicated phone lines.

Alternate

Commercial telephone, MARCS radio, cell phones and satellite phones are available alternate means of communications, if necessary.

**Contiguous
State/Local**

Communications to contiguous state/local governments and Canada are accomplished through commercial telephone, cell phone, satellite phones, or MARCS radio.

Federal

Communication to federal agencies is accomplished through commercial telephone, cell phone, satellite phones, or MARCS radio.

**Field
Monitoring
Teams**

Communication to field monitoring teams is accomplished through MARCS radio or cell phone.

**Emergency
Operations
Facility**

Communication to the utility Emergency Operations Facility (EOF) is accomplished through commercial telephone, cell phone, or MARCS radio.

The various representatives at the EOF will communicate to the state and county Emergency Operation Centers (EOCs) and offices through commercial telephones with radio backup.

**Mobile
Communications
Assets**

Upon declaration of an Alert at a power station, mobile communication assets may be dispatched to the affected area. This 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.

Continued on next page

Primary/Backup Communications, Continued

Hospitals & Ambulances

Transport crews are able to communicate directly with hospitals using radios and cell phones to provide information such as the patient's condition, estimate exposure, presence of contamination and estimated time of arrival.

Local EOCs have procedures available to coordinate pickup of patients, routing of ambulances, and provision of assistance for radiological monitoring.

Periodic Testing

Periodic testing is conducted to ensure that emergency communications systems are available when needed.

Functions of the SEOC Communications Facility

SEOC Responsibilities

1. Maintain SEOC/Ohio EMA 24 hour telephone number.
 2. Receive and disseminate warnings.
 3. Receive and transmit messages via telephone, email, instant messaging, network file shares, facsimile, radio, or other communications systems.
 4. Provide equipment for:
 - a. State Government –
 - i. Amateur (2 meter) Radio Net
 - ii. Amateur (6 meter) Radio Net
 - iii. Amateur (80 meter) Radio Net
 - iv. Amateur Packet Radio
 - v. Department of Natural Resources Net
 - vi. Department of Transportation Net
 - vii. EMA County Government Net
 - viii. EMA Direction and Control
 - ix. Emergency Alert System
 - x. Military Support (ONG) Net
 - xi. State Highway Patrol Net (Department of Public Safety)
 - xii. Facsimile Machine
 - xiii. Law Enforcement Automated Data System (LEADS)
 - b. Federal Government –
 - i. NOAA Weather Satellite Data System
 - ii. Federal Emergency Management Agency (FEMA): Various nets/data systems
 - iii. FEMA National Automated Message System (FNAMS)
 - iv. FEMA National Radio System (FNARS)
 - v. Ohio NAWAS Warning Point
 5. Provide closed-circuit and commercial television services to the operations room.
-

Communications Equipment

MARCS Radio The Multi-Agency Radio Communication System (MARCS) talk groups that are available for a radiation emergency include the following:

EMA Rad Talk Group (primarily for Field Monitoring/Sampling Teams)

OEPA
ODH
Ohio EMA
Columbiana County EOC
Lake County EOC
Ottawa County EOC
BVPS
DBNPS
PNPP

NUCBV Talk Group (Beaver Valley)

BVPS JPIC
Columbiana County EOC
BVPS Facility
Ohio EMA Vehicles
OSP Hub
Ohio EMA Deployable
COMM Support

NUCDB Talk Group (Davis Besse)

DBNPS JIC
DBNPS Facility
Erie County EOC
Ottawa County EOC
Lucas County EOC
Sandusky County EOC
Ohio EMA Vehicles
OSP Hub
Ohio EMA Deployable
COMM Support

NUCPERRY Talk Group (Perry)

PNPP JIC
PNPP Facility
Ashtabula County EOC
Geauga County EOC
Lake County EOC
Ohio EMA Vehicles
OSP Hub
Ohio EMA Deployable
COMM Support

Potential Mobile Communications Asset Locations

**Potential
Locations**

Facility	Address
DBNPS	Bethel Church Grounds 2920 S.R. 590 Elmore, OH 43416
BVPS	Rich Feldman Residence 1691 Annesley Road East Liverpool, OH 43920 (Columbiana County)
PNPP	Ledgemont Elementary School 16200 Burrows Road Thompson, OH 44086

VI. Public Information

NUREG-0654 FEMA-REP-1 Criteria G

Overview

Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information to the public are established.

Contents

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Joint Information Center Concept of Operations	94
JIC Responsibilities	95
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Emergency Public Information (EPI)

Emergency Public Information (EPI) Guide

Each organization (county, state, and licensee) shall coordinate the annual production and distribution of a public information packet on suggested actions to take in the event of an emergency involving nuclear power stations. Public information will be focused on both residents of the area and any transients who may be there. It is expected that this information will be available in EPZ residences at the time of an emergency. Updated information will be disseminated annually. This Emergency Public Information (EPI) Guide shall contain, but will not be limited to:

1. Educational data on radiation.
 2. Points of contact for additional information.
 3. Protective measures, e.g., evacuation routes, relocation centers, sheltering information, and radioprotective drugs.
 4. Changes in warning and notification procedures.
 5. Information on emergency planning for persons with disabilities and access/functional needs.
 6. Changes in administrative guidance.
 7. Emergency information for the agricultural community.
-

Beaver Valley

Columbiana County

The BVPS publishes information that is mailed annually in an informational letter or telephone book format to residents of Columbiana County. It is also available online at:

<http://ccoema.org/>

1. Preparation of the letter or telephone book is coordinated with state and county EMA officials.
 2. Distribution of emergency preparedness information is accomplished on a direct basis from the licensee and/or telephone book publisher to Columbiana County addresses in the EPZ. In addition, the county EMA and telephone book publisher assist in assuring that ample supplies of emergency information/phone books are available at public safety and administration centers, recreation and camping facilities, chambers of commerce and other sites within the county.
 3. Contents
 - a. A public inquiry line is published with the annual emergency public information.
 - b. The EPI lists care centers, school relocation information (by name and address), and transportation pickup points.
-

Continued on next page

Emergency Public Information (EPI), Continued

Beaver Valley, continued

- c. Service animals are welcome at reception centers.
- d. The EAS radio stations are:
 - i. WKBN 570 AM;
 - ii. WOHI 1490 AM;
 - iii. WYSU 88.5 FM;
 - iv. WMXY 98.8 FM;
 - v. WHOT 101.1 FM;
 - vi. WGDF 104.3 FM; and
 - vii. WQXK 105.1 FM.

For more information, refer to the county plans and emergency public information.

Davis-Besse NPS

Ottawa and Lucas Counties

The DBNPS publishes information mailed annually in calendar format to residents of Ottawa County and parts of Lucas and Sandusky counties (covering the 10-mile EPZ radius, plus some residents outside the EPZ). It is also available online at:

<http://www.co.ottawa.oh.us/ottawacoema/davisbesse.html>

- 1. Preparation of the calendar is coordinated with state and county EMA officials.
- 2. Besides direct mail, the calendars are also distributed through local governmental offices. EPI is also distributed via transient information pamphlets at public safety agencies, recreation centers, chambers of commerce, visitor information offices, and lodging facilities.
- 3. Emergency information is also included in local telephone directories.
- 4. Contents
 - a. A public inquiry line is published with the annual emergency public information.
 - b. The EPI lists care centers and school relocation information (by name and address).
 - c. Service animals are welcome at reception centers.
 - d. EAS radio stations are WRVF 101.5 FM and WIOT 104.7 FM.

For more information, refer to the county plans and emergency public information.

Continued on next page

Emergency Public Information (EPI), Continued

Perry NPP

Ashtabula, Geauga, and Lake Counties

The PNPP publishes information that is distributed to residents of Ashtabula, Geauga, and Lake counties on an annual basis. It is also available online at:

http://www.lakecountyohio.gov/Portals/35/documents/EmergencyPreparednessInfo_Perry.pdf

1. Preparation of the information is coordinated with state and county EMA officials.
2. In addition, the county EMA distributes the information through governmental offices and other public-contact areas.
3. Emergency information is included in local telephone directories.
4. Contents
 - a. A public inquiry line is published with the annual emergency public information.
 - b. The EPI lists care centers, school relocation information (by name and address), and transportation pickup points.
 - c. Service animals are welcome at reception centers.
 - d. EAS radio stations are WTAM 1100 AM and WCPN 90.3 FM.

For more information, refer to the county plans and emergency public information.

Continued on next page

Emergency Public Information (EPI), Continued

Transients

1. Transients are typically present in all jurisdictions under consideration. However, the likelihood of their presence is greater in those Ohio counties along Lake Erie due to tourist attractions.
2. Maintenance on transient public information is performed annually.
3. Public information for transients is given below along with type, location, and responsible agencies.

Utility	Information Type	Locations	Responsible Organization
BVPS	Fact Sheets	Gas stations, restaurants, libraries, public bulletin boards	Columbiana County EMA
DBNPS	Fliers	Marinas, campgrounds, grocery stores, hotels, restaurants	Ottawa and Lucas County EMAs
PNPP	Signs, decals, handouts	Parks, nurseries, hotels, campground, recreation centers	Geauga, Ashtabula and Lake County EMAs

For more information, refer to the individual county plans or procedures.

Ingestion Pathway Zone (IPZ) Information

Annual Public Information

1. The state shall coordinate the annual production and distribution of the Radiological Emergency Information for Food Producers, Processors, and Distributors brochure. This brochure will be sent to the producers, processors and distributors of food within a 10-mile radius and be deliverable within 24 hours out to a 50-mile radius of a nuclear power facility. The brochure can be found at the following web address: <http://www.agri.ohio.gov>
 - a. This information shall include, but is not limited to:
 - i. Radiation effects on the human food supply.
 - ii. Emergency and preventive action guidelines definitions.
 - iii. Preventive protective actions for food, soil, and livestock.
 - iv. Notification methods for the agricultural industry.
 - v. Sources for obtaining further information.
2. Preparations shall be made to disseminate information for implementing protective actions within the entire affected IPZ. Distribution of this information shall be initiated at Site Area Emergency or higher ECL. Information shall include, but not be limited to:
 - a. Educational information on the impact of radiation contamination on food in the ingestion pathway.
 - b. Contact points for additional information.
 - c. Information on protective measures related to the ingestion pathway.
3. Each county Ohio State University (OSU) Extension office of the U.S. Department of Agriculture (USDA) shall distribute the Radiological Emergency Information for Food Producers, Processors, and Distributors brochure by the most effective means to agriculture producers, processors, and distributors within their county. Each county EMA may assist in this distribution.
4. The USDA Farm Service Agency (FSA) shall provide a means of informing farmers about protective actions through its county newsletter system. To view news releases, fact sheets and announcements, visit the USDA FSA website at: <http://www.fsa.usda.gov>

Continued on next page

Ingestion Pathway Zone (IPZ) Information, Continued

Annual Public Information,
continued

5. In the case where the PNPP IPZ extends into Erie, Crawford, and Mercer counties in Pennsylvania, agriculture radiological emergency information shall be disseminated by the Pennsylvania Emergency Management Agency (PEMA) to these affected areas. Ohio EMA shall notify PEMA at the Site Area Emergency or higher ECL and will advise distribution of their agriculture information to those affected areas. It is the responsibility of Pennsylvania to produce and distribute this information to these specific counties outside Ohio.
 6. In the case where the DBNPS IPZ extends into Lenawee, Monroe, Wayne, and Washtenaw counties in Michigan, agriculture radiological emergency information shall be disseminated by the Michigan State Police, Emergency Management and Homeland Security Division (EM&HS), to these affected areas. Ohio EMA shall notify Michigan EMD at the Site Area Emergency or higher ECL and advise distribution of their agriculture information to those affected counties. It is the responsibility of Michigan to produce and distribute this information to these specific counties outside Ohio.
 7. In the case where the DBNPS or PNPP IPZ extends into southwestern Ontario, Canada, agriculture radiological information shall be disseminated by Emergency Management Ontario (EMO) to these affected areas. Ohio EMA shall notify EMO at the Site Area Emergency or higher ECL and advise distribution of the agriculture information to these areas. It is the responsibility of Ontario, Canada, to produce and distribute this information to these specific areas outside Ohio.
-

Joint Information Center Concept of Operations

State & Utility JICs

1. The Ohio EMA Executive Director will authorize the State PIO to activate the State JIC. Utility officials will activate the Utility JIC as deemed appropriate, based upon their procedures or news media interest.
2. Media briefings at the Utility and State JICs will be conducted jointly with appropriate information officers present.
3. Development of press releases:
 - a. Press releases will be developed at the State EOC/JIC by the state public information staff and transmitted to the Ohio EMA spokesperson at the Utility JIC for use during media briefings.
 - b. Press releases can be transmitted via e-mail and/or fax.
4. Before released, media releases will be coordinated with involved agency information officers.
5. Content of releases/advisories
 - a. All news releases relating to any incident, presented by state or local government will contain in the heading – the date, time and number of the news release; identification of the agency(ies) issuing the release; and the name of the involved facility.
 - b. Initial hazard/notification data includes:
 - i. Date/time of the incident;
 - ii. Nature of radiation hazard;
 - iii. Risks and protective actions, if any;
 - iv. Actions undertaken by the utility, state, local, federal agencies;
 - v. Description of incident.
 - c. If the press release/advisory is an update of previously issued information, the item should contain any changes in conditions resulting from the accident and the protective actions to be taken.
 - d. If the situation is the result of hostile action, news release content will be reviewed by law enforcement personnel prior to release as described in the Terrorism Incident Annex of the state EOP.
 - e. If a state or agency Public Information Officer/spokesperson is unfamiliar with the technical content of a briefing, they should consult with a subject matter expert prior to its release.

Continued on next page

Joint Information Center Concept of Operations, Continued

- Deactivation of JIC**
1. The Joint Information Center will be deactivated as the situation warrants, or when operational activities begin to decline. All participating agencies must jointly agree on the deactivation. Steps to deactivate a JIC include:
 - a. Prepare a comprehensive deactivation press release for lead agency (or State EOC) approval and distribution.
 - b. Notify community, media, agency communications managers, and local officials about JIC closing and provide regional (local) contact information.
 2. Provide casebooks (info packets) to communications managers whose organizations will assume responsibility for ongoing information.
-

JIC Responsibilities

- Office of the Governor**
- The Office of the Governor shall:
1. Coordinate directly with the Governor and the Communication Office on Joint Information Centers (JICs) activities and issues.
 2. Interface with utility and county government representatives in the Utility JIC.
 3. Provide information on the activities of the Governor as necessary.
-

- Ohio EMA**
- Ohio EMA shall:
1. Dispatch a State PIO and administrative support to the Utility JIC to represent the state, assist county public information efforts, and participate in media briefings.
 2. Authorize State PIO to activate the State JIC and Public Inquiry. Ensure coordination among all participating state (and federal) agencies for the release of information.
 3. Authorize the distribution of press releases at the State JIC and ensure coordination of information occurs.
 4. Maintain a flow of information between all participating state and federal agencies.
 5. The Ohio EMA Executive Director shall coordinate information with the Governor's office.
-

Continued on next page

JIC Responsibilities, Continued

Ohio EMA,
continued

6. Maintain a designated media briefing area at the SEOC. Briefings/interviews are coordinated by the State PIO/JIC.
 7. Conduct periodic media briefings at the SEOC, as required.
 8. Develop and maintain an educational program aimed at increasing the awareness of the population within Ohio's 50-mile ingestion pathway as it relates to radiological emergency response planning for nuclear power facilities.
-

Ohio DPS

Ohio DPS shall make available to Ohio EMA the expertise and assistance of the department's Communications Office.

ODH-BRP

ODH-BRP shall dispatch a health physicist to the Utility JIC to act as a subject matter expert for state and local PIO's.

**Other State
Agencies**

Other State agencies shall:

1. Coordinate with Ohio EMA at the SEOC, in accordance with established State JIC procedures, prior to the release of information.
 2. Appoint a qualified information officer for the release of information through briefings. State agency PIO may be called upon to assist in the State JIC.
 3. Information from all other participating state agencies will be coordinated with Ohio EMA and combined into a joint release, if appropriate.
 4. Pre-designated representatives may be present during media briefings upon request, or to answer questions beyond the expertise of the Ohio EMA Executive Director.
-

**County
Agencies**

Counties shall:

1. Appoint a PIO, or otherwise designate an official and at least one alternate, to liaise with state officials to ensure a coordinated release of information at the Utility JIC.
 2. Upon activation of the Utility JIC, adhere to the coordinated media release concept by conducting media briefings at the Utility JIC.
 3. Participate in joint media briefings.
-

Continued on next page

JIC Responsibilities, Continued

County Agencies, continued

4. A release point may be established by the county for the convenience of the media, but only information that has been previously released or cleared for release should be given out. This may include duplicates of media releases available at the Utility JIC and transmitted to the county for information/authorization purposes.

Note: All news releases must be disseminated through the Utility JIC.

Utilities

The Utility shall:

1. Maintain and operate the Utility JIC.
 2. Activate the Utility JIC as deemed appropriate, based upon their procedures or news media interest.
 3. Appoint PIO(s) to liaise with state, federal and county information officers.
 4. Participate in joint media briefings. All media briefings will be conducted jointly when the situation warrants.
 5. Coordinate press releases with federal, state and county representatives prior to distribution to the media.
-

Federal Agencies

Federal agencies shall:

1. Appoint representatives/information officer(s) to liaise with state, county and utility information officers.
 2. Coordinate the release of information with other participating agencies.
 3. Adhere to the joint media center concept by conducting briefings at the Utility JIC. Briefings at remote locations (Joint Field Office [JFO], Federal Radiological Monitoring and Assessment Center [FRMAC], headquarters, regional headquarters) should be coordinated with federal agency representatives at the Utility JIC.
 4. The NRC shall:
 - a. Be responsible for coordinating release of public information for the federal community. (Ref. NUREG-1442/FEMA-REP-17, dated July 1992)
 - b. Serve as the coordinating agency under the National Response Framework (NRF) at a facility or an activity that is licensed by the NRC or an NRC Agreement State for incidents/emergencies that are below the classification of General Emergency.
-

Continued on next page

JIC Responsibilities, Continued

Federal Agencies, continued

Support DHS (if DHS assumes overall management of the federal response) under NRF and the National Incident Management System (NIMS), including acting as the coordinating agency for the NRF's Nuclear/Radiological Incident Annex.

5. FEMA will assist the federal coordinating agency in coordinating non-technical information among federal agencies.
 6. When mutually acceptable, FEMA may assume responsibility from the coordinating agency for coordinating federal public information. Should this occur, it will usually be after the onsite situation has been stabilized and recovery efforts have begun.
-

Media Inquiries

A call center with a phone line for media inquiries will be set up.

Rumor Control

Public inquiry (rumor control) may be accomplished by any or all of the following:

1. Establish and publicize a telephone number for each utility service area cited above for use by the public.
 2. Publicize a telephone number located at the SEOC for use by the public. Should Ohio EMA public inquiry hotline operators/resources become overwhelmed, PUCO consumer services may be used as a referral service to provide EOC phone numbers.
 3. Establish and publicize a phone number for each county EOC for use by the public.
-

Hostile Action Based Events

1. Additional organizations will become involved with the response and the public information. These agencies will include local, state and federal law enforcement and intelligence gathering organizations.
 2. Coordination will take place between law enforcement agencies and PIOs prior to release of information.
 3. Sensitive information may need to be withheld from the public to protect the integrity of the criminal response.
-

Media Information

Training

1. FENOC annually mails media kits to local media (television, radio, and newspaper) to orient them to both radiation and the REP program. Contents may include:
 - a. Contacts for news media in the event of an emergency
 - b. Overview of emergency response plans for nuclear power plants
 - c. FENOC brochure
 - d. EPZ map
 - e. Siren information
 - f. Plant diagrams
 - g. Emergency Public Information brochure or calendar
 2. Tours are available upon request.
-

Utility JIC Physical Locations

Joint Information Centers are provided at the following locations:

Utility	JIC Location
BVPS	Pittsburgh Industrial Park, Bldg. #3 Spring Run Road Extension Coraopolis, Pennsylvania 15108
DBNPS	<u>Onsite</u> Administration Building 5501 State Route 2 Oak Harbor, Ohio 43449 <u>Offsite</u> Edison Plaza 300 Madison Avenue Toledo, Ohio 43604
PNPP	Auburn Career Center 8140 Auburn Road Concord Twp., Ohio 44077

State EOC Media Briefing Area

1. Communications may be established by commercial telephone, radio, network connection, and/or fax machine with the Utility JIC.
 2. The State JIC is established to address media inquiries relating to state activities.
-

Continued on next page

Media Information, Continued

**State EOC
Media Briefing
Area**, continued

3. Media briefings will be conducted as the situation dictates. Major changes in status will be announced immediately to the media, even if further information is not readily available.
 4. If the Utility JIC has been established and a State PIO is onsite, the PIO at the State EOC will coordinate all information through the State PIO.
-

**County Media
Briefing Area**

Refer to the individual county plan.

VII. Emergency Facilities & Equipment

NUREG-0654 FEMA-REP-1 Criteria H

Overview Adequate emergency facilities and equipment to support the emergency response are provided and maintained.

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Emergency Operations Centers (EOC)

Purpose To identify facilities and equipment available to support the State of Ohio response to a nuclear power facility emergency and establish the staffing requirements for the State of Ohio Emergency Operations Center (SEOC).

**State
Emergency
Operation
Center**

The SEOC is located in the lower level of the State of Ohio Emergency Operations Center/Joint Dispatch Facility (SEOC/JDF) at 2855 West Dublin-Granville Road, Columbus, Ohio. During an emergency, Ohio EMA shall ensure the SEOC remains operational 24 hours a day throughout the emergency period. The SEOC will be the Governor's central control site for the emergency operations of state government.

1. The functions of the SEOC are as follows:
 - a. Coordinating the actions and resources of state agencies in support of local response.
 - b. Formulating protective action recommendations for consideration by county officials.
 - c. Posting and displaying information and operational data to enhance coordination between response organizations.
 - d. Establishing a central location for coordination of response efforts.
 - e. Coordinating communications between federal, state, and county governments.
 - f. Providing work space for personnel who staff the SEOC during emergencies.
2. Activation
 - a. The SEOC may be activated at any time or ECL as deemed necessary by the Governor or his/her designee. The assessment room will be staffed by representatives from various state agencies that will be appropriate for the situation.
 - b. The principal executive of state departments and agencies are responsible for the conduct of emergency functions assigned by law or by prior agreement. They will determine the number of personnel required to fulfill duties in the EOC as outlined in this plan.
 - c. Internal SEOC procedures will be maintained by Ohio EMA.

Continued on next page

Emergency Operations Centers (EOC), Continued

State
Emergency
Operation
Center,
continued

d. Staffing should begin within the time frames indicated below:

ACTIVATION / NOTIFICATION TIMES	STAFFING TO COMMENCE WITHIN
7:00 a.m. - 4:30 p.m.	Immediately
4:30 p.m. - 11:30 p.m.	60 - 90 minutes
11:30 p.m. - 7:00 a.m. (and weekends, holidays)	90 - 120 minutes

- e. At the Site Area Emergency and General Emergency ECLs, the SEOC will be fully staffed with the appropriate personnel in accordance with the NIMS standards.
- f. Full staffing may be necessary at any ECL as deemed necessary by the Governor or his/her designee.
- g. EOC readiness is maintained by EOC Logistics and Preparedness.
- h. The Assessment Room may be activated at Alert or earlier. It will be considered operational when these key staff are present:
 - i. Formal Line Communicator
 - ii. State Dose Assessment Systems Operator
 - iii. Radiological Assessment Branch Director
 - iv. Situation/Status Branch Director or Situation Unit Leader
 - v. One Situation Analyst
 - vi. One Field Desk Liaison
- i. The Operations Room may be activated at Site Area Emergency or earlier. It will be considered operational when these key staff members are present:
 - i. EOC Manager
 - ii. Operations Section Chief
 - iii. A representative from American Red Cross

Continued on next page

Emergency Operations Centers (EOC), Continued

**State
Emergency
Operation
Center,
continued**

- iv. One representative from each of the following:
 - 1. ESF-1
 - 2. ESF-6
 - 3. ESF-8
 - 4. ESF-9
 - 5. ESF-10
 - 6. ESF-13
 - 7. ESF-15
-

**SEOC
Equipment**

Equipment available includes:

- 1. Tables
 - 2. Chairs
 - 3. Fax/copier/scanner/printers
 - 4. Commercial and satellite telephones
 - 5. Dedicated telephones
 - 6. MARCS radios
 - 7. Televisions
 - 8. Maps
 - 9. Projectors
 - 10. Computers
 - 11. Headsets
 - 12. Administrative supplies (e.g., pens, paper)
 - 13. 1000 kW Onan-Cumming backup generator with 2 weeks diesel supply
-

SEOC Security

Access to the State EOC is through locked doors and persons making entry must receive a visitor's badge. OSHP is responsible for staffing the front door. EOC staff have photo IDs which are keyed to the doors.

Continued on next page

Emergency Operations Centers (EOC), Continued

County EOC Locations

1. Ashtabula County
25 West Jefferson Street
Jefferson, OH
 2. Columbiana County
215 South Market Street
Lisbon, OH
 3. Geauga County
12518 Merritt Road
Claridon, OH
 4. Lake County
8505 Garfield Road
Kirtland, OH
 5. Lucas County
2144 Monroe Street
Toledo, OH
 6. Ottawa County
315 Madison Street
Port Clinton, OH
-

County EOC Activation, Staffing, Layout, & Equipment

- See individual county plans and procedures for more information on:
1. EOC activation
 2. Staffing
 3. EOC layout
 4. EOC equipment
-

Equipment – General

FMT Procedures Operational checks of survey instruments, dosimeters, and other equipment is maintained in the FMT procedures.

Dosimeters – DRDs Instructions for checking and re-zeroing DRDs are included in each ORO’s procedures.

Dosimeters - PRD Permanent Record Dosimeters (OSLD or TLD) will be turned in to the Dosimetry Coordinator at the end of the emergency worker’s final mission, or when requested, to be processed.

Supplies Ohio EMA maintains sufficient reserves of equipment to replace any that must be removed from operation.

Calibration Calibration of all radiological and laboratory equipment is scheduled for intervals recommended by the manufacturer.

Emergency Kits Refer to the county plans for contents of emergency kits by locations and general category.

Equipment – County Emergency Response

Available Equipment

1. Ohio EMA has distributed radiological instrument sets to county emergency response units. The number and contents of kits distributed in the county are established by the Ohio EMA Resident Radiological Analysts and are based upon the emergency response duties of specific agencies.

- a. Each kit may contain the following:

1 - Low Range Beta-Gamma Detector	CDV-700 (0-50 mR/hr; 0-30,000 cpm)
-----------------------------------	------------------------------------

1 - High Range Gamma Detector	CDV-715 (0-500 R/hr)
-------------------------------	----------------------

1 - Dosimeter Charger	CDV-750
-----------------------	---------

- b. In addition, these may be located separately:

1 – Low Range Beta-Gamma Detector	Ludlum Model 3 (0-650,000 cpm)
-----------------------------------	--------------------------------

or

1 – Low Range Beta-Gamma Detector	CDV-700RP (0-30,000 cpm)
-----------------------------------	--------------------------

2. Dosimetry packets will also be available for emergency workers. These packets may contain the following:

1 - Dosimeter	CDV-742 (0-200 R)
---------------	-------------------

1 - Dosimeter	CDV-730 (0-20 R)
---------------	------------------

1 - Thermoluminescent Dosimeter (TLD) or Optically Stimulated Luminescent Dosimeter (OSLD)

Potassium Iodide (KI) Tablets

Dosimetry Report Form

Equipment – Maintenance

EMA Responsibilities

1. Ohio EMA will inspect, inventory and operationally check the radiological equipment to be used by the FMTs quarterly and after each use.
2. The Ohio EMA Radiological Instrument Maintenance and Calibration Lab (RI/M&C) maintains and calibrates radiological instruments. Radiological equipment will be calibrated annually or in accordance with the manufacturer recommendation.
3. The Resident Radiological Analysts distribute the instruments in their areas of the state.
4. The radiological sets that are issued to county emergency services units will be returned to Ohio EMA for calibration or exchanged for calibrated equipment annually.
 - a. This will be accomplished by the Ohio EMA Resident Radiological Analyst in each jurisdiction in which a plant is sited.
 - b. During training sessions for the offsite response organizations, the emergency responders are instructed to operationally check their equipment on a quarterly basis.
 - c. Problems with equipment are to be reported to the county EMA or the Analyst.
 - d. This system ensures the responders are familiar with the instrumentation.
5. Each sampling agency will be responsible for the maintenance of their sampling kits.
6. As the coordinating agency for the Field Team Center (FTC), Ohio EMA will provide for the replenishment of sampling kit supplies, purchase of additional supplies as necessary, and will coordinate the requisition of items obtainable from federal resources.

Note: A list of items found in the master sampling kit can be found in Table VII-B. Each agency's sampling kit may have a variation of this list, depending on sampling requirements.

Central Point for Data Processing

Responsibilities Ohio EMA and ODH are responsible for assessing radiological data.

Sample Media Data Receipt & Analysis

1. The Ohio EMA Assessment Room will be the central point for receipt and analysis of all field monitoring data and coordination of sample media results.
2. Field Monitoring Teams will communicate with the Field Monitoring Team Coordinator who will relay the information to the Field Team Communicator in the State EOC Assessment Room via commercial phone line, cell phone, or MARCS radio.
3. Field Monitoring Teams are responsible for transporting samples to the Sample Screening Point. Once the samples have been processed, OSHP or ONG are responsible for transportation of samples to the laboratory for analysis.

For more information, refer to ODH procedures.

Figure VII-A: State Emergency Operations Center Layout

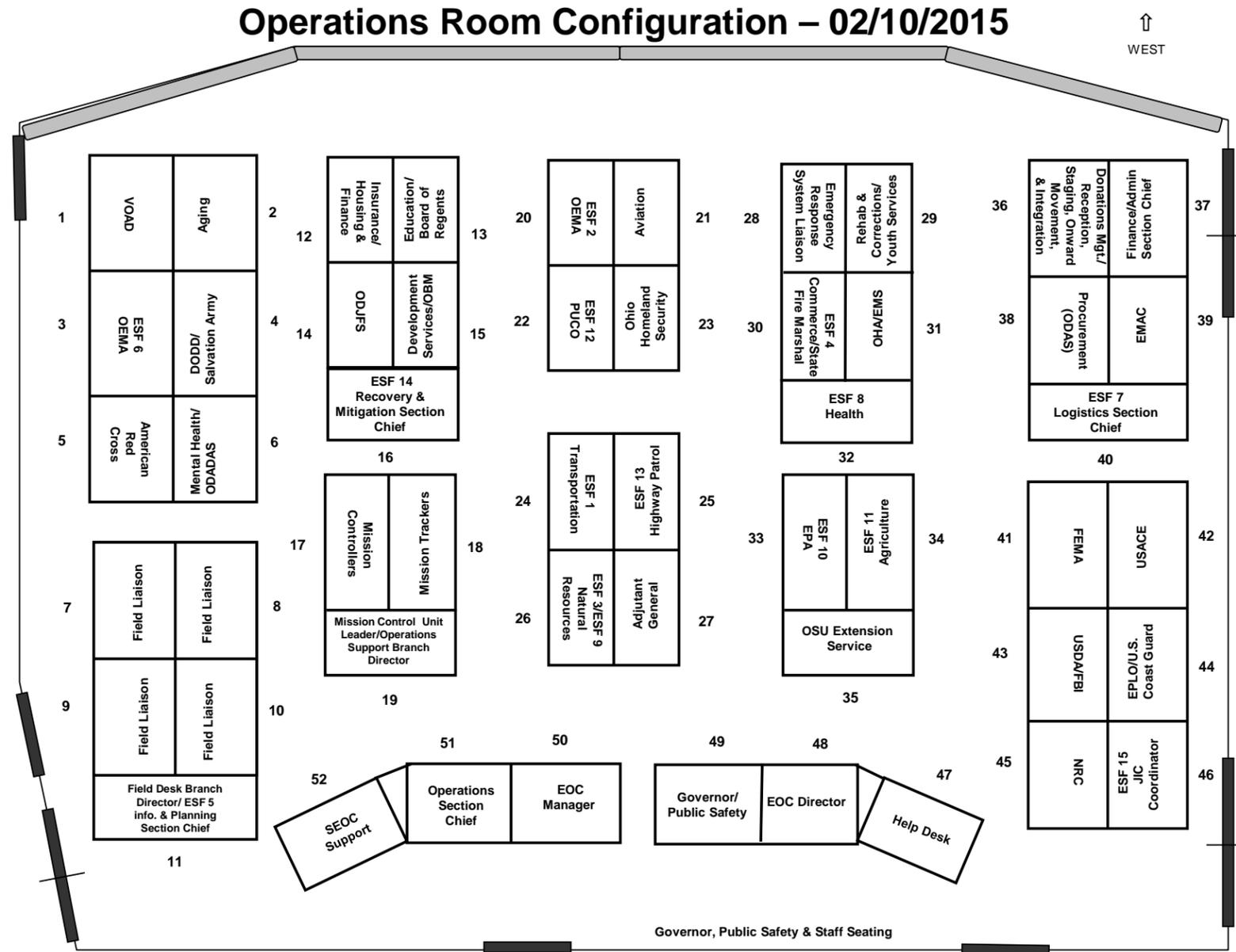


Table VII-B: Equipment – Radiological Emergency Response

Emergency Worker Dosimetry Packets	<ul style="list-style-type: none"> 1 CDV-730 Direct-Reading Dosimeter (0-20 R) 1 CDV-742 Direct-Reading Dosimeter (0-200 R) 1 Canberra Ultra Radiac Plus Electronic Dosimeter⁵ (0.1 µR/hr – 999 R/hr) 1 Permanent Reading Dosimeter (TLD or OSLD) 1 Dosimetry Report Form Potassium Iodide (KI) tablets with instruction sheet⁶
---	---

Response Instrumentation⁷	<ul style="list-style-type: none"> CDV-700 G.M. Probe (0-50 mR/hr or 0-30,000 cpm) CDV-700M End-Window G.M. Probe (0-30,000 cpm) CDV-700RP Pancake Probe (0-30,000 cpm) CDV-715 Ion Chamber (0.05-500 R/hr) CDV-718 G.M. Probe (0.001 mR/hr to 10,000 R/hr) CDV-750 Charger Micro - R meter (0.005-5 mR/hr) Ludlum 19 MicroR meter (0.005-5 mR/hr) Ludlum 2241-3 General Purpose Ratemeter / Scaler SPA-3 Scintillation Probe (High Energy) HP-200 or HP-190 Gamma "Acorn" Probe HP-210 Pancake G.M. Probe HP-270 Beta/Gamma Probe A-C-3-7 Scintillation Alpha Probe CA-5-36 Cable CA-14-36 Cable Cesium Check Source
---	--

Continued on next page

⁵ Electronic dosimeters will only be issued to Field Monitoring Teams. DRDs will be utilized by remaining emergency workers.

⁶ KI will be issued (administered) to emergency workers as directed by ODH.

⁷ Instrumentation is available to make up, as a minimum, three kits.

Table VII-B: Equipment – Radiological Emergency Response, Continued

**Response Kit Equipment & Supplies⁸,
continued**

Garmin GPS
 Silver Zeolite Cartridges
 Glass Fiber Filter Paper, 47 mm
 Radeco Model H811 Air Sampler
 Rubber Overshoes
 Rubber and Disposable Gloves
 Cloth and Paper Coveralls
 Masking Tape (2 inch)
 Two-Gallon Plastic Buckets
 Garbage Bags (small and large)
 Plastic Baggies and Rubber Bands
 Note Pads, Pencils, Clipboards
 Procedures
 County Maps (scale of 1" = 1 mile and 1" = 24,000 feet)
 Flashlight
 Collapsible Table
 Extension Cord (50 foot)
 Reflective Vests for Night-Time Response
 Warning Lights
 ODH Sample and Laboratory Data Sheets
 Batteries
 Small Screwdriver
 Tweezers
 Evidence Tape

ODH Laboratory Equipment

Perkin Elmer Tri-Carb Liquid Scintillation Analyzer (Model: 2910TR)
 Protean Alpha/Beta WPC 9550
 Protean Alpha/Beta MPC 9604 (6)
 Canberra Gamma Spectroscopy System HPGe (3)

Continued on next page

⁸ Equipment and supplies are available to make up, as a minimum, three kits.

Table VII-B: Equipment – Radiological Emergency Response, Continued

Master Sampling Kit

Plastic Sample Bottles, 1 Gallon or 4 Liter Cubitainers
Stainless Steel 8-ounce Dipper with 22 1/4-Inch Handle
Stainless Steel Funnel
Plastic Pail, 11 quart
Graduated Cylinder, 25 milliliter
Bottle Brush
Chlorine Sanitizer Tablets (bottle)
Coleman 54-quart Coolers (5)
Collapsible Shovel
Retractable Utility Knife
Grass Clippers
Rope (20 foot)
Plastic Sealable Bags (5 gallon)
Clear Plastic Sampling Bags (5 gallon)
Tape Measure (meter/yard)
Aluminum Foil
Permanent/Waterproof Markers
Absorbent Pads
Disposable Gloves
Disposable Shoe Covers
Disposable Lab Coats (or anti-contamination suits)
Masking Tape (2 inch)
Adhesive Labels (1 box)
Clipboards
Scoops - Meat/Grain
Flashlights
Sampling Procedures
County Maps (EPZ and IPZ)
ODH Sample and Laboratory Data Sheets
Grease Pencils
Sampling Team Dispatch Forms
Emergency Vehicle Passes and Log Sheets
Evidence Tape

Table VII-C: Vessels Available to Respond to Davis-Besse NPS Emergencies

Resource	Personnel	QTY	Vessel Type
U.S. COAST GUARD⁹			
Station Toledo	31	1	45 ft. vessel
		2	25 ft. vessels
		1	24 ft. vessel
Station Marblehead	35	1	47 ft. vessel
		2	33 ft. vessel
		1	20 ft. vessel (for ice rescues)
Station Lorain	18	1	45 ft. vessel
		1	25 ft. vessel
OHIO DEPARTMENT OF NATURAL RESOURCES¹⁰			
Division of Watercraft, Sandusky Field Office			
Sandusky	8	1	28 ft. Regulator
		1	29 ft. Mission Marine
		1	32 ft. Boston Whaler
Division of Watercraft, Maumee Bay Field Office			
Maumee Bay	5	1	27 ft. Boston Whaler
		1	26 ft. Boston Whaler
		1	32 ft. Boston Whaler
		1	21 ft. Boston Whaler
Division of Wildlife, District 2			
Sandusky	5	2	25 ft. Boston Whaler
		1	21 Ft. Almar
Lorain	3	1	19 ft. Boston Whaler

⁹ Response times for U.S. Coast Guard units are estimated to be 15 to 45 minutes.

¹⁰ Response times for Ohio Department of Natural Resources, 2 to 3 hours.

Table VII-D: Vessels Available to Respond to Perry NPP Emergencies

Resource	Personnel	QTY	Vessel Type
U.S. COAST GUARD¹¹			
Station Lorain	18	1	41 ft. vessel
		1	25 ft. vessel
Station Cleveland	35	1	45 ft. vessel
		2	25 ft. vessel
Station Fairport	22	1	47 ft. vessel
		1	25 ft. vessel
Station Ashtabula	18	1	33 ft. vessel
		1	25 ft. vessel
OHIO DEPARTMENT OF NATURAL RESOURCES¹²			
Division of Watercraft, Cleveland Field Office			
Cleveland	8	2	27 ft. Boston Whaler
		1	35 ft. Boston Whaler
Division of Watercraft, Ashtabula Field Office			
Ashtabula	5	1	27 ft. Boston Whaler
		1	35 ft. Boston Whaler
Division of Wildlife			
Lorain	2	1	27 ft. Boston Whaler
Geneva	2	1	26 ft. Boston Whaler

¹¹ Response times for U.S. Coast Guard units are estimated to be 15 to 45 minutes.

¹² Response times for Ohio Department of Natural Resources, 2 to 3 hours.

Table VII-E: Post-Emergency Sampling Kit Locations

Kit Location by Agency

Agency	Qty	Address
Ohio Department of Natural Resources	1	Division of Wildlife, District 1 1500 Dublin Road Columbus, OH
Ohio Environmental Protection Agency	6	“Office Kits” Homer Ohio Lane Facility DERR-SIFU 4600 Homer Ohio Lane Groveport, OH
	20	“Sample Kits” Homer Ohio Lane Facility DERR-SIFU 4600 Homer Ohio Lane Groveport, OH
Ohio Department of Agriculture	35 ¹³	ODA Division of Enforcement 8995 E. Main St., Bromfield Bldg. Reynoldsburg, OH

¹³ Pre-issued to members of ODA sampling teams.

VIII. Accident Assessment

NUREG-0654 FEMA-REP-1 Criteria I

Overview Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.

Contents

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Post-Emergency Sampling	123
Table VIII-A: Sample Screening Points	124

Field Monitoring Teams & Sampling Teams

- Responsibilities**
1. Ohio EMA and ODH will be responsible for field monitoring during the emergency phase of an incident.
 2. The following agencies have sampling responsibilities during the intermediate and late phases:
 - a. Ohio Department of Natural Resources
 - b. Ohio Department of Agriculture
 - c. Ohio Environmental Protection Agency
-

- Activation & Notification**
1. The Ohio EMA will determine at which Emergency Classification Level Field Monitoring Teams should be activated.
 2. Team members will be contacted by commercial phone, cell phone, or MARCS radio.
-

Composition Field monitoring teams are composed of two trained emergency workers.

Shift Schedule Field Monitoring Teams will work 12-hour shifts. Additional field teams would be requested from ODH and then through the EMAC system.

Transportation The initial three field monitoring teams will utilize available Ohio EMA vans for their sampling duties.

Assembly Points

Utility	FMT Assembly Location
BVPS	Columbiana County EOC 215 Market Street Lisbon, OH
DBNPS	Fremont Airport 365 South State Route 53 Fremont, OH
PNPP	Lake County EOC 8505 Garfield Road Mentor, OH

Continued on next page

Field Monitoring Teams & Sampling Teams, Continued

Deployment Times

Utility	Minimum Time from SEOC to FMT Assembly Points
BVPS	2 hours 38 minutes
DBNPS	1 hour 47 minutes
PNPP	2 hours 22 minutes

Direction

The Ohio EMA Field Monitoring Team Coordinator will direct FMTs to selected locations for monitoring and air sampling.

Communications

Field teams communicate with each other and the FTC utilizing MARCS radios. Backup communication will be by cell phone.

Equipment

For sampling team equipment, see Table VII-B.

Centerline Readings

The Field Monitoring Teams will traverse the plume or the Restricted Zone to locate centerline measurements.

Note: If readings are too high and turn back values would be exceeded, this will not be performed by State FMTs. Federal or utility resources will be requested.

Radioiodine Concentration Readings

The state Field Monitoring Teams have the capability to detect and measure radioiodine concentrations in air in the plume exposure EPZ as low as 10^{-7} $\mu\text{Ci/cc}$ under field conditions. Interference from the presence of noble gas and background radiation do not decrease the stated minimum detectable activity.

Exceeding Dosimetry Limits

In order to exceed one's limit, emergency workers must contact their Dosimetry Coordinator (DC). The DC will contact the ODH-BRP representative at the ESF-10 desk, who will make the decision.

Continued on next page

Field Monitoring Teams & Sampling Teams, Continued

Field Monitoring Teams

The number of Field Monitoring Teams deployed during a shift would be dependent upon the additional personnel provided by federal agencies and other states. Initially, three FMT would be activated.

More Information

FMT procedures contain information regarding:

1. Equipment
 2. Methods for:
 - a. Operations checks,
 - b. Monitoring,
 - c. Collecting samples, and
 - d. Analyzing samples.
-

Dose Assessment

- Plume Phase**
1. Ohio EMA or ODH will be responsible for performing dose assessment calculations using one or more of the following: MIDAS, RASCAL, OEMA-developed spreadsheets, ODH-developed spreadsheets, or hand calculations.
 - a. The Meteorological Information and Dose Assessment System (MIDAS) has the capability to project offsite dose from accidental releases from BVPS, DBNPS, and PNPP. With the applicable data either automatically or manually entered, MIDAS can be used to:
 - i. Assess core conditions.
 - ii. Estimate magnitude of a release from monitored vent readings.
 - iii. Calculate total effective dose equivalent and child thyroid committed dose equivalent out to 10 miles.
 - iv. Calculate nuclide decay.
 - v. Calculate dose based on field readings.
 - vi. Estimate dose due to an unmonitored release.
 - b. The FENOC e-Data system provides real time in-plant data, release data, and meteorological (met) data for the BVPS, DBNPS and PNPP by logging in through an Internet connection. The plant data is available 24/7.
 - c. The Emergency Response Data System (ERDS) is linked to the NRC Operations Center through an Internet connection. If e-Data is unavailable, the Assessment Room personnel may log into ERDS at the NRC through an Internet connection in the Assessment Room in the SEOC.
 - i. The function of ERDS is to monitor plant systems in the emergency phase.
 - ii. When linked to ERDS, this link is part of data transmission between the NRC and the utility declaring the emergency.
 - iii. ERDS will be activated at Alert ECL or higher to receive current and accurate plant data for the Dose Assessment Team.
 - d. Meteorological Data
 - i. In addition ERDS and e-Data, meteorological data will be furnished by the nuclear power plant from onsite meteorological stations.

Continued on next page

Dose Assessment, Continued

Plume Phase, continued

- ii. National Weather Service (NWS) information is available in the SEOC. Telephone contact is also available with weather service offices in Cleveland, OH; Pittsburgh, PA; Wilmington, OH; Charleston, WV; Northern Indiana; and Grand Rapids, MI to provide data on:
 1. Surface wind direction and speed at a nuclear site.
 2. Winds at higher elevations; including speed, direction and duration.
 3. Temperature considerations.
 4. Lapse or inversion conditions and predictions.
 5. Weather forecast information at the nuclear site.
2. Initial dose projection runs will be based on plant data. FENOC will provide Ohio EMA and ODH copies of their dose projection runs.
3. As the utility provides notification forms with actual release data, dose assessment will utilize the information to provide more accurate projections, as subsequent runs.
4. ODH will perform a quality check on the inputs for Ohio EMA's calculations.
5. ODH may choose to run an independent dose projection.
6. Once field team data reaches the Assessment Room, it will be run to compare to the dose projections already performed and may modify assessments and protective action recommendations.

Ingestion Phase

1. Sample results will be reported by each laboratory to ODH.
 2. Dose assessment staff will put these numbers in the appropriate software to analyze and make recommendations based on Protective Action Guidelines (PAG).
 - a. Soil data will be used to develop the Restricted Zone and determine if relocation of the populace is necessary.
 - b. Water, milk, and vegetation results will be used to determine contamination levels to drive protective actions.
-

Post-Emergency Sampling

Ingestion Sampling

1. After the emergency phase of the incident, an FTC will be established near the contaminated area (if possible in conjunction with FRMAC) to facilitate the dispatching of state sampling teams into the ingestion zone. State sampling teams will report directly to the FTC to receive coordinated instructions and sampling assignments from the IZRRAG.
2. Sampling teams will be fielded by the state agencies responsible for the regulation of various food, milk, drinking water, and environmental conditions. These agencies are:
 - a. Ohio Department of Agriculture
 - b. Ohio Department of Natural Resources
 - c. Ohio Environmental Protection Agency
3. The Ohio EMA will coordinate the operation of the FTC and ensure escorts for RZ entry.
4. The number of field teams deployed during a shift will be dependent upon the additional personnel provided by federal and other States.
5. Prior to field deployment, State FMTs assemble at pre-designated Assembly Points, unless otherwise directed:

FACILITY	ASSEMBLY POINT
BVPS	Columbiana County EOC
DBNPS	Fremont Airport
PNPP	Lake County EOC

Table VIII-A: Sample Screening Points

Introduction ODH-BRP shall establish and operate a Sample Screening Point to ensure that sample containers are intact and no external contamination is present prior to transport. The locations listed are suitable for both the emergency and intermediate phases.

Beaver Valley PS

	Location	Distance from Site	Direction
1	Wellsville Fire Dept. 1202 Main St Wellsville, OH	13 miles	W
2	Columbiana County Engineer Complex 235 S. Market St. Lisbon, OH	20 miles	W
3	United Local School Complex, 8143 State Route 9 Hanoverton, OH	27 miles	WNW
4	Rogers Community Sale 45625 State Route 154 Rogers, OH	16 miles	NW
5	Kent State University at Salem 2491 State Route 45 Salem, OH	27 miles	NW
6	Department of Natural Resources 3601 New Garden Rd Salem, OH	28 miles	WNW

Continued on next page

Table VIII-A: Sample Screening Points, Continued

**Davis-Besse
NPS**

	Location	Distance from Site	Direction
1	Fremont Airport 365 S. SR 53 Fremont, OH	18 miles	SSW
2	New Life Pentecostals 30470 Lemoyne Rd. Millbury, OH	20 miles	W
3	K-mart 1825 Oak Harbor Rd. Fremont, OH	16 miles	S
4	Allen Township Hall 21030 W. Toledo St. Williston, OH	13 miles	W
5	Sandusky County Health Department 2000 Countryside Dr. Fremont, OH	17 miles	S
6	Sports Complex Bardshar Rd. (next to 795 Bardshire Rd.) Sandusky, OH	20 miles	ESE

Perry NPP

	Location	Distance from Site	Direction
1	Lake Catholic High School 6733 Reynolds Road Mentor, OH	14 miles	WSW
2	Lake County EOC 8505 Garfield Road Mentor, OH	16 miles	SW
3	OSHP Post 28, Chardon 530 Center Road Chardon, OH	15 miles	SSW
4	South-Central Ambulance District 3100 US Route 6 Rome, OH	20 miles	SSE
5	OSHP Post 4, Ashtabula 4860 North Ridge Rd West Ashtabula, OH	16 miles	E

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IX. Protective Response

NUREG-0654 FEMA-REP-1 Criteria J

Overview

A range of protective actions have been developed for the plume exposure pathway EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. Evacuation time estimates have been developed by local governments and utility and must be updated on a periodic basis. Guidelines for the choice of protective actions during an emergency, consistent with federal guidance, are developed and in place, and protective actions for the IPZ appropriate to the locale have been developed.

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State Responsibilities

Purpose To identify the protective actions, protective action recommendations (PAR) made to counties, measures taken to protect emergency workers, actions taken to care for evacuees, and the agencies and organizations responsible for those functions. This section is an overview of the protective response. Specific instructions as to how to complete individual tasks are contained in procedures for each emergency response function.

Ohio EMA The Executive Director, Ohio EMA, acting for the Governor is responsible for:

1. Recommending a "State of Emergency" for the affected area; the Governor will issue the declaration when appropriate.
2. Requesting assistance by means of the NRF through the NRC or the DHS, and other assistance through the FEMA or the DOE. Under the NRF, DHS is the overall incident manager for deliberate attacks involving nuclear/radiological facilities, and they will facilitate implementation of the NRF; contact is initially made through the primary federal coordinating agency, which is the NRC.
3. Upon the Governor's approval, request a Presidential Declaration of Emergency through FEMA.
4. Providing representatives to the utility Emergency Operations Facility (EOF) and the Utility JIC, as necessary.
5. Developing and maintaining a series of plans for the prompt implementation of nuclear incident protective response that includes, but is not limited to –
 - a. A warning notification process.
 - b. Monitoring and assessment program.
 - c. Planned sheltering and/or evacuations, as required.
 - d. Other protective actions within the EPZ and IPZ.
6. Employing and training a Resident Radiological Analyst who is required to reside in the county where a nuclear power station is sited. For the BVPS in Pennsylvania, the analyst shall reside in Columbiana County, Ohio. The Resident Radiological Analyst, under the direction of the Radiological Analyst Supervisor, will:
 - a. Assist county governments in protective action guidance preparation and implementation.
 - b. Train county response agencies in basic self-protective emergency radiological monitoring techniques and use of Potassium Iodide (KI).

Continued on next page

State Responsibilities, Continued

Ohio EMA,
continued

- c. Assist county governments in the maintenance of local plans and procedures.
 - d. Pre-distribute KI with the dosimetry packets for emergency workers whose duties are within the 10-mile EPZ and at each agency's main office or staging area.
7. Ensuring plans and implementing actions are coordinated with agencies listed in this plan.
 8. Coordinate state services, other public agencies and private relief organizations in the operations of reception and care centers.
-

ODH-BRP

The ODH-BRP is responsible for supplying KI from NRC to the Resident Radiological Analysts for replacement in the field.

OSHP

The Ohio Department of Public Safety will provide, through the Ohio State Highway Patrol (OSHP), traffic regulation and control on state routes leading to and from areas of evacuation. OSHP may provide aircraft to perform aerial traffic/access control for the evacuated area, as coordinated through ESF-1, Transportation.

1. OSHP will coordinate with local authorities to:
 - a. Manage the flow of traffic from the utility when the licensee evacuates non-essential onsite personnel.
 - b. Determine locations on state routes requiring Traffic/Access Control Points (T/ACPs).
 - c. Determine times for the establishment and maintenance of T/ACPs.
 - d. Determine the number of officers required to man T/ACPs.

Refer to the individual county plan and procedures for more information on T/ACPs.

2. OSHP will protect state properties and equipment.
-

ODOT

The Ohio Department of Transportation (ODOT), as the primary agency of ESF-1, Transportation, has the responsibility for the development of general traffic survey plans, which project traffic flow patterns and capacities on evacuation routes. These are on file with the Ohio EMA. Similar data is located in county and utility plans. ODOT shall also assist in:

Continued on next page

State Responsibilities, Continued

ODOT, continued

1. Traffic control on evacuation routes.
 2. Removal of road impediments (snow, ice, disabled vehicles).
 3. Provisions of traffic control equipment, such as barriers, warning lights or signs.
 4. Provide real-time traffic updates via Traffic Management Center (TMC).
-

ONG

ONG personnel providing assistance within the 10 mile EPZ during a radiological emergency at a nuclear power plant are considered emergency workers. As a result, they will require dosimetry and KI be issued to them.

1. The KI and dosimetry packets for the ONG will be issued by county officials at a designated staging or assembly area.
 2. Additionally, ONG personnel will receive a dosimetry briefing covering the mission, emergency worker exposure limits, and refreshed on the use of personnel dosimeters.
 3. The 10-mile EPZ planning counties shall identify locations for ONG assembly areas, provide communication plans for transmitting information to ONG personnel and dosimetry coordinators, and identify how the county will provide appropriate briefings and training of ONG personnel.
 4. ONG personnel will be dispatched to assembly areas under direction of the Adjutant General, through the appropriate ESF in the SEOC.
 5. The exception to this requirement may be that the ONG members who are already trained and equipped to respond to radiological emergencies, such as the Civil Support Team (CST).
-

Methods of Accomplishment

Introduction

The State of Ohio agrees to adopt, as a basis for interagency planning and emergency protective actions, guidance contained in U.S. Environmental Protection Agency (EPA) 400-R-92-001, Manual of Protective Actions for Nuclear Incidents, 1992; U.S. Environmental Protection Agency PAG Manual, 2013; and U.S. Food and Drug Administration. Accidental Radioactive Contamination of Human and Animal Feeds: Recommendations for State and Local Agencies, August 13, 1998.

Continued on next page

Methods of Accomplishment, Continued

State Requirements

Actions to be taken to ensure full compliance with the cited guidance above include the following as they apply to the EPZ:

1. The development of a series of plans and relocation guidance/information packets.
 2. The development of specific planning guidance for the 50-mile IPZ surrounding each facility.
 3. The development of specific planning guidance for the recovery and reentry of contaminated offsite areas.
 4. The means for the notification and evacuation of recreational boaters and mariners on Lake Erie waterways within the EPZ of DBNPS or PNPP.
 - a. The affected counties and the state jointly decide to initiate waterway notification procedures.
 - b. The decision to clear waterways shall be based on variables such as plant status, meteorological conditions and circumstances within the EAL.
 5. In the case of an Alert or higher ECL or hostile action, the affected counties have the option to directly coordinate with the U.S. Coast Guard (USCG) and notify the state of such actions as time allows.
-

County Requirements

Refer to the individual county plans and procedures for:

1. The designation (based upon population distribution and facility studies) of temporary public shelters and care centers for use in a temporary relocation mode at least 15 miles from a given site.
 2. The listing of total population and residence statistics within an EPZ.
 3. The establishment of an expeditious means of notification of all segments of the population to include transportation dependent, transients, and the agricultural community.
 4. The identification of major medical facilities in the vicinity of a nuclear power station as the initial receiving facilities for radiological health cases.
 5. The establishment of a means for the registration and radiological monitoring of evacuees (residents, transients, service animals, and vehicles) from the 10 mile EPZ for possible radiological contamination.
-

Continued on next page

Methods of Accomplishment, Continued

County Requirements, continued

- a. Counties must establish a means capable of monitoring 20% of the EPZ population (including transients) within about 12 hours.
 - b. For monitoring, decontamination and registration procedures, refer to the individual county plans and procedures.
-

Precautionary Relocation of School Children

The establishment of a means for the precautionary relocation of school children prior to other protective actions being initiated for the general public:

1. The precautionary relocation of school children is a county decision. The state may be able to provide assistance in the transportation of school children by coordinating through ESF-1.
 2. For more information, such as alerting/notifying schools and parents, see the individual county plans.
 3. As coordinated through ESF-1, state resources may be used to assist in the transportation of school children. However, it is not likely state resources would be available early enough during an event to be used in the relocation of school children.
-

Evacuation of Persons with Disabilities and Access/Functional Needs

The establishment of a means for the evacuation of residents who may be immobilized through institutional confinement or other factors:

1. All citizens so confined or otherwise immobile have been instructed to notify county officials for assistance.
 - a. The specific methods used to identify and inform citizens are decided by the counties.
 - b. Special needs cards are included in the annual dissemination of the utility Emergency Public Information. Persons who send in this card will be put on a confidential list maintained by the counties.
 2. In the event that local ambulance/rescue services are not capable of transporting patients or residents of hospitals and other institutions in an emergency, additional assistance will be obtained through the implementation of mutual aid agreements or through the SEOC by coordinating through ESF-8.
 3. For more information on mobility impaired persons, refer to the individual county plan and procedures.
-

Continued on next page

Methods of Accomplishment, Continued

**Evacuation of
Persons with
Disabilities and
Access/
Functional
Needs,
continued**

4. Evacuation support provided by state resources through ESF-1 or ESF-8, will use the following evacuation order:
 - a. Hospitals.
 - b. Nursing homes.
 - c. Residences.
 5. State resources may be requested to support local law enforcement officials in the evacuation of incarcerated individuals. Due to the capability required, this request will be coordinated through ESF-13, Law Enforcement.
 6. Responding state personnel, considered emergency workers, will receive dosimetry packets with KI and be briefed and/or trained on emergency worker exposure control.
-

ODH-BRP

The Ohio Department of Health (ODH-BRP) will establish the criteria for the administration of protective actions in accordance with appropriate federal guidance and adopted state policies.

1. The ODH-BRP will assess available information from the affected nuclear power plant, including (1) plant conditions, (2) potential or actual release data, (3) weather or (4) other special conditions. ODH-BRP will recommend actions to protect the general public or to mitigate the public's total exposure. These actions could include evacuation, sheltering in-place, relocation of persons with disabilities and access/functional needs, taking Potassium Iodide (KI), any combination of these actions, that the public take no actions at all or other actions deemed appropriate by the ODH Director
 2. Recommending protective actions to County Commissioners in the 10-mile EPZ, or to local townships and counties for areas in the 50-mile IPZ, as developed by the radiological assessment branch and executives.
 3. The ODH-BRP shall provide a recommendation to emergency workers and institutionalized personnel to take KI when necessary.
 4. The recommendations shall be passed to appropriate local officials and emergency workers in the state and county EOCs for further dissemination over landlines, and existing radio networks.
 5. The county health department shall contact institution officials directly by telephone whenever the ODH-BRP issues recommendations concerning KI. Correctional facilities within EPZs in Ohio have procedures in place for evacuating to host facilities.
-

Continued on next page

Methods of Accomplishment, Continued

ODH-BRP,
continued

6. The ODH-BRP is responsible for ensuring the Analyst is provided replacement KI for emergency workers from the NRC.
-

Protective Action Decision-Making

Immediate Protective Actions

1. For an incident involving actual or significant potential for offsite consequences, it may be appropriate to immediately take protective actions (e.g., evacuation or shelter), without waiting for release rate information or environmental measurements.
2. Weather conditions, the direction of the plume, an HAB incident, or other circumstances may pose an undue risk to evacuation. In some incidents, sheltering may be the preferred protective action.
3. In an HAB incident, the protective action decision-making process is complicated by the potential risks posed by the hostile activities themselves. Actions taken by the Incident Commander, such as closing major roadways or implementing a precautionary evacuation or sheltering close to the site, may also significantly impact protective action considerations.
4. To account for these potential risks, PADs are closely coordinated/communicated between appropriate ORO decision-makers, and include consideration of the risk of evacuation against the risk of sheltering in place. If the decision is to evacuate some or all of the population in the EPZ, ORO decision-makers plan for contingencies that would minimize congestion caused by emergency workers entering the area at the same time the public is evacuating.

Subsequent Protective Actions

1. If additional information becomes available regarding potential or actual releases after the initial PADs have been made, the dose assessment group will provide additional PARs based on dose projections.
 2. When field data becomes available, it is used to evaluate and, if needed, revise PARs based on dose projections.
 3. In general, protective actions that have been implemented should not be reversed based on revised dose assessments or early field measurements.
-

Additional Support Measures

- Traffic Control**
1. County governments have the primary responsibility for the designation of roads, bridges and service areas to be used during an evacuation, based on an assessment of local traffic capability, capacities, and weather conditions.
 2. Counties are responsible for the establishment of traffic control points.
 3. Counties are responsible for determining alternate routes because of traffic impediments, adverse weather conditions, an airborne radioactive plume, areas affected by hostile actions, or other factors that might hinder a timely, safe .
 4. Should conditions require, additional state assistance in the area of traffic control will be requested through ESF-1. Just in time (JIT) training and additional Personal Protective Equipment (PPE) may be required upon arrival at the designated staging area.
 5. Counties are responsible for identifying resources (e.g., personnel and equipment) required to clear physical impediments on evacuation routes.

For more information, refer to the individual county plans and procedures.

- Hostile Impediments to Evacuation**
1. In a hostile action based GE, OROs may determine that an initial recommendation to shelter in place rather than evacuation is the preferred path (e.g., more harm could be caused to individuals being evacuated if they are being moved into or through an area affected by a terrorist threat or act or an evacuation may disrupt the efforts to respond to a hostile action).
 2. During a HAB incident, ESF-1 and ESF-13 will coordinate with the counties to ensure that inbound response resources do not become an impediment to evacuation and vice versa. This could include, but is not limited to, altering evacuation routes and/or provisions for removal of impediments to in-bound responders.

- School Buses**
1. School buses are available for evacuation purposes when an emergency is declared by the state or county emergency management agency; or a civil emergency is declared by the Governor.
 2. Should circumstances dictate a need for additional manpower to operate school buses or provide transportation for evacuees, support can be obtained through ESF-1.
 3. Training may be required as personnel reporting may not be licensed or experienced in the operation of buses.
-

**Watercraft
Alerting**

Provisions shall be made by a multi-agency force to alert and notify recreational boaters and mariners:

1. The minimum ECL to initiate waterway notification is Alert, but it may be initiated earlier based on need.
2. Direction and control of emergency responders shall be under that agency's on-scene coordinating official.
 - a. The Search-And-Rescue (SAR) Mission Commander shall be in charge of all USCG response.
 - b. The nearest Division of Watercraft Area Supervisor shall be in charge of the ODNR Watercraft Notification response.
3. Responding agencies shall utilize on-board electronic systems to communicate:
 - a. MARCS radio (primary).
 - b. VHF-FM two-way radios.
4. The following methods are conducted for waterway notification:
 - a. Broadcast communications:
 - i. Marine band channel 16 (156.8 MHz).
 - ii. NOAA weather radio.
 - b. Deployment of personnel and resources:
 - i. Watercraft equipped with public address systems.
5. Responders are considered emergency workers and will be provided with dosimetry and surveys meters as required.
 - a. Each responding watercraft and aircraft shall have an operable CDV 777-1 radiation detection kit or equivalent rate meters.
 - b. Each responder shall have a dosimetry packet which includes a permanent reading dosimeter and appropriate direct reading dosimeters.
6. Guidelines for waterway notification efforts –
 - a. Surface responders will directly notify boaters by public address system and issue waterway clearing instructions (i.e., return to port or sail to marinas outside the 10-mile EPZ).
 - b. Responding agencies will establish and maintain contact by radio or other means in order to receive situation updates from:
 - i. County EOCs
 - ii. SEOC
 - iii. Ninth District USCG Headquarters (USCG only)
 - iv. ODNR Communications Center, (ODNR only)

Continued on next page

Additional Support Measures, Continued

**Watercraft
Alerting,**
continued

7. Waterway clearing objectives are:
 - a. Boaters should return to the harbor or marina from which they launched and upon arrival, evacuate by car or public transport means.
 - b. If the above objective cannot be met, boaters should clear the 10-mile EPZ by paralleling the shoreline away from the plant to a marina or harbor outside the 10-mile EPZ.
 - c. ODNR will coordinate with USCG efforts to assist in clearing the affected area and establishing a perimeter. ODNR will conduct traffic control to and at marinas outside the 10-mile EPZ.
 - d. Notification of emergency information regarding a release will be transmitted by radio or other means from the SEOC, or affected county EOC, to the SAR Mission Commander and the Division of Watercraft Supervisor/ODNR Communications Center.
 8. Waterway notification efforts will be conducted until it is reasonable that all boaters have been notified. Responders may disengage from waterway clearing efforts as directed.
-

Map Responsibilities

State

1. Ohio EMA is responsible for the maintenance of maps showing:
 - a. Evacuation routes
 - b. Evacuation areas
 - c. Radiological sampling and monitoring points
 - d. Reception centers
 - e. Care centers
 2. Maps will be updated when requests are received by the Radiological Branch.
-

Utility

1. The utility is responsible for maps and information contained in their Evacuation Time Estimate (ETE) document. For more information, refer to the utility ETE and the individual county plans, including.
 - a. Population distribution
 - b. Route capabilities
 - c. School populations, including licensed day care centers
 - d. Sub-area population
 - e. Recreation area populations
 2. At a minimum the utility will update the ETE and population distribution maps when new Census data is released.
-

County Plan Information

Plans and Procedures

Refer to the individual county plans and procedures for information regarding:

1. Special needs list and updates.
 2. Traffic and Access Control Points (T/ACP).
 3. Evacuation of non-essential onsite personnel.
 4. Evacuation of persons with disabilities and access/functional needs.
 5. Evacuation of persons without transportation.
 6. Coordination of in-bound resources and evacuation.
 7. Evacuation sub-area boundaries.
 8. Alerting alternate personnel during hostile-action events.
 9. Prompt access to the nuclear power plant site during hostile-action events.
 10. Reception and care center
-

Table IX-A: PAG Manual 2013: Table 1-1 Planning Guidance and Protective Action Guides for Radiological Incidents

Phase	Protective Action Recommendation	Protective Action Guide or Planning Guide
Early	Sheltering-in-place or evacuation of the public ¹⁴	1 to 5 rem projected dose/4 days ¹⁵
	Administration of prophylactic drugs KI ¹⁶	5 rem projected child thyroid dose ¹⁷ from radioactive iodine
	Limit emergency worker exposure	5 rem/year (or greater under exceptional circumstances) ¹⁸
Intermediate	Relocation of the public	2 rem projected dose first year ¹⁸ . Subsequent years, 0.5 rem/year projected dose
	Food interdiction	0.5 rem/year projected dose, or 5 rem/year to any individual organ or tissue, whichever is limiting
	Limit emergency worker exposure	5 rem/year
	Reentry	Operational guidelines ¹⁹ (Stay times and concentrations) for specific activities
Late	Cleanup	Brief description of planning process
	Waste disposal	Brief description of planning process

¹⁴ Should begin at 1 rem; take whichever action (or combination of actions) that results in the lowest exposure for the majority of the population. Sheltering may begin at lower levels if advantageous.

¹⁵ Projected dose - the sum of the effective dose from external radiation exposure (i.e., groundshine and cloudshine) and the committed effective dose from inhaled radioactive material.

¹⁶ Provides thyroid protection from internal exposure to radioactive iodines only.

¹⁷ Thyroid equivalent dose.

¹⁸ When radiation control options are not available, or, due to the magnitude of the incident are not sufficient, doses to emergency workers above 5 rem may be unavoidable and are generally approved by competent authority.

¹⁹ For extensive technical and practical implementation information, please see "Preliminary Report on Operational Guidelines Developed for Use in Emergency Preparedness and Response to a Radiological Dispersal Device Incident" (DOE 2009).

Table IX-B: PAG Manual 2013: Table 2-1 PAGs and Protective Actions for the Early Phase of a Radiological Event

Protective Action Response	PAG (projected dose)	Comments
Sheltering-in-place or evacuation of the public ²⁰	1 to 5 rem over 4 days ²¹	Evacuation (or, for some situations, sheltering-in-place) should be initiated when projected dose is 1 rem
Supplementary administration of prophylactic drugs - KI ²²	5 rem projected dose to child thyroid from exposure to iodine ²³	KI is most effective if taken prior to exposure. May require approval of state medical officials (or in accordance with established emergency plans).

²⁰ Should begin at 1 rem except when practical or safety considerations warrant using 5 rem; take whichever action (or combination of actions) that results in the lowest exposure for the majority of the population. Sheltering may begin at lower levels if advantageous.

²¹ Calculated dose is the projected sum of the effective dose from external radiation exposure (i.e., groundshine) and the committed effective dose from inhaled radioactive material.

²² Provides thyroid protection from radioactive iodines only.

²³ Thyroid equivalent dose.

Table IX-C: Ohio Radiological Field Monitoring Reference List– Beaver Valley Power Station

SECTOR	NUMBER	SITE DESCRIPTION
N	1	Drive along Ohio Avenue as close to Ohio River as possible to the east end of Babbs Island. Go to large factory along the river to Puritan Avenue (Columbiana Port Authority).
N	2	East Liverpool, at 2nd Street and Broadway to large white storage tanks at river south of railroad tracks.
N	3	The first street south of Orchard and Parkway on west side of road (Rubicon Street).
N	4	Turn south off S.R. 7 by Vista Motel (Edwards Street). Follow road down into ravine (Leonard Street).
N	5	Pond at Johnny's Landing S.O.I. at west end of Center Street off Camp Ground Road.
N	6	S.R. 7 and Kountz Avenue, by the Ohio River.
P	1	East Liverpool waterworks on Ohio or Brink Avenue along Ohio River. Look for electric substation.
P	2	Pennsylvania Avenue at S.R. 39 and Bridge St. on north side of road.
P	3	County Road 430, 0.25 miles north of Fisher Avenue.
P	4	Grimms Bridge Road at Little Beaver Creek.
P	5	Parkway or Thompson Park Road, just north of Armstrong Lane.
P	6	McCoy Avenue between County Road 428 and County Road 435 (Tri- State Casting Club).
P	7	Farm pond on S.R. 170, 0.2 miles north of Calcutta.

Continued on next page

Table IX-C: Ohio Radiological Field Monitoring Reference List– Beaver Valley Power Station, Continued

SECTOR	NUMBER	SITE DESCRIPTION
P	8	S.R. 11 at corner of County Road 424 and Substation R Ridge Road on south side of road.
P	9	Irish Ridge Road, 0.3 miles south of S.R. 267 (Lisbon Street).
P	10	Corner of S.R. 267, Lisbon Street and Long's Run, 0.35 miles north of County Road 425.
P	11	Cannons Mills Road and Long's Run, 0.35 miles north of County Road 425.
P	12	County Road 428, 0.75 miles north of Calcutta where Long's Run crosses, just south of Cannons- Mills Road.
Q	1	0.5 miles southeast of Grimms Bridge at end of road and Little Beaver Creek.
Q	2	Duke Road, 0.6 miles southeast of S.R. 170 and Duke Road intersection.
Q	3	Corner of S.R. 170 and Duke Road, 2 miles north of Calcutta.
Q	4	S.R. 170 at bridge over Little Beaver Creek before entering Fredericktown.
Q	5	County Road 428 at bridge over Little Beaver Creek at Gretchen Locks Park area.

Figure IX-D: Ohio Radiological Field Monitoring Reference Map – Beaver Valley Power Station

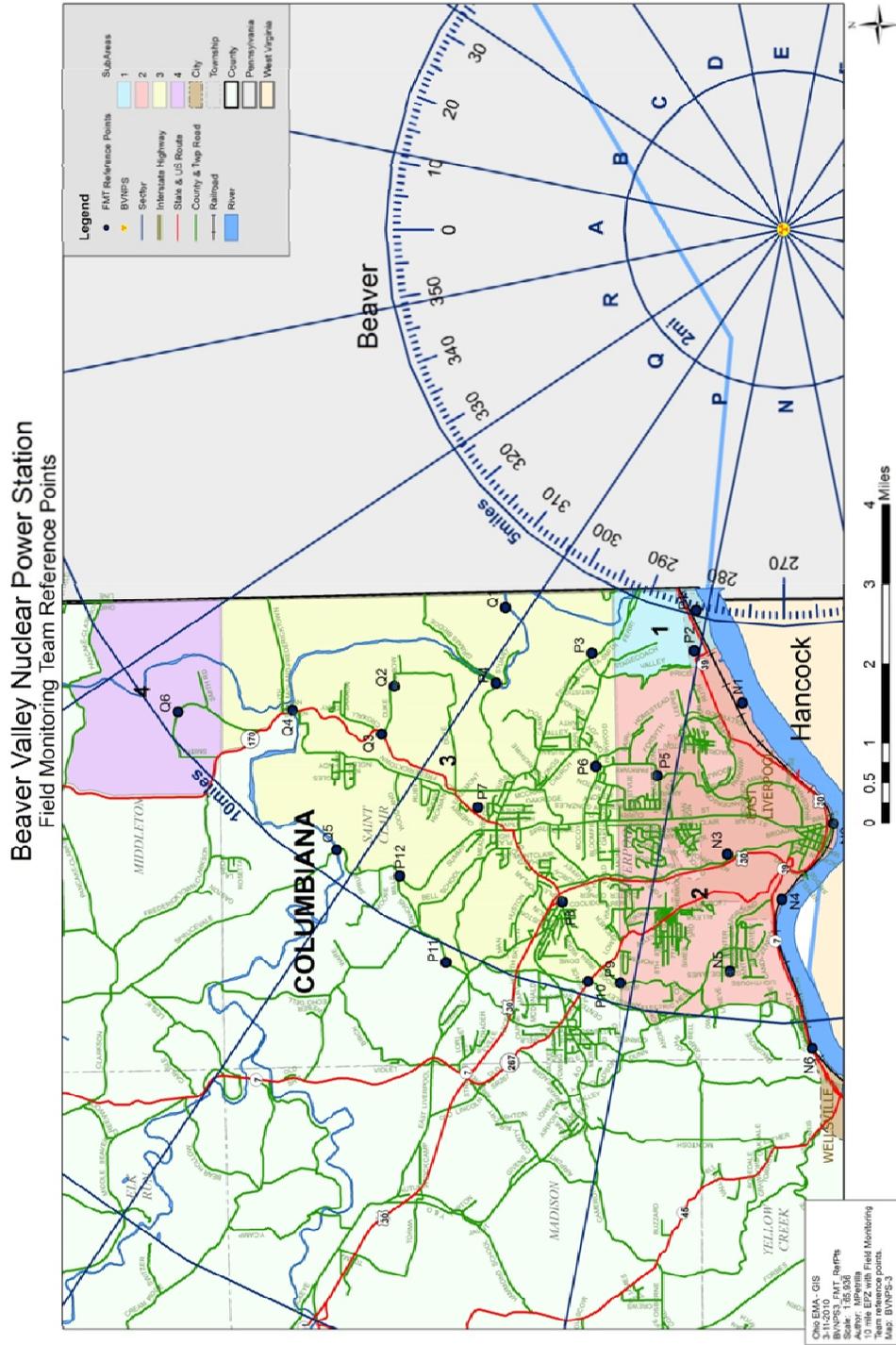


Table IX-E: Ohio Radiological Field Monitoring Reference List – Davis-Besse Nuclear Power Station

SECTOR	NUMBER	SITE DESCRIPTION
G	1	Erie Township, Section 20 - Erie Industrial Park water tower pad
G	2	Erie Township, Section 21 - Camp Perry water tower pad
G	3	Erie Township, Section 28 - CR 171 (Camp Perry East Road); 0.7 miles north of S.R. 2
G	4	Erie Township, Section 33 - S.R. 2 and Lacarpe Creek
G	5	Erie Township, Section 34 - S.R. 2 Bridge (Northwest end) & Portage River
G	6	Bay Township, Section 2 - S.R. 2 and S.R. 53 South; ditch Northwest of interchange
G	7	Port Clinton, Section 7 - S.R. 163, Northwest corner of drawbridge
G	8	Bay Township, Section 12 - T-118 (Wonnell Road); ditch 0.7 miles south of S.R. 53
G	9	Portage Township, Section 7 & 8 - CR 123 (Fulton Street); ditch north of CR 133 (Lockwood Road)
H	1	Carroll Township, Section 24 - S.R. 2 and Rusha Creek
H	2	Erie Township, Section 19 - S.R. 2; ditch 0.3 miles northwest of CR 15 (Camp Perry Western Road)
H	3	Erie Township, Section 29 - CR 14 (Tettau Road); ditch southwest corner Lacarpe Cemetery
H	4	Erie Township, Section 32 - CR 14 (Tettau Road) and Lacarpe Creek
H	5	Erie Township, Section 5 - T-212 (Meachem Road) and Portage River
H	6	Bay Township, Section 4 - Unnamed road; 0.9 miles north of CR 12 (Darr Hopfinger Road) and Portage River
H	7	Bay Township, Section 8 - End of gravel road in Little Portage River Wildlife Area; 0.7 miles north of CR 12 (Darr Hopfinger Road)
H	8	Bay Township, Section 18 - CR 17 (Oak Harbor Southeast Road) and Little Portage River

Continued on next page

Table IX-E: Ohio Radiological Field Monitoring Reference List – Davis-Besse Nuclear Power Station, Continued

SECTOR	NUMBER	SITE DESCRIPTION
H	9	Bay Township, Section 17 - T-27 (Mulcahy Road); ditch at intersection with T-112 (Little Portage East Road)
J	1	Carroll Township, Section 23 - CR 104 (Toussaint South Road) and Rusha Creek
J	2	Salem Township, Section 35 - CR 104 (Toussaint South Road) and Lacarpe Creek
J	3	Salem Township, Section 36 - CR 26(Carroll Erie Road)& Lacarpe Creek
J	4	Salem Township, Section 2 - S.R. 163; ditch 0.3 miles west of CR 104 (Toussaint South Road)
J	5	Bay Township, Section 7 - CR 18 (Portage River South Road); 0.5 miles north of CR 17 (Oak Harbor Southeast Road)
J	6	Salem Township, Section 11 - CR 18 (Portage River South Road) and Green Bayou; 0.2 miles E of T-226 (Gordon Road)
J	7	Salem Township, Section 15 - CR 36 (Mud Creek Road) and Little Portage River
J	8	Salem Township, Section 14 - T-217 (Muddy Creek North Road) and Little Portage River
J	9	Salem Township, Section 23 - T-217 (Muddy Creek North Road) and Muddy Creek
J	10	Sandusky County, Rice Township, Section 30 - S.R. 53 and Muddy Creek
K	1	Carroll Township, Section 11 - S.R. 2 and Toussaint River
K	2	Carroll Township, Sect. 22 - T-101 (Leutz Road)& Rusha Creek
K	3	Carroll Township, Section 27 - T-101 (Leutz Road) and south ranch of Rusha Creek; 0.2 miles north of T-97 (Bier Road)
K	4	Salem Township, Section 33 - T-102 (Behlman Road) and Lacarpe Creek
K	5	Salem Township, Section 32 - S.R. 19 and Lacarpe Creek

Continued on next page

Table IX-E: Ohio Radiological Field Monitoring Reference List – Davis-Besse Nuclear Power Station, Continued

SECTOR	NUMBER	SITE DESCRIPTION
K	6	Salem Township, Section 5 - S.R. 19 and Portage River; 0.2 miles S of S.R. 163
K	7	Salem Township, Section 6 - S.R. 105 and Portage River; 0.3 miles W of T-92 (Toussaint-Portage Road)
K	8	Salem Township, Section 16 - T-169 (Woodrick Road) and Cottonwood Swale; 0.2 miles north of T-6 (Elmore Eastern Road)
K	9	Salem Township, Section 8 - T-111 (Portage South Road) and Wolf Creek; 0.2 miles S of T-18 (Portage River South Road)
K	10	Salem Township, Section 17 - S.R. 19 and Little Portage River
L	1	Carroll Township, Section 2 - S.R. 2; ditch 0.3 miles north of Toussaint River
L	2	Carroll Township, Section 21 - T-102 (Behlman Road) and Rusha Creek
L	3	Carroll Township, Section 20 - S.R. 19 and Rusha Creek
L	4	Salem Township, Section 31 - T-92 (Toussaint- Portage Road) and Lacarpe Creek
L	5	Benton Township, Section 35 - T-22 (Lickert- Harder Road) and Lacarpe Creek
L	6	Benton Township, Section 34 - S.R. 590 and Lacarpe Creek
L	7	Harris Township, Section 12 - C.R. 42 (Harris- Salem Road) and Wolf Creek
M	1	Carroll Township, Section 8 - S.R. 19 and Toussaint River
M	2	Carroll Township, Section 7 - T-62 (Toussaint North Road) and Packer Creek
M	3	Benton Township, Section 12 - CR 23 (Benton- Carroll Road) and Packer Creek
M	4	Benton Township, Section 13 - CR 23 (Benton- Carroll Road) and Toussaint Creek
M	5	Benton Township, Section 23 - T-22 (Lickert- Harder Road) and Toussaint Creek

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Table IX-E: Ohio Radiological Field Monitoring Reference List – Davis-Besse Nuclear Power Station, Continued

SECTOR	NUMBER	SITE DESCRIPTION
M	6	Benton Township, Section 15 - S.R. 590 and Packer Creek
M	7	Benton Township, Section 22 - S.R. 590 and Toussaint Creek; 0.1 miles S of CR 62 (Toussaint North Road)
M	8	Benton Township, Section 16 - T-21 (Stange Road) Packer Creek
N	1	Carroll Township, Section 2-S.R. 2 & CR 24 (Duff Washa Rd)
N	2	Carroll Township, Section 5 - S.R. 2 and Turtle Creek Bay
N	3	Carroll Township, Section 7 - T-90 (Lemon Road) and Turtle Creek
N	4	Benton Township, Section 12 - CR 23 (Benton- Carroll Road) and Turtle Creek
N	5	Benton Township, Section 36 – Magee Marsh Entrance Road; 0.3 miles N of S.R. 2
N	6	Benton Township, Section 11 - T-22 (Lickert- Harder Road) and Packer Road
N	7	Benton Township, Section 2 - T-22 (Lickert-Harder) Road and Turtle Creek
N	8	Benton Township, Section 3 - S.R. 590 and Turtle Creek
N	9	Benton Township, Section 9 - T-21 (Stange Road) & Turtle Creek
N	10	Benton Township, Section 29 - S.R. 2 and Crane Creek
P	1	Carroll Township, Section 34 - C.R. 237 (Locust Point Road) at mouth of Turtle Creek (Lake Erie)
P	2	Benton Township, Section 25 – Magee Marsh Entrance Road; ditch 1.5 miles N of S.R. 2
P	3	Lucas County, Jerusalem Township, Section 10 - CR 185 (Veler Road) and Canal; 1.7 miles E of S.R. 2
P	4	Lucas County, Jerusalem Township, Section 8 - S.R. 2 and Ward Canal

Continued on next page

Table IX-E: Ohio Radiological Field Monitoring Reference List – Davis-Besse Nuclear Power Station, Continued

SECTOR	NUMBER	SITE DESCRIPTION
P	5	Lucas County, Jerusalem Township, Section 6 - CR 209 (Howard Road) and Canal; 0.5 miles N of S.R. 2
Q	1	Carroll Township, Section 35 - CR 252 (Sand Beach Road) and Lake Erie; .1 miles E of CR 128 (Russell Road)
Q	2	Carroll Township, Sect.35 - CR 128 (Russell Road) & Lk. Erie
Q	3	Carroll Township, Section 34 - Long Beach Road at navigational light and Lake Erie

Figure IX-F: Ohio Radiological Field Monitoring Reference Map – Davis-Besse Nuclear Power Station

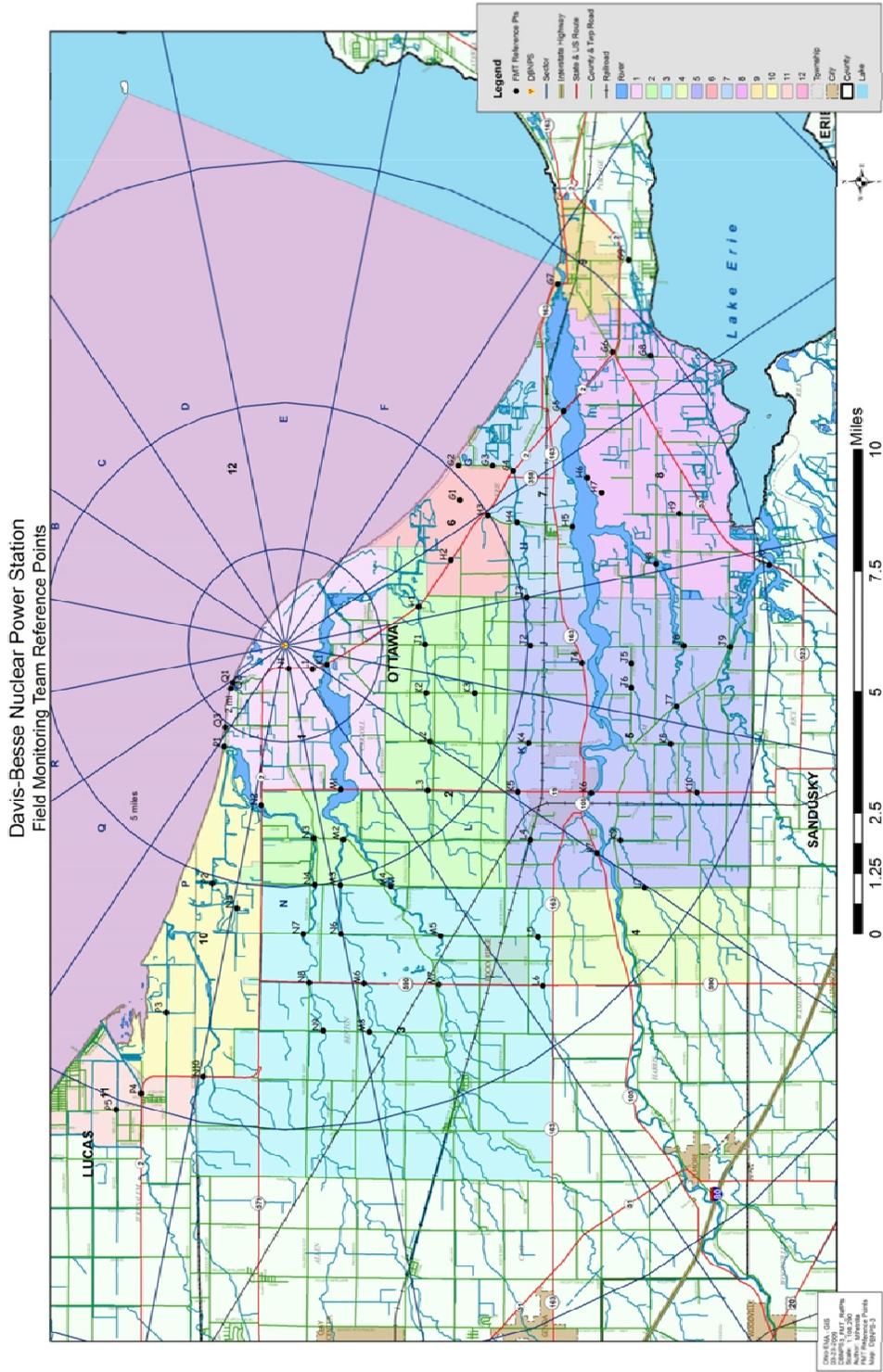


Table IX-G: Ohio Radiological Field Monitoring Reference List – Perry Nuclear Power Plant

SECTOR	NUMBER	SITE DESCRIPTION
C	1	Lake Erie at North Perry Village Park on Lockwood Road
D	1	Stream crossing, 2535 Antioch Road
D	2	Stream crossing on Haines Road; 0.2 miles south of Chapel Road
D	3	Lake Erie at Madison-on-the-Lake Township Park on Hubbard Road
D	4	Stream crossing on Cunningham Road; 0.1 miles east of Dock Road
D	5	Stream crossing on Lake Road; 0.3 miles west of Deer Lake Public Golf Course
D	6	Stream crossing, 4291 S.R. 534, at Kuhar's Restaurant
E	1	Stream crossing on Haines Road; 0.3 miles north of North Ridge Road
E	2	Stream crossing, 2327 Hubbard Road; 0.1 miles south of Canterbury Drive
E	3	Stream crossing on U.S. Route 20; 0.1 miles east of Dock Road
E	4	Stream crossing on Geneva Park Road (West Street); 0.05 miles south of U.S. Route 20
E	5	Stream crossing, 3448 Padanarum Road; 1.2 miles north of U.S. Route 20
E	6	Stream crossing on Maple Road; 0.1 miles east of S.R. 534
F	1	Stream crossing on Townline Road; 0.1 miles S of U.S. Route 20
F	2	Stream crossing on Dayton Road; 0.3 miles south of Middle Ridge Road
F	3	Stream crossing on S.R. 84; 0.3 miles east of Bates Road
F	4	Pond, 7666 Warren Road (S.R. 307); 0.3 miles west of County Line Road
F	5	Pond on LaFevre Road; 0.8 miles south of South Ridge Road (S.R. 84)

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Table IX-G: Ohio Radiological Field Monitoring Reference List – Perry Nuclear Power Plant, Continued

SECTOR	NUMBER	SITE DESCRIPTION
F	6	Pond, 6827 South River Road; 0.3 miles west of Atkins Road
G	1	Stream crossing on Wood Road; 0.4 miles north of railroad tracks
G	2	Pond on unnamed road at intersection of River and Wood Roads
G	3	Grand River at Klasen Road Metro Park under the S.R. 528 bridge
G	4	Pond at Camp Stigwandish Boy Scout Camp; 0.1 miles north of Ross Road
G	5	Stream crossing on Sidley Road; 0.1 miles south of Stocking Road
G	6	Stream crossing on Under Road (Ledge Road); 0.4 miles north of Thompson Road
H	1	Stream crossing, 3699 Call Road; 0.2 miles north of Davis Road
H	2	Stream crossing, 4637 Turney Road; 0.3 miles north of River Road
H	3	Stream crossing on Trask Road; 0.1 miles south of Balch Road
H	4	Stream crossing on Ford Road; 0.1 miles west of Clay Road (Fisher Road)
H	5	Stream crossing on Leroy-Thompson Road; 1.4 miles north of S.R. 86
H	6	Stream crossing, 6995 Dewey Road; 0.6 miles south of Leroy-Thompson Road
J	1	Stream crossing on Center Road at the Perry City Limits sign
J	2	Stream crossing on S.R. 84; 0.3 miles east of Shepard Road
J	3	Stream crossing, Paine and Taylor Roads intersection; 0.3 miles south of Seeley Road
J	4	Ditch, 6352 Paine Road; 0.7 miles north of Leroy Center Road
J	5	Stream crossing on S.R. 86; 1.2 miles southeast of Leroy Center Road

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Table IX-G: Ohio Radiological Field Monitoring Reference List – Perry Nuclear Power Plant, Continued

SECTOR	NUMBER	SITE DESCRIPTION
J	6	Stream crossing on S.R. 86 at cemetery; 0.9 miles east of S.R. 86 and Girdled Road intersection
K	1	3715 Parmly Road at NEWGreen Legacy Services, Inc. driveway
K	2	Stream crossing on U.S. Route 20, beneath high tension wires; 1.0 miles west of Center Road
K	3	Stream crossing at Maine and Oregon Streets intersection, within Oakbrook Village development
K	4	Grand River on Seeley Road; 0.4 miles east of Vrooman Road
K	5	Stream crossing on Huntoon Road; 0.6 miles west of Vrooman, Leroy Center, and S.R. 86 intersection
K	6	Stream crossing on S.R. 608; 0.55 miles east of Painesville-Ravenna
L	1	Stream crossing at Clark and Perry Parks Roads intersection
L	2	Ditch, 3685 Blackmore Road; 0.1 miles north of U.S. Route 20
L	3	Stream crossing on Bacon Road; 0.3 miles north of Blase-Nemeth Road
L	4	Stream crossing on Bowhard Road (Bowhall); 0.2 miles south of the second set of railroad tracks
L	5	Grand River at Mill Street and East Main Street intersection
L	6	Stream crossing on Morley Road; 0.4 miles south of S.R. 84
M	1	Lake Erie at Perry Township Park on Perry Park Road
M	2	Stream crossing on Bacon Road; 0.1 miles north of Lake Road, near private gas storage tank
M	3	Lake Erie at Painesville-on-the-Lake Township Park on Hardy Road
M	4	Grand River at S.R. 535 bridge
M	5	Lake Erie at the Fairport Harbor Coast Guard Station, north of Headlands Road and S.R. 44
M	6	Marsh at Corduroy and Woodridge Roads intersection

Figure IX-H: Ohio Radiological Field Monitoring Reference Map – Perry Nuclear Power Plant – Overall

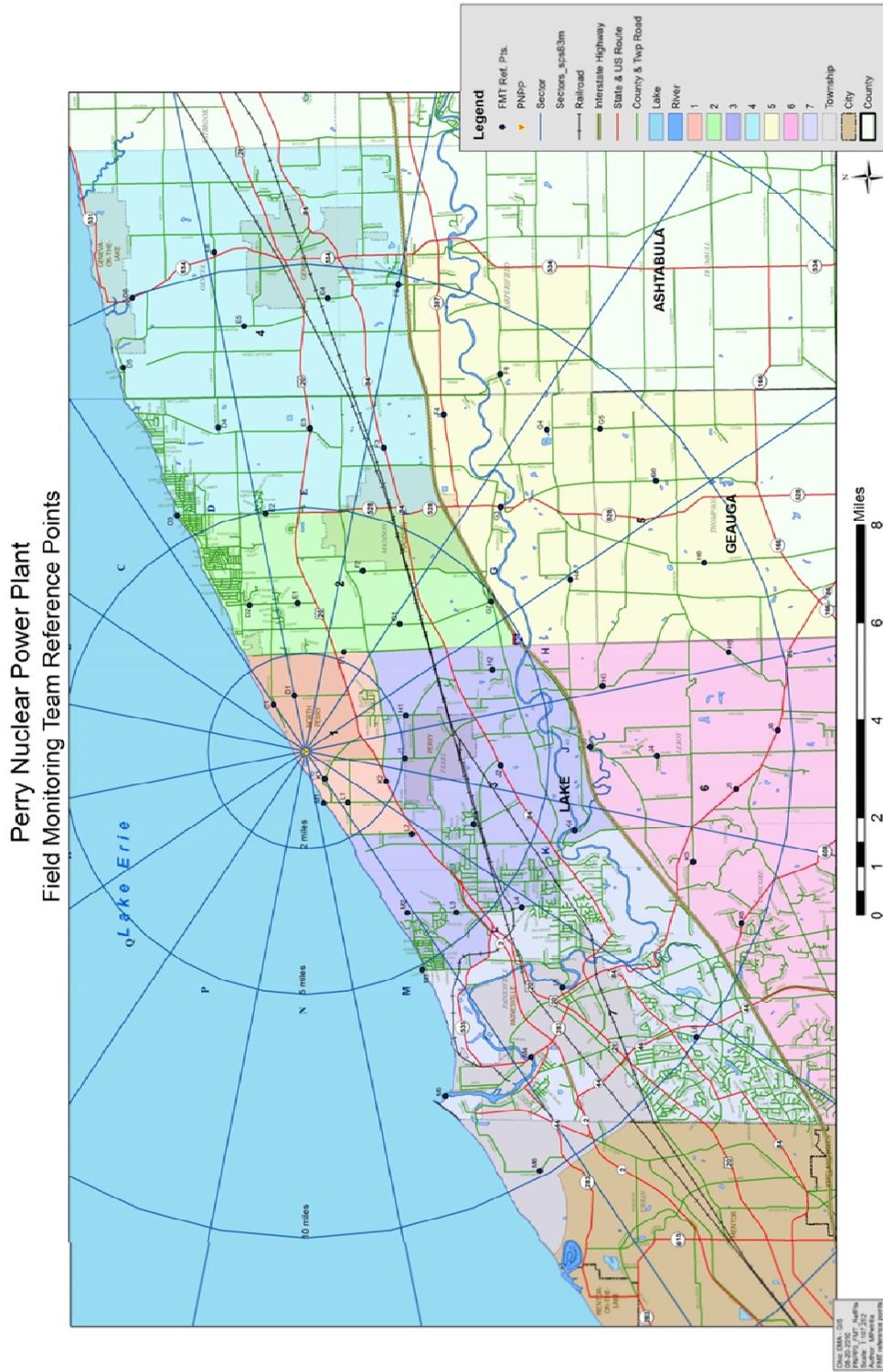


Figure IX-I: Ohio Radiological Field Monitoring Reference Map – Perry Nuclear Power Plant – Lake County

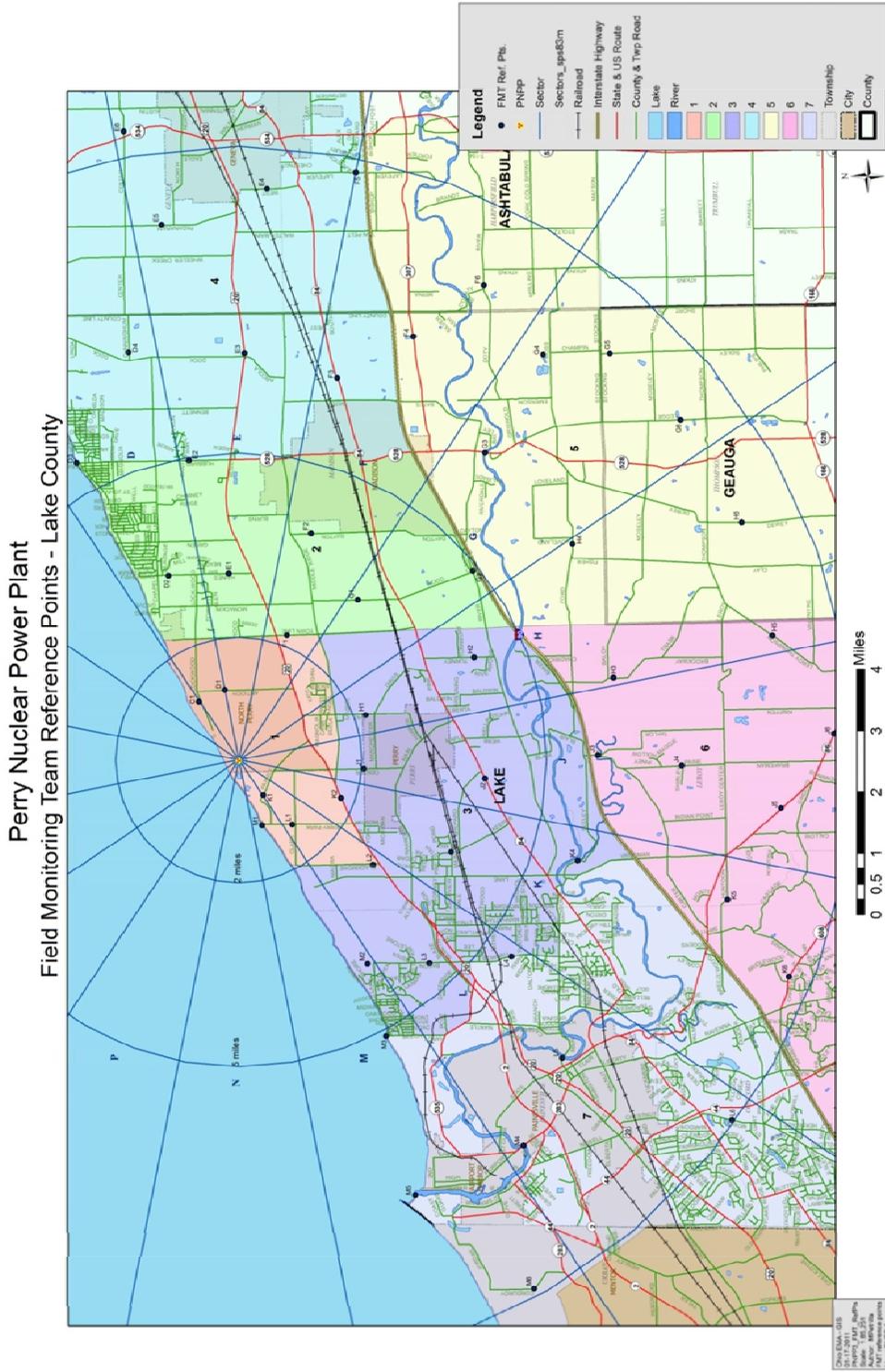


Figure IX-J: Ohio Radiological Field Monitoring Reference Map – Perry Nuclear Power Plant – Ashtabula County

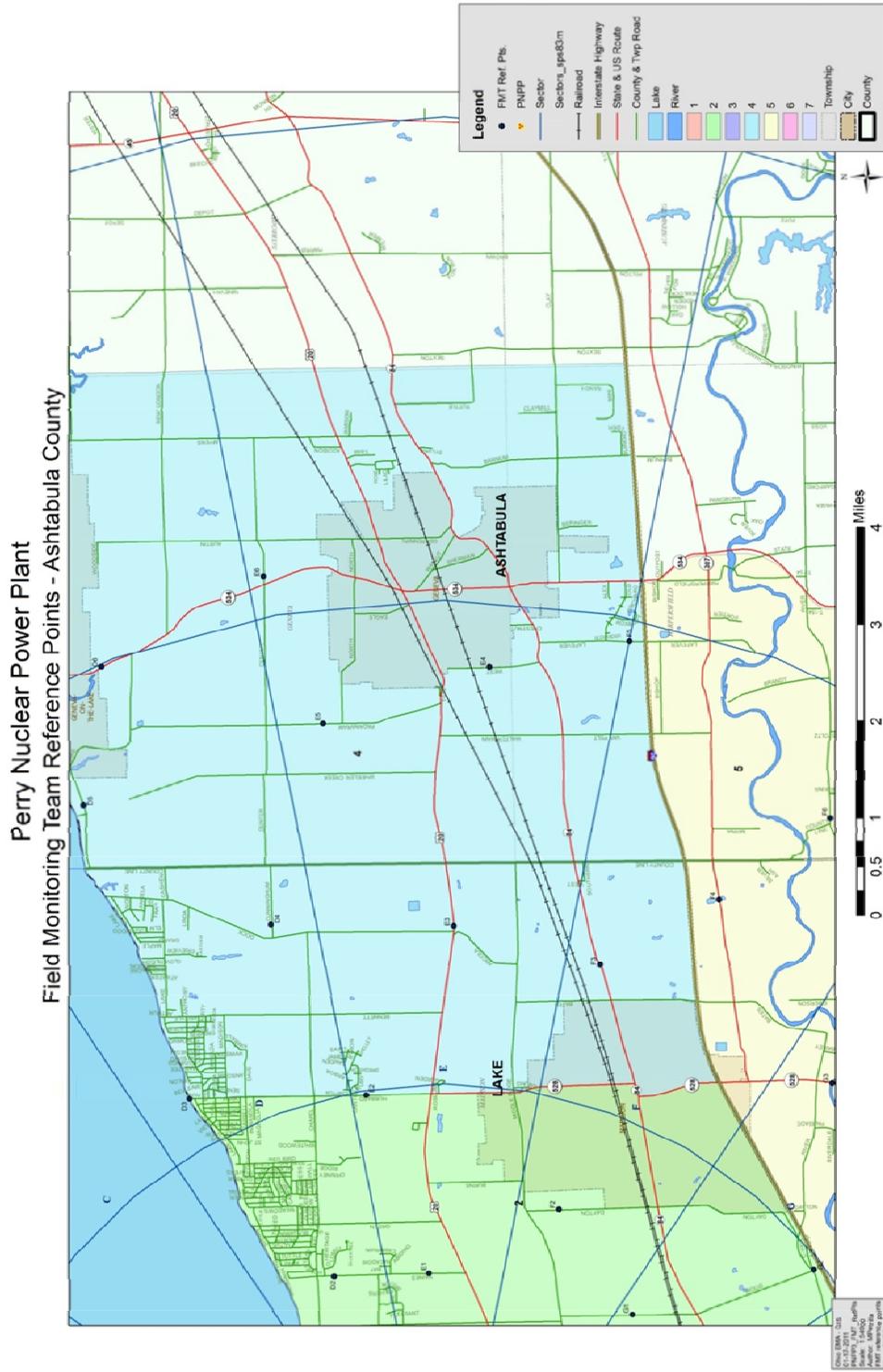


Figure IX-L: Recommended Marinas and Harbors Outside the Davis-Besse NPS Emergency Planning Zone

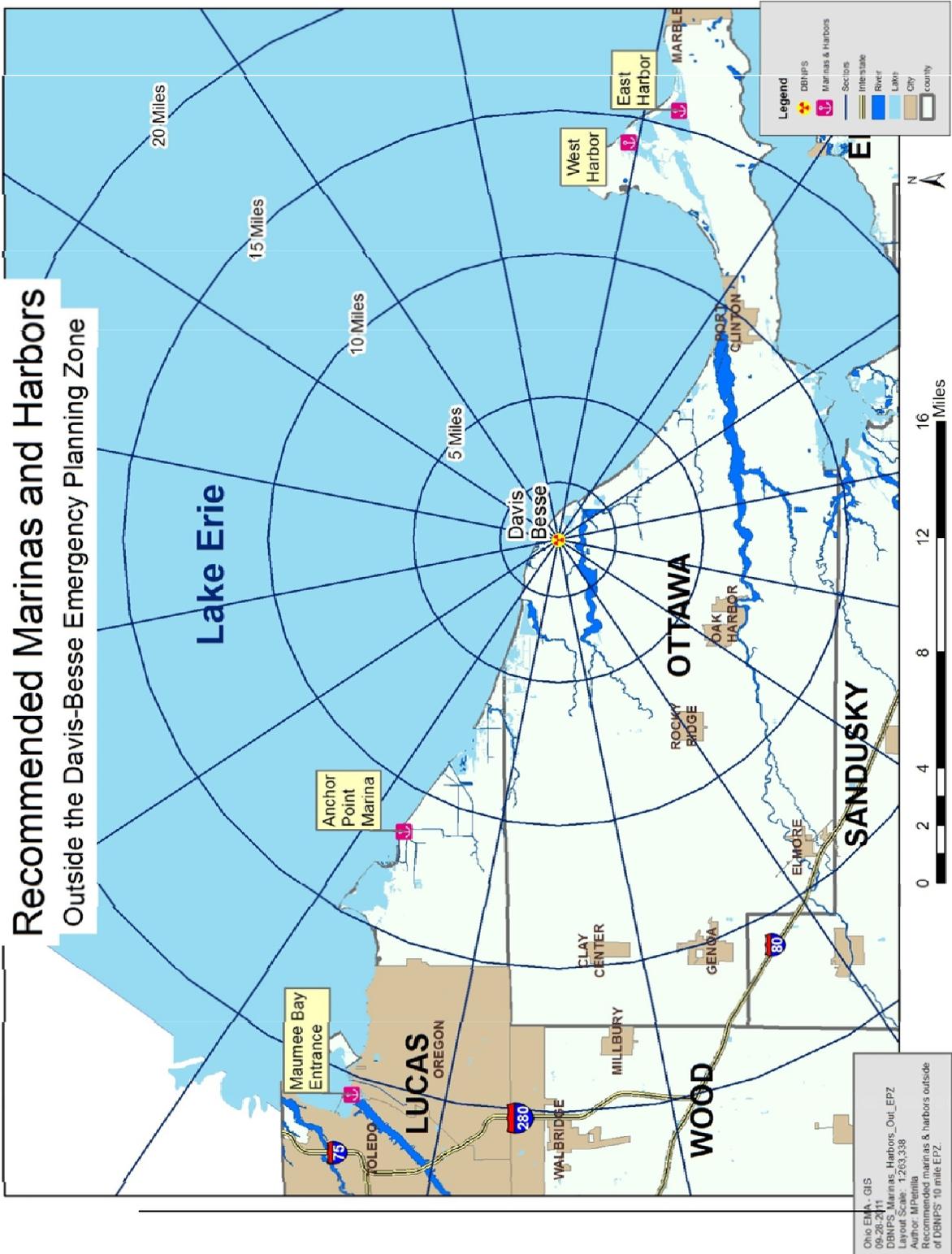
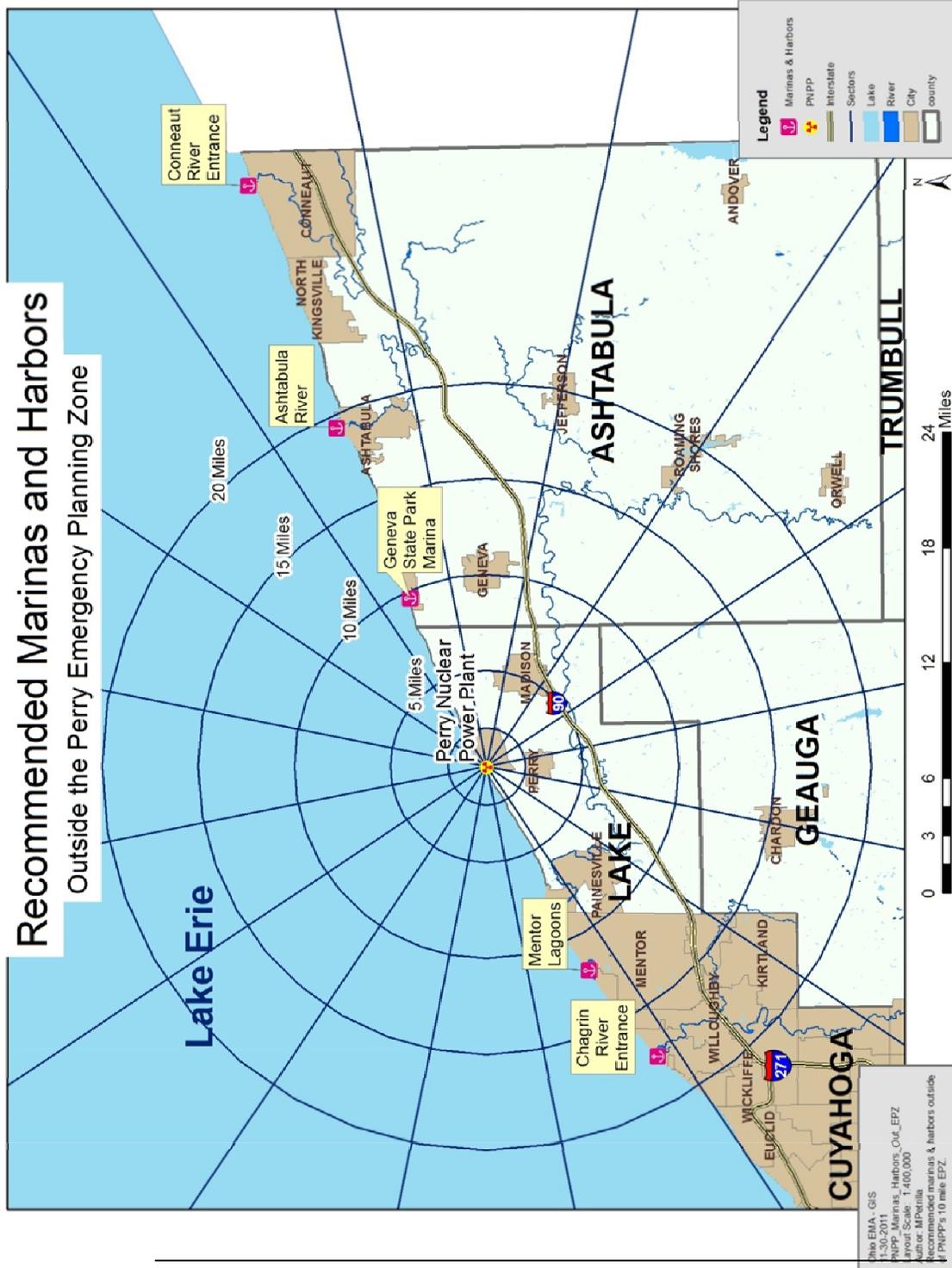


Figure IX-M: Recommended Marinas and Harbors Outside the Perry NPP Emergency Planning Zone



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X. Radiological Exposure Control

NUREG-0654 FEMA-REP-1 Criteria K

Overview

Means for controlling radiological exposures, in an emergency, are established for emergency workers. The means for controlling radiological exposures shall include exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides.

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Responsibilities

Purpose To describe major state agency functions in the area of radiological monitoring and exposure control, contamination monitoring and decontamination of personnel and equipment, radioactive contamination control, and disposal of contaminated materials from monitoring and decontamination centers.

- Ohio EMA** The Ohio EMA shall:
1. Ensure appropriate DRDs are available for designated emergency workers.
 - a. It is the responsibility of the respective county EMA Directors to provide the Ohio EMA with the number of emergency workers who need dosimetry.
 - b. The Ohio Resident Radiological Analyst assigned to each nuclear power facility area shall supervise the distribution of dosimetry packets.
 - c. These packets should include direct-reading dosimeters (DRD) and a permanent record dosimeter (PRD), either thermo luminescent dosimeters (TLDs) or optically stimulated luminescent dosimeters (OSLDs).
 2. Ensure appropriate DRDs and PRDs are available for each state-level and U.S. Coast Guard (USCG) emergency worker, as duties and responsibilities require.
 3. Ensure an arrangement is in place to provide for the reading of emergency worker permanent reading dosimeters by an appropriately accredited facility, in accordance with 10 CFR 20.
 4. Provide training on the use of dosimeters and radiological survey meters to state agencies and USCG personnel.
 5. Inform emergency workers about the health risks from receiving radiation doses, and the increased risk from doses up to and in excess of EPA PAG Manual guidelines.
 6. Provide the necessary record-keeping forms to state and county governments with instructions for use.
 7. Ensure emergency workers submit their TLD or OSLD and Dosimetry Report Form for processing upon termination of their emergency duties.
 8. Provide training and equipment, with the exception of portal monitors, to facilitate the monitoring of evacuees at reception and care centers.
 9. Provide personnel for Field Monitoring Teams.

Continued on next page

Responsibilities, Continued

Ohio EMA, continued

10. Instruct state agency and USCG personnel on the process of reporting to a decontamination facility for survey and wash down of their service equipment.
11. Provide personnel for Escort Teams.
 - a. These teams will escort state sampling teams and other personnel into the RZ as necessary.
 - b. While in the RZ, the Escort Teams shall check gross gamma readings and take air samples as requested.
12. Calculate dose to the general population and update, as needed, based upon:
 - a. Measured exposure rates provided by field teams.
 - b. Measured airborne radioactive material provided by field teams.
 - c. Projected exposure or dose rates from data provided by licensee.
 - d. Radiological contamination levels identified in environmental samples.

ODH-BRP

The Ohio Department of Health – Bureau of Radiation Protection (ODH-BRP) shall:

1. Specify administrative limits for emergency workers.
2. Issue recommendations to protect the general public, emergency workers, and institutionalized individuals including the administration of Potassium Iodide (KI).
3. Request KI supplies from NRC for the general public and emergency workers.
4. Distribute KI for use by emergency workers, institutionalized individuals, and the general public through Ohio EMA, county EMA, and local health agencies..
5. Provide guidance for appropriate follow-up and treatment of affected citizens for county governments.
6. Calculate dose to the general population as necessary and update, as needed, based upon:
 - a. Measured exposure rates provided by field teams.
 - b. Measured airborne radioactive material provided by field teams.
 - c. Projected exposure or dose rates from data provided by licensee.
 - d. Radiological contamination levels on monitored individuals.

Continued on next page

Responsibilities, Continued

ODH-BRP,
continued

- e. Radiological contamination levels identified in environmental samples.
 - 7. In coordination with the OEPA and the utility, determine a means for disposal of waste generated by offsite radioactive decontamination process of emergency workers, the public, equipment, structures and environment.
 - 8. Provide personnel for the Field Monitoring Teams.
 - 9. Provide personnel for the Field Sample Screening Point.
-

OEPA

The Ohio Environmental Protection Agency (OEPA) shall:

- 1. Determine the condition of public drinking water supplies (contaminated or uncontaminated) by using current federal guidance and in accordance with Ohio Administrative Codes.
 - 2. Determine a means for the disposal of waste generated by the offsite radioactive decontamination process of emergency workers, the public, and equipment in coordination with ODH-BRP and the utility.
 - 3. Act as liaison for the Field Monitoring Teams, and assist in tracking of the plume deposition.
-

ODA

The Ohio Department of Agriculture (ODA) shall:

- 1. Recommend as a precaution, livestock and poultry be brought inside and placed on stored feed and protected water in all townships and municipalities within 50 miles of the plant.
 - 2. Specify action levels for the decontamination of dairy farms, processing plants and facilities, in accordance with the existing procedures.
 - 3. Dairy farms, processing plants, and other dairy related activities in an IPZ that are confirmed to have any detectable radiation levels greater than response levels set forth in FDA protective action guidance shall be included in appropriate protective actions.
-

Dosimetry

Record Keeping, Reading & Reporting

1. Emergency workers shall be issued dosimetry before departing for the affected area. This includes state emergency workers, such as Field Monitoring Team (FMT) members, communications support personnel, Emergency Operations Facility Liaisons, and other personnel as deemed necessary by the state.
2. Each emergency worker shall complete and maintain a "Dosimetry Report Form," which shall be carried while in possession of radiation dosimetry and completed at the end of their mission. A new Dosimetry Report Form will be issued daily to each emergency worker.
3. Unless directed otherwise by ODH, dosimeters shall be placed in an accessible location on the body between the waist and neck and read at the frequency established.
4. All emergency workers must have, and be in communication with their designated Dosimetry Coordinator. All emergency workers shall report their DRD readings to their respective Dosimetry Coordinator at the designated intervals. The interval for reading dosimeters will be every 30 minutes unless directed otherwise.
5. Emergency workers will keep their assigned PRD throughout the emergency phase, unless their lead organization requests them earlier to verify anomalous reading on a DRD or the Dosimetry Coordinator reissues all PRDs.
6. PRDs will be returned to the vendor or appropriate laboratory for processing.
7. Copies of the emergency worker dose records shall be collected and maintained by ODH for an indefinite period.

Hostile Action

1. The counties have requested additional dosimetry which has been stockpiled in the event of an HAB.
 2. The county will be responsible to provide JIT training to the responders when distributing dosimeters.
-

Turn-back Value Determination

Overview

1. While the emergency worker exposure limit is 5 R TEDE, the initial turn-back administrative limit is 1R to account for inhalation dose which cannot be measured using a DRD. By selecting an appropriate value for the administrative limit, there can be reasonable assurance that after including the dose from inhalation, the TEDE to an emergency worker is unlikely to exceed the applicable limit.
 2. The TEDE calculation for emergency workers who have ingested KI does not include the contribution from thyroid dose due to inhalation of radioiodine, because that contribution will be minimal if KI is administered prior to exposure.
 3. For the less severe but more probable reactor incident sequences, the TEDE to emergency workers who have taken KI is unlikely to exceed 5 times their measured external dose as shown on DRDs. Therefore, if the external dose measured by a DRD is limited to 1/5 of the applicable limit, the TEDE is unlikely to exceed the limit.
-

Exposure Limits

Exposure Control & Limits

1. In accordance with the U.S. EPA's PAG Manual, 2013, emergency workers assigned to life saving activities, , the evacuation of large population groups, or the prevention of severe property damage or loss shall be advised that they are allowed to exceed normal regulatory limits for occupational exposure to radiation.
 - a. The limits listed in Table 2-2 of the EPA PAG Manual only apply during the emergency phase of an event.
 - b. All exposure received in the intermediate or late phase of an incident is considered occupational exposure and controlled in accordance with OAC 3701:1-38-12.
 - c. The 5 rem Total Effective Dose Equivalent (TEDE) limit of OAC 3701:1-38-12 is in addition to and separate from the limits established in the EPA PAG Manual for emergency response.
 2. All doses should be maintained as low as reasonably achievable (ALARA).
 3. The limits established in the EPA PAG Manual are a combination of the external Effective Dose Equivalent and the Committed Effective Dose Equivalent from intake during an emergency response.
-

Continued on next page

Exposure Limits, Continued

**Exposure
Control &
Limits,**
continued

- a. For emergency workers performing activities inside the EPZ, these limits are not equivalent to the reading on an emergency worker's DRD.
 - b. By selecting an appropriate value for the administrative limit on measured external dose and restricting emergency workers to that limit, there can be reasonable assurance that after including the dose from inhalation, the TEDE to an emergency worker is unlikely to exceed the applicable limit. The DRD only measures the external exposure rate, not the total dose (internal plus external) an emergency worker may receive.
 - c. For this reason, administrative limits have been established.
 - d. The Dosimeter Limit / Turn-back Value is a limit imposed on an emergency worker's DRD that provides reasonable assurance the dose limits of the EPA PAG Manual have not been exceeded.
4. The Ohio Department of Health (ODH-BRP) may raise or lower the Dosimeter Limit / Turn-back Value based on content of the release and the associated intake hazard.
- a. Many factors affect the Total Effective Dose Equivalent (TEDE) that an emergency worker may receive.
 - b. These factors, along with the potential exposure to the public avoided by the mission of the emergency worker, must be considered when making a decision to exceed these exposure limits.
 - c. Any exceedance will be documented by the Dosimetry Coordinator and reported to the ODH-BRP representative at the ESF-10 desk.

Doses to all workers during an emergency, to the extent practical, should be limited to 5 rem.
 - d. The initial Dosimeter Limit for state emergency workers is 1R.
 - i. This administrative limit on the dose to emergency workers entering the plume is determined in advance.
 - ii. The administrative limit is stated in terms of the external dose measured by a DRD.
 - iii. To account for the inhalation dose, which cannot be measured prior to or during a mission, the administrative limit is set lower than the limit for each class of activity recommended by the EPA.

Continued on next page

Exposure Limits, Continued

**Exposure
Control &
Limits,**
continued

- iv. By selecting an appropriate value for the administrative limit on measured external dose and restricting emergency workers to that limit, there can be reasonable assurance that after including the dose from inhalation, the TEDE to an emergency worker is unlikely to exceed the applicable limit.
 - e. Potassium Iodide (KI)
 - i. The TEDE calculation for emergency workers who have ingested KI does not include the contribution from thyroid dose due to inhalation of radioiodine, because that contribution will be minimal if KI is administered prior to exposure.
 - ii. For the less severe but more probable reactor incident sequences, the TEDE to emergency workers who have taken KI is unlikely to exceed 5 times their measured external dose as shown on DRDs. Therefore, if the external dose is measured by a DRD is limited to 1/5 of the applicable limit, the TEDE is unlikely to exceed the limit.
- 5. Each emergency worker shall be provided with personnel dosimetry that includes a PRD and DRD(s) with a range suitable for measuring the maximum anticipated exposure. Exposure readings and task assignments shall be recorded for each emergency worker assigned to work in a radiological area.
- 6. Dosimetry Coordinators are responsible for monitoring emergency worker exposure levels, updating emergency workers with changes in their Dosimeter Limit / Turn-back Value, and taking the necessary actions to ensure emergency worker exposure is ALARA. The FMT Coordinator shall function as the Dosimetry Coordinator for the state emergency workers and ensure exposures are kept ALARA. It may be necessary to use such measures as routing vehicles around radiologically contaminated areas, minimizing time in a Radiation Area, and rotating team members to minimize exposure.

If an emergency worker cannot be relieved, the Dosimetry Coordinator shall contact the ODH-BRP representative at the ESF-10 desk and request approval for the individual to exceed the Dosimeter Limit / Turn-back Value. Any exceedance will be documented by the Dosimetry Coordinator.
- 7. Situations may occur in which an emergency worker who is involved in a lifesaving activity or an activity that would limit exposure to large populations may be justified in exceeding the 25 Rem limit of the EPA PAG Manual.

Continued on next page

Exposure Limits, Continued

**Exposure
Control &
Limits,**
continued

- a. Persons undertaking any operation in which the dose may exceed the 25 Rem limit established in the EPA PAG Manual must do so only on a voluntary basis with full awareness of the associated risks, to include the numerical levels of dose at which acute effects of radiation are likely to be incurred and numerical estimates of the risk of delayed effects.
 - b. The respective Dosimetry Coordinator shall immediately contact the ODH-BRP representative at the ESF-10 desk and provide details of the exposure.
 - c. The emergency worker may continue only after being formally briefed by Dosimetry Coordinator and made fully aware of the risks of a radiation dose of that magnitude.
 - d. Any exceedance will be documented by the Dosimetry Coordinator.
8. No emergency worker shall be assigned to an activity involving potential exposure to airborne radioactive material or radioactive contamination unless:
- a. Provisions are made for monitoring the emergency worker for radioactive contamination, and
 - b. Facilities are provided for decontaminating the emergency worker.
9. Records shall be kept of the contamination monitoring and decontamination results for each worker who is monitored and/or decontaminated.
10. An emergency worker assigned to an activity involving potential exposure to radioiodine should be provided with:
- a. KI to reduce the uptake of radioiodine by the thyroid.
 - b. A two-way radio or direct communication with a Dosimetry Coordinator.
 - c. Current information on the developing emergency situation, which might significantly affect radiation exposure.
-

Radioactive Contamination Monitoring

Emergency Worker

1. The locations of Emergency Worker Monitoring / Decontamination Stations are identified in the county plans.
2. Emergency workers shall be monitored for contamination at Emergency Worker Monitoring / Decontamination Stations prior to eating, drinking, or smoking and at the end of their shift. The Personnel Monitoring Record form shall be used for recording monitoring and decontamination information.
3. Each emergency worker shall be monitored for external contamination using a portal monitor or a survey meter with a “pancake” probe that provides a reading in counts per minute. Although the use of instruments that do not read out in units of counts per minute (cpm) is permitted by FEMA-REP-22, the state does not recommend using these instruments for contamination monitoring.

NOTE: Decontamination levels are indicated on Tables X-C and X-D.

4. Any emergency worker monitored with an initial reading of 3000 cpm or higher, on areas of the body indicating a reasonable probability of inhalation or thyroid contamination (the head, face, neck, and chest area), should be decontaminated and then sent to a medical facility for internal contamination monitoring. Receiving medical facilities shall be identified at the time of the emergency in coordination with county, federal, and utility authorities.

NOTE: Medical emergencies take precedence over decontamination.

5. Emergency workers should be monitored for internal contamination after their final emergency task to determine the presence of internally deposited radioactive material and related radiation dose. This evaluation should be coordinated with ODH.
6. Personal belongings, vehicles, and equipment should be monitored for contamination.
 - a. Any personal belongings with a count rate of 300 cpm above background shall be impounded and bagged for later decontamination.
 - b. A receipt describing the impounded item(s) shall be provided to the individuals by a member of the monitoring team.
 - c. Refer to FEMA-REP-22 for further guidance on detailed surveys, decontamination, and making a determination between loose surface and fixed contamination.
7. Monitoring / decontamination team members should monitor vehicles for contamination.

Continued on next page

Radioactive Contamination Monitoring, Continued

Emergency Worker, continued

- a. Special attention should be paid to areas suspected to be contaminated such as truck beds, radiator grills, front bumpers, door handles, tires, seats, and floor mats.
 - b. Air intake systems and air filters do not need to be monitored due to the complexity of the systems and the significant disassembly which is sometimes required.
 - c. For more detailed information, refer to the individual county plans and procedures.
-

Public

1. The locations of reception centers are identified in county plans.
2. Each person shall be monitored for external contamination using a portal monitor, or survey meter with a “pancake” probe that provides a reading in counts per minute. FEMA-REP-22 permits the use of a CDV-700 (with the standard side-window GM tube) for contamination surveys. However, the use of a standard CDV-700 for contamination surveys is not desirable due to its decreased sensitivity when compared to an instrument with a thin window GM tube (pancake probe). Although the use of instruments that do not read out in units of counts per minute (cpm) is permitted by FEMA-REP-22, the state does not recommend using these instruments for contamination monitoring. The Personnel Monitoring Record form shall be used for recording information.

NOTE: Decontamination levels are indicated on Tables X-C and X-D.

3. Any member of the public monitored with an initial reading of 3000 cpm or higher, on areas of the body that would indicate a reasonable probability of inhalation or thyroid contamination (the head, face, neck, and chest area), should be decontaminated and then sent to a medical facility for internal contamination monitoring. Receiving medical facilities shall be identified at the time of the emergency in coordination with county, federal, and utility authorities.

NOTE: Medical emergencies take precedence over decontamination.

4. Personal belongings, vehicles, and equipment should be monitored for contamination.
 - a. Any personal belongings with a count rate of 300 cpm above background shall be impounded and bagged for later decontamination.
 - b. A receipt describing the impounded item(s) shall be provided to the individuals by a member of the monitoring team.
-

Continued on next page

Radioactive Contamination Monitoring, Continued

Public,
continued

- c. For detailed surveys, decontamination, and making a determination between loose surface and fixed contamination, see FEMA REP-22 for further guidance.
 5. Monitoring / decontamination team members should monitor vehicles for contamination.
 - a. Special attention should be paid to areas suspected to be contaminated such as truck beds, radiator grills, front bumpers, door handles, tires, seats, and floor mats.
 - b. Air intake systems and air filters do not need to be monitored due to the complexity of the systems and the significant disassembly which is sometimes required.
 6. Service animals will be monitored using the same activity levels as humans to determine if decontamination needs to be performed.
 7. For more detailed information, refer to the individual county plans and procedures.
-

Decontamination

**Public and
Emergency
Workers**

1. If monitoring reveals contamination levels in excess of levels indicated in Tables X-C and X-D, the general public and emergency workers should be decontaminated. Cleaning and drying supplies are available in the decontamination kit at the monitoring/decontamination stations. Decontamination should consist of the appropriate method:
 - a. Removal of contaminated clothing.
 - b. Washing localized areas with mild soap and tepid water
 - c. Washing large areas with mild soap, shampoo, and tepid water in a shower.
 - d. A radiological monitor should re-survey contaminated areas after washing.
 2. If after two attempts at decontamination, using methods above, the contaminated area is still greater than or equal to a count rate of 300 cpm above background the person shall be sent to a medical facility for further evaluation. After decontamination, people should be provided with temporary replacement clothing.
-

Continued on next page

Decontamination, Continued

**Public and
Emergency
Workers,**
continued

3. Service animals will be decontaminated, at a minimum, to the levels stated in Tables X-C and X-D. If possible, animals should be decontaminated to the same levels acceptable for humans.
 4. The guidance contained in this section relating to vehicle contamination refers to the combination of loose-plus-fixed surface contamination, per Table 3 of FEMA-REP-22. Any vehicle or equipment with contamination levels in excess of Tables X-C and X-D shall be decontaminated at a Monitoring / Decontamination Station.
 - a. An area at the station shall be roped off for decontaminating vehicles or equipment, using material from equipment decontamination kits.
 - b. Emergency vehicles and equipment that are not immediately necessary for public safety and cannot be easily decontaminated below 300 cpm above background should be impounded for further evaluation. For detailed surveys and decontamination, and making a determination between loose surface and fixed contamination, see FEMA REP-22 for further guidance.
 - c. Emergency vehicles and equipment required to be back in service should be appropriately decontaminated.
 - i. Areas of fixed contamination on the interior of the vehicle should be covered in plastic if in a location likely to come in contact with the occupants (e.g. seats, steering wheel, door handles, and arm rests).
 - ii. Radiation dose rate levels shall be conspicuously posted inside the vehicle.
 - iii. The FMT Coordinator shall be informed of all fixed contamination involving FMT vehicles.
 5. Radioactive wastes shall be collected and bagged at each monitoring/ decontamination station.
 6. ODH-BRP and OEPA shall jointly determine a means for the disposal of waste generated by the offsite radioactive decontamination process.
 7. The ODH-BRP, shall provide guidance for the removal of waste.
 8. Water from decontamination of vehicles and belongings may be directed to any existing approved drain system.
 9. For more detailed information, refer to the individual county plans and procedures.
-

Potassium Iodide (KI)

Introduction

KI is an effective supplemental means for minimizing radioiodine exposure to the thyroid; it does not provide protection from any other radioisotope. Evacuation should be the primary means of minimizing exposure.

KI is a stable compound of iodine in the form of a salt. KI is useful for radiological emergency response; as it can be taken orally to saturate the thyroid gland with non-radioactive iodine. It blocks the gland's ability to absorb radioactive iodine released following a nuclear reactor accident.

Potassium Iodide

In a nuclear power plant accident that results in a release of radioactive material, individuals within the 10-mile EPZ may be exposed to an airborne plume containing radioiodine (and other isotopes).

1. The procurement of KI is under the NRC's KI distribution program.
2. The ODH-BRP recommends:
 - a. That evacuation remains the primary protective action for a nuclear power reactor accident involving a loss of containment and a release of radioactive material to the environment.
 - b. The use of sheltering should be considered in lieu of evacuation for a controlled release of short duration (puff release), where the area cannot be evacuated before the plume arrives, or when conditions make evacuation hazardous or extremely difficult based on an determination made by local governments (see NUREG-0654, FEMA-REP-1, Rev.1 Supp. 3).
3. The following are considered when making the decision to recommend KI:
 - a. Confirmed release,
 - b. Actual or projected child thyroid dose of 5 Rem,
 - c. Confirmed fuel clad damage, or,
 - d. Imminent release.
4. Issuance of KI PARs:
 - a. KI may be recommended on the basis of:
 - i. One of the factors specified in 3 above or,
 - ii. Plant conditions that indicate potential further degradation and/or release.

Continued on next page

Potassium Iodide (KI), Continued

Potassium Iodide, continued

- b. KI may not be warranted if it is clear that the current conditions or plant status is the result of a hostile action event. Careful evaluation of plant systems and local conditions should guide KI issuance in a hostile action event.
 5. The recommendation for KI administration is for all categories of individuals in the affected sub-areas and will be in accordance with U.S. FDA approved-dosage guidance provided by the manufacturer.
 6. The choice of the individual to take KI is voluntary.
-

Effectiveness

1. A delay in taking KI reduces or eliminates its effectiveness in blocking the uptake of radioactive iodine by the thyroid. This increases the radiation dose to the thyroid, which may increase the risk of thyroid cancer.
 2. KI is about 95% effective in blocking radioiodine deposition in the thyroid if taken several hours before, during, or immediately after inhalation or ingestion.
 - a. The effectiveness of KI drops to about 50% when taken about 4 hours after exposure.
 - b. After about eight hours from exposure, the ability to block radioiodine is essentially nonexistent.
 3. KI is only effective against radioiodine and provides no protection from the other inhaled or ingested mixed fission products that are also released during a nuclear power plant accident.
 4. KI provides no protection against the external radiation exposure from an airborne release of radioactive material, or from deposited radioactive material. Prolonged external radiation exposure can cause serious health consequences.
 5. Evacuation is the primary protection in the event of a release of radioactive material to the environment.
 - a. Sheltering may be an option based on short releases or other conditions making evacuation hazardous such as adverse weather conditions.
 - b. The public should not delay evacuation or leave shelter in order to obtain KI.
 - c. KI only protects against exposure to radioactive iodine.
 - d. By leaving shelter to seek KI, the public risks unnecessary exposure to radionuclides other than radioactive iodine that may pose a greater health risk.
-

Continued on next page

Potassium Iodide (KI), Continued

Sensitivity

1. The administration of KI is generally safe for most adults and children if taken in appropriate doses for only a few days. Potential side effects of KI are small; however, persons with known iodine-sensitive conditions should not take KI. The guidance from the U.S. FDA indicates that iodine-sensitive conditions include dermatitis associated with complications of celiac disease (dermatitis herpetiformis), Graves' disease, enlargement of the thyroid (multinodular goiter), auto-immune thyroiditis (which causes low thyroid reserve), and inflammation of the blood vessels due to lack of immune response mechanism in the blood (hypocomplementemic vasculitis).
 2. The FDA has determined that pregnant or nursing women should be given KI, but should avoid repeat dosing.
 3. The FDA has concluded that the benefits of KI outweigh the risks to babies but that they should be medically monitored for transient hypothyroidism. Without immediate treatment, transient hypothyroidism may cause mental retardation.
 4. The FDA has determined that KI in breast milk can pose a risk of hypothyroidism in nursing infants; nursing babies should be medically monitored for transient hypothyroidism.
-

Affected Populations

Populations of concern include full-time residents, part-time residents, transients, persons with disabilities and access/functional needs, emergency workers, and school children.

1. Precautionary relocation in the 10-mile EPZ of school children is recommended by each county at the declaration of a Site Area Emergency.
 2. KI is stored onsite at institutions (e.g., hospitals and nursing homes) where the residents may be unable to evacuate.
-

Distribution and Administration of KI

Administration to Public

1. Members of the general public who are capable of evacuation must not delay evacuation in order to locate KI. Similarly, if the public has been instructed to shelter in place, they should not leave shelter in order to obtain KI. KI protects only against exposure to radioactive iodine. By delaying evacuation or leaving shelter to seek KI, the public risks unnecessary exposure to radionuclides other than radioactive iodine that may pose a greater health risk.
2. ODH-BRP will make recommendations to local authorities, after approval of the SEOC Executive Group, through a Protective Action Recommendation (PAR) to alert the general public within the 10-mile EPZ to begin taking KI based on conditions outlined in this chapter. The decision to take KI tablets by an individual is voluntary.
3. KI does not have to be administered by or in the presence of medical workers. Parents or guardians who accompany their children will personally administer the KI to their children. Adults will administer the KI to themselves.
4. Local plans and procedures address administration of KI if a nuclear power plant accident occurs during school hours where parents or guardians are not expected to be present at the time KI should be taken. The local plan should allow administration of KI by school or day-care officials, in accordance with the guidance provided by the KI tablet manufacturer. Exceptions should be allowed for parents, or guardians, who have an "opt out" form filed beforehand with the local school.

Administration to Institutionalized Persons & Emergency Workers

Institutionalized persons (e.g., incarcerated, nursing home residents) and emergency workers who are either working inside of evacuated sub-areas of the 10-mile EPZ will be advised to take KI in accordance with FDA approved-dosage guidance provided by the manufacturer. This recommendation for KI administration is for all categories of individuals (i.e., general public, emergency worker and institutionalized) in the sub-areas that are recommended to evacuate or shelter.

KI Dosages

1. KI dosage recommendations are adopted from the FDA approved guidance.
2. To minimize the risk of potential side effects, only the recommended dosage should be taken.
 - a. One KI dose protects against thyroid uptake of radioiodine for about 24 hours.

Continued on next page

Distribution and Administration of KI, Continued

KI Dosages, continued

- b. Taking more than a single dose at any one time or taking doses more than two days after exposure has ended increases the risk of side effects without providing additional benefit.
3. If circumstances prevent an individual from evacuating and he/she is exposed to the airborne radioactive plume, ODH-BRP recommends that the appropriate KI dose be taken once each day for the duration of the radioactive plume exposure period.
4. If at all possible, the first dose should be taken prior to the plume exposure or soon after the initial exposure and should continue each day until exposure to the radioactive plume ends.
5. The KI available from the NRC is manufactured in a tablet size of 65 milligrams (mg). ODH-BRP recommends following the manufacturer's guidance on the daily dosage for the public.

Population	KI dose (mg)	# of 65 mg tablets
Adults over 18 yrs and Pregnant or breast feeding women	130	2
Adolescents over 12 through 18 yrs and Children over 3 through 12 yrs	65	1
Over 1 month through 3 yrs	32	1/2
Birth through 1 month	16	1/4

6. The rationale behind the lower dosages in the FDA guidance is not that the current recommendations are unsafe; rather, the lower dosages represent the "minimal effective dosage" that would protect individuals in their respective age groups.
7. Individuals taking KI tablets are advised to follow the current manufacturer's guidance that accompanies the tablets.
 - a. The FDA considers this dosage to be safe.
 - b. To minimize confusion between the different FDA KI-dosage guidance, ODH-BRP recommends that people taking KI follow the information the manufacturer provides (KI package insert) with the tablets.

Continued on next page

Distribution and Administration of KI, Continued

Procurement, Distribution, and Storage

1. ODH-BRP will coordinate procurement activities.
2. The quantity of pills needed for the general public is derived from county plans for 10-mile EPZ populations (permanent residents, transients, and local employees) and recent federal census data.
3. ODH-BRP coordinates with the NRC, FEMA, Ohio EMA, affected county EMAs, and local health departments to ensure an adequate supply of KI is available to provide a 2-day dosage to the entire general population of each of the three 10-mile EPZs in Ohio.
4. ODH-BRP recommends stockpiling supplies of KI at designated areas in accordance with county plans.
5. ODH-BRP maintains a small cache of KI for use if all other avenues of procurement have been exhausted.
6. However, after an emergency alert notification is received, ODH-BRP recommends KI be made available only at designated facilities outside of the 10-mile EPZ, such as Monitoring / Decontamination Centers for evacuees, and on a priority basis to people contaminated by the plume, children, and pregnant women.
7. Counties should consider providing KI to individuals demonstrating exposure to the radioactive plume upon entrance to a Monitoring / Decontamination Center.
8. Storage of KI shall be in accordance with the package insert provided.
9. Shelf life extensions will be coordinated through the NRC with the FDA. Extensions must be granted by the FDA.
10. Disposal will be in accordance with state and local health department drug disposal regulations or policies.

Pre-Accident Distribution

1. ODH will work with local health departments to develop effective distribution plans to the public including provisions for distribution of KI to people with disabilities and access/functional needs.
2. People who receive KI should be provided with copies of the KI manufacturer package insert or other similarly prepared information.
3. KI will be provided to the general public within the 10-mile EPZ by the individual county health departments in accordance with a distribution plan developed by the individual county EMAs and local health departments. This may include the pre-distribution of KI to the general public.

Continued on next page

Distribution and Administration of KI, Continued

Pre-Accident Distribution,
continued

4. While KI is pre-distributed to the general public, KI for the general public and transient population will also be available at reception and care centers during an emergency.
-

Emergency Workers

1. Emergency workers will be provided KI prior to their mission.
 2. Emergency workers will be provided a form to record ingestion of KI.
 3. Procedures will identify how recommendations to take KI will be communicated to emergency workers and institutionalized persons.
-

Transient Distribution

The criteria to take KI for transient populations within the 10-mile EPZ are the same as the general public. KI made available for use by transient populations is stockpiled and not pre-distributed per local plans. However, in the case of companies, organizations, recreational facilities, or similar entities that are located within the 10-mile EPZ that have a known population, voluntary pre-distribution of KI may be utilized.

While KI is pre-distributed to the general public, KI for the general public and transient population will also be available at reception and care centers during an emergency.

For More Information

Further KI information may be obtained through the Ohio Department of Health Potassium Iodide (KI) Directive.

Table X-A: PAG Manual 2013: Table 2-2 Response Worker Guidelines²⁴

Guideline	Activity	Condition
5 rem	All occupational exposures	All reasonably achievable actions have been taken to minimize dose.
10 rem ²⁵	Protective valuable property necessary for public welfare (e.g., power plant)	Exceeding 5 rem unavoidable and all appropriate actions taken to reduce dose. Monitoring available to project or measure dose.
25 rem ²⁶	Lifesaving or protection of large populations	Exceeding 5 rem unavoidable and all appropriate actions taken to reduce dose. Monitoring available to project or measure dose.

²⁴ The dose to emergency workers is treated as a once-in-a-lifetime exposure and is not added to occupational radiation exposure accumulated under non-emergency conditions.

²⁵ For potential doses > 5 rem, medical monitoring programs should be considered.

²⁶ In the case of a very large incident, such as an IND, incident commanders may need to consider raising the property and lifesaving response worker guidelines to prevent further loss of life and massive spread of destruction.

Table X-B: Emergency Worker Dosimeter Limit Protective Action Guidelines (PAG)

Emergency Worker¹ Dose Limits during the Emergency Phase²			
Activity	Dose Limit (TEDE)³	Dosimeter Limit⁴	Condition
Field Teams	5 rem	1 R	
Outside EPZ	5 rem	5 R	
Protecting valuable property (Special Facilities)	10 rem	2 R	Lower dose not practicable
Lifesaving or protection of large populations (Inside EPZ)	25 rem	5 R	Lower dose not practicable
Lifesaving or protection of large populations	> 25 rem		Only on a voluntary basis to persons fully aware of the risks involved
¹ Emergency Workers are limited to non-pregnant adults performing emergency services. ² The Emergency Phase ends when the release has terminated, the public is evacuated, and valuable property has been protected. ³ Total Effective Dose Equivalent (TEDE) is the sum of external exposures and internal doses, accumulated over the duration of the emergency phase, and treated as a once-in-a-lifetime exposure. Eye lens dose should be limited to three times and skin/extremities dose limited to ten times the listed values. ⁴ Dosimeters record only the external exposure component of TEDE. To reasonably ensure that the TEDE limits are not exceeded due to internal doses from inhalation, ingestion, injection, and absorption, a reduction factor may be applied. These values may be revised as more information, particularly the isotopes involved, becomes available during the incident.			
Administrative Instructions during the Emergency Phase			
<ol style="list-style-type: none"> 1. Direct-Reading Dosimeters (DRDs) and Electronic Personal Dosimeters (EPDs) are to be read at intervals as prescribed by the Ohio Department of Health (ODH), but no less frequently than every 30 minutes. 2. Exposures, in IR increments, are to be reported by the worker to the organization's designated Safety Officer (SO) (or Dosimeter Coordinator (DC)). Organization SOs (or DCs) report exposures to the County Radiological Officer. County Radiological Officers are to forward reported exposures to ODH in Columbus. State organizations may bypass the County Radiological Officer and report through their chain-of-command. 3. Personnel should not remain in areas exceeding 1 R/hr unless performing lifesaving operations. 4. Emergency Workers, who are willing to voluntarily exceed 25 rem TEDE during lifesaving operations, must have their proposed activities evaluated by ODH to compare the risk versus the benefit. 			
Worker¹ Dose Limits during the Intermediate Phase²			
Activity	Dose Limit (TEDE)³	Dosimeter Limit⁴	Condition
All activities	5 rem	5 R	
¹ Workers are limited to non-pregnant adults performing essential services. ² The Intermediate Phase ends when reliable environmental measurements have become available and additional protective actions are completed. ³ Total Effective Dose Equivalent (TEDE) is the sum of external exposures and internal doses, accumulated over the duration of one year. Intermediate Phase doses are treated separately from any doses accumulated during the Emergency Phase. Eye lens dose should be limited to three (3) times and skin/extremities dose limited to ten (10) times the listed value. ⁴ Dosimeters record only the external exposure component of TEDE. To reasonably ensure that the TEDE limits are not exceeded due to internal doses from inhalation, ingestion, injection, and absorption, a reduction factor may be applied. These values may be revised as more information, particularly the isotopes involved, becomes available during the incident.			
Administrative Instructions during the Intermediate Phase			
<ol style="list-style-type: none"> 1. Direct-Reading Dosimeters (DRDs) and Electronic Personal Dosimeters (EPDs) are to be read at intervals as prescribed by the Ohio Department of Health (ODH), but not less than every 30 minutes. 2. Personnel should not enter areas exceeding 1 R/hr. 			

Table X-C: Guidelines for Contamination Screening²⁷

SUBJECT	INSTRUMENT	LIMIT	ACTION
Maximum background reading for monitoring areas	Portal Monitor	per mfg	As long as no high background alarm active
	CDV-700	300 cpm	1 meter above ground, closed window (gamma only)
Personnel initial monitoring	Portal Monitor	1 μ Ci	Summed detectors
	CDV-700RP ²⁸	300 cpm	Above background, 1-3 inches above subject, less than 6 inches per second
	CDV-700 ²⁹	300 cpm	Above background, 1/4-1/2 inches above subject, less than 4 inches per second
Hospital referral ³⁰	CDV-700RP	3000 cpm	Initial reading in designated areas ³¹ above this threshold, decontaminate and refer for uptake analysis
	CDV-700RP or CDV-700	300 cpm	If reading above this threshold following two decontamination attempts, refer to medical facility
Vehicle/equipment/possession monitoring	Portal Monitor	1 μ Ci	Summed detectors
	CDV-700RP ³²	300 cpm	Above background, 1 inch above surface, less than 12 inches per second
	CDV-700 ³³	300 cpm	Above background, side window open, 1 inch above surface, less than 6 inches per second
Public vehicle/equipment/possession post-decontamination monitoring	CDV-700RP or CDV-700	300 cpm	Impound
Emergency vehicle/equipment/possession post-decontamination monitoring	CDV-700RP or CDV-700	300 cpm	Cover with plastic, mark, release for service
	CDV-700RP or CDV-700	30,000 cpm	Impound if contaminated surface in contact with personnel
Decontamination areas	CDV-700RP or CDV-700	30,000 cpm	Decontaminate to reduce count rate, otherwise secure area, post warning, and relocate to another area

²⁷ For detailed surveys and decontamination, and making a determination between loose surface and fixed contamination, see FEMA REP-22 October 2002 for further guidance. The counts per minute equivalents were determined using FEMA REP-22 guidance, and calibration data for specific CDV instruments, where measuring beta-gamma contamination gives an equivalent 0.1 mR/hr = 300 cpm. Where qualitative measurements are needed, such as measuring maximum background levels, or determining internal contamination, such as Thyroid measurements, the more restrictive calibration data for the specific instruments are used for equivalents.

²⁸ Survey may be performed with an equivalent instrument provided that the probe is a thin window GM tube (pancake probe) and the instrument can provide a reading in counts per minute. Examples: Ludlum model 3 with a 44-9 probe, Eberline E-140 with a HP-210 probe.

²⁹ A CDV-700 may be used for contamination surveys. Due to the decreased sensitivity, a slower rate of movement, as well as holding the probe closer to the surface is required.

³⁰ Thyroid monitoring for emergency workers, per FEMA REP-2, is addressed by the requirement that all emergency workers exposed to the plume are required to undergo bioassay following their final mission and all emergency workers are provided with KI prior to their first mission. Thyroid monitoring for the public is addressed by the requirement that if their initial survey in the head, face, neck, and chest area are greater than 3000 cpm above background, they are decontaminated and sent to a medical facility for bioassay. **NOTE:** Medical emergencies take precedence over decontamination.

³¹ Designated areas are the head, face, chest, and neck due to the likelihood of ingestion if contamination is found in those areas.

³² Survey may be performed with an equivalent instrument provided that the probe is a thin window GM tube (pancake probe) and the instrument can provide a reading in counts per minute. Examples: Ludlum model 3 with a 44-9 probe, Eberline E-140 with a HP-210 probe.

³³ A CDV-700 may be used for contamination surveys. Due to the decreased sensitivity, a slower rate of movement, as well as holding the probe closer to the surface is required.

Table X-D: PAG Manual 2013: Table 2-6 Recommended Surface Contamination Screening Levels for People and Objects at Monitoring Stations in Low Background Radiation Areas (<0.1 mR/hr Gamma Exposure Rate)

Condition	Appropriate Detection Instrument Reading	Recommended Action
Before decontamination	<2x existing background	Unconditional release
	>2x existing background	Decontaminate
After simple decontamination effort	<2x existing background	Unconditional release
	>2x existing background	Full decontamination
After full decontamination effort	<2x existing background	Unconditional release
	>2x existing background	Continue to decontaminate people. Release animals and equipment.
After additional full decontamination effort	<2x existing background	Unconditional full release
	>2x existing background	Send people for special evaluation. Release animals and equipment.

Table X-E: PAG Manual 2013: Table 3-1 Protective Action Guides for Exposure to Deposited Radioactivity during the Intermediate Phase of a Radiological Incident

Protective Action Recommendation	PAG (Projected Dose) ³⁴	Comments
Relocate the general population ³⁵	≥ 2 rem in the first year; 0.5 rem in the second and subsequent years	Projected dose over one year
Apply simple dose reduction techniques ³⁶	< 2 rem	These protective actions should be taken to reduce doses to as low as practicable levels

³⁴ Projected dose refers to the dose that would be received in the absence of shielding from structures or the application of dose reduction techniques. These PAGs may not provide adequate protection from some long-lived radionuclides.

³⁵ People previously evacuated from areas outside the relocation zone defined by the PAG may return to occupy their residences. Cases involving relocation of people at high risk from such action (e.g., patients under intensive care) may be evaluated individually.

³⁶ Simple dose reduction techniques include scrubbing or flushing hard surfaces, minor removal of soil from spots where radioactive materials have concentrated and spending more time than usual indoors or in other low exposure rate areas.

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XI. Medical & Public Health Support

NUREG-0654 FEMA-REP-1 Criteria L

Overview Arrangements are made for medical services for contaminated, injured individuals.

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General Information

**County
Procedures**

See the individual county plans and procedures for:

1. Primary and backup hospitals and ambulance services Letters of Agreement.
 2. Primary and backup hospital and ambulance services procedures.
-

**Bioassay
Requirement**

1. If a person's initial survey in the head, face, neck, and chest area is greater than 3000 cpm above background, they are decontaminated and sent to a medical facility for a bioassay.

NOTE: Medical emergencies take precedence over decontamination.

2. Per FEMA REP-2, it is a requirement that all emergency workers exposed to the plume to undergo bioassay following their final mission.
-

Table XI-A: Medical Facilities Capable of Treating Contaminated, Injured Individuals (BVPS Planning Area)

Hospital	Address	Capacity	Decon Rate
Belmont County			
Belmont Community Hospital	47th and Harrison Streets Bellaire, OH 43906	99 beds	1-3 / hour
Barnesville Hospital Association	639 W. Main St. P.O. Box 309 Barnesville, OH 43713	25 beds	2-3 / hour
East Ohio Regional Hospital	90 N. Fourth St. Martins Ferry, OH 43935	88 beds	2-4 / hour
Columbiana County			
East Liverpool City Hospital	425 W. Fifth St. East Liverpool, OH 43920	57 beds	3-5 / hour
Salem Community Hospital ³⁷	1995 E. State St. Salem, OH 44460	88 beds	3-5 / hour
Harrison County			
Harrison Community	951 E. Market St. Cadiz, OH 43907	25 beds	3-4 / hour
Jefferson County			
Trinity Health Medical Center (West)	4000 Johnson Road Steubenville, OH 43952	12 beds	3-5 / hour
Mahoning County			
Akron Children's Hospital Mahoning Valley	6505 Market St. Boardman, OH 44512	50 beds	
Northside Medical Center	500 Gypsy Lane Youngstown, OH 44504	188 beds	
St. Elizabeth Boardman Health Center	8401 Market St. Boardman, OH 44512	134 beds	10 / hour
St. Elizabeth Health Center	1044 Belmont Avenue Youngstown, OH 44504	610 beds	10 / hour
Portage County			
Robinson Memorial Hospital	6847 N. Chestnut St. Ravenna, OH 44266	117 beds	Up to 24/hr

Continued on next page

³⁷ Primary MS-1 hospital.

Table XI-A: Medical Facilities Capable of Treating Contaminated, Injured Individuals (BVPS Planning Area),
Continued

Hospital	Address	Capacity	Decon Rate
Stark County			
Affinity Medical Center	875 Eighth St. NE Massillon, OH 44646	120 beds	
Alliance Community Hospital	200 E. State St. Alliance, OH 44601	116 beds	
Aultman Hospital	2600 Sixth St. SW Canton, OH 44710	808 beds	
Mercy Medical Center	1320 Mercy Dr. NW Canton, OH 44708	476 beds	
Trumbull County			
St. Joseph's Health Center	667 Eastland Avenue Warren, OH 44484	219 beds	10/hour
Trumbull Memorial Hospital	1350 E. Market St. Warren, OH 44482	167 beds	
Tuscarawas County			
Twin City Hospital	819 N. First St. Dennison, OH 44621	25 beds	
Union Hospital	659 Boulevard Dover, OH 44622	158 beds	

Table XI-B: Medical Facilities Capable of Treating Contaminated, Injured Individuals (DBNPS Planning Area)

Hospital	Address	Capacity	Decon Rate
Crawford County			
Bucyrus Community Hospital	629 N. Sandusky Ave. Bucyrus, OH 44820	25 beds	24 / hour
Galion Community Hospital	269 Portland Way S Galion, OH 44833	25 beds	24 / hour
Erie County			
Firelands Regional Medical Center	1111 Hayes Ave Sandusky, OH 44870	236 beds	12 / hour
Fulton County			
Fulton County Health Center	725 S. Shoop Ave. Wauseon, OH 43567	106 beds	3 / hour
Hancock County			
Blanchard Valley Hospital	1900 South Main Street Findlay, OH 45840	150 beds	15-25 / hour
Huron County			
Fisher-Titus Medical Center	272 Benedict Avenue Norwalk, OH 44857	98 beds	3 / hour
Mercy Willard Hospital	1100 Neal Zick Road Willard, OH 44890	25 beds	3 / hour
Lorain County			
UH Elyria Medical Center	630 E. River St. Elyria, OH 44035	285 beds	12 / hour (ambulatory) 4 / hour (non-ambulatory) ³⁸
Mercy Allen Hospital ³⁹	200 W. Lorain St. Oberlin, OH 44074	25 beds	15 / hour (ambulatory) 4 / hour (non-ambulatory) ³⁸

Continued on next page

³⁸ Cannot sustain for 24 hours.

³⁹ Primary MS-1 hospital.

Table XI-B: Medical Facilities Capable of Treating Contaminated, Injured Individuals (DBNPS Planning Area),
Continued

Hospital	Address	Capacity	Decon Rate
Lorain County			
Mercy Regional Medical Center	3700 Kolbe Rd. Lorain, OH 44053	251 beds	8 / hour (ambulatory) 2 / hour (non-ambulatory)
Lucas County			
Mercy St. Charles Hospital ⁴⁰	2600 Navarre Avenue Oregon, OH 43616	115 beds	12-15 / hour
Mercy St. Anne Hospital	3404 Sylvania Avenue Toledo, OH 43623	96 beds	40 / hour
Mercy St. Vincent Medical Center	2213 Cherry Street Toledo, OH 43608	445 beds	40 / hour
ProMedica Bay Park Hospital	2801 Bay Park Drive Oregon, OH 43616	77 beds	8 / hour
ProMedica Flower Hospital	5200 Harroun Road Sylvania, OH 43560	220 beds	6-20 / hour
ProMedica St. Luke's Hospital	5901 Monclova Road Maumee, OH 43537	175 beds	2-24 / hour
ProMedica Toledo Hospital & Toledo Children's Hospital	2142 North Cove Boulevard Toledo, OH 43606	669 beds	2-20 / hour (construction issues)
University of Toledo Medical Center	3000 Arlington Avenue Toledo, OH 43614	225 beds	30 / hour
Ottawa County			
Magruder Memorial Hospital ⁴¹	615 South Fulton Street Port Clinton, OH 43452	24 beds	2 / hour
Richland County			
Medcentral Mansfield Hospital	335 Glassner Ave. Mansfield, OH 44903	284 beds	20/hour
Medcentral Shelby Hospital	199 W. Main St. Mansfield, OH 44875	25 beds	5/hour

Continued on next page

⁴⁰ Primary MS-1 hospital for Lucas County.

⁴¹ Primary MS-1 hospital for Ottawa County.

Table XI-B: Medical Facilities Capable of Treating Contaminated, Injured Individuals (DBNPS Planning Area),
Continued

Hospital	Address	Capacity	Decon Rate
Sandusky County			
Bellevue Hospital	1400 W. Main St. Bellevue, OH 44811	50 beds	2 / hour
ProMedica Memorial Hospital ⁴²	715 S. Taft Ave. Fremont, OH 43420	194 beds	10 / hour
Seneca County			
ProMedica Fostoria Community Hospital	501 Van Buren St. Fostoria, OH 44830	25 beds	2-4 / hour
Wyandot County			
Wyandot Memorial Hospital	855 N Sandusky Ave. Upper Sandusky, OH 43351	25 beds	

⁴² Secondary MS-1 hospital for Lucas and Ottawa counties.

Table XI-C: Medical Facilities Capable of Treating Contaminated, Injured Individuals (PNPP Planning Area)

Hospital	Address	Capacity	Decon Rate
Lake County			
Tri Point Medical Center ⁴³	7950 Auburn Rd. Concord, OH 44077	365 beds	3 / hour (ambulatory) 4 / hour (non-ambulatory)
West Medical Center ⁴⁴	36000 Euclid Ave. Willoughby, OH 44094	360 beds	3 / hour (ambulatory) 4 / hour (non-ambulatory)
Ashtabula County			
Ashtabula County Medical Center	2420 Lake Ave. Ashtabula, OH 44004	259 beds	10 / hour (ambulatory) 4 / hour (non-ambulatory) ⁴⁵
UH Conneaut Medical Center	158 W. Main Rd. Conneaut, OH 44030	25 beds	15 / hour (ambulatory) 4 / hour (non-ambulatory) ⁴⁵
UH Geneva Medical Center	870 W. Main St. Geneva, OH 44041	25 beds	12 / hour (ambulatory) 3 / hour (non-ambulatory) ⁴⁵
Geauga County			
UH Geauga Medical Center	13207 Ravenna Rd. Chardon, OH 44024	129 beds	15 / hour (ambulatory) 4 / hour (non-ambulatory) ⁴⁵
Cuyahoga County			
Cleveland Clinic Foundation	9500 Euclid Ave. Cleveland OH 44112	1220 beds	3 / hour (ambulatory) 5 / hour (non-ambulatory)
Euclid Hospital	18901 Lake Shore Blvd. Euclid, OH 44119	232 beds	6 / hour (ambulatory) 3 / hour (non-ambulatory)

Continued on next page

⁴³ Primary MS-1 hospital.

⁴⁴ Secondary MS-1 hospital.

⁴⁵ Cannot sustain for 24 hours.

Table XI-C: Medical Facilities Capable of Treating Contaminated, Injured Individuals (PNPP Planning Area),
Continued

Hospital	Address	Capacity	Decon Rate
Cuyahoga County			
Fairview Hospital	18101 Lorain Ave. Cleveland, OH 44111	401 beds	12 / hour (ambulatory) 3 / hour (non-ambulatory) ⁴⁶
Hillcrest Hospital	6780 Mayfield Rd. Mayfield Heights, OH 44124	489 beds	6 / hour (ambulatory) 5 / hour (non-ambulatory) ⁴⁶
Lakewood Hospital	14519 Detroit Ave. Lakewood, OH 44107	255 beds	2-4 / hour (ambulatory) 4 / hour (non-ambulatory) ⁴⁶
Lutheran Hospital	1730 W. 25 th St. Cleveland, OH 44113	172 beds	2-4 / hour (ambulatory) 4 / hour (non-ambulatory) ⁴⁶
Marymount Hospital	12300 McCracken Rd. Garfield Heights, OH 44125	248 beds	3-4 / hour (ambulatory) 4 / hour (non-ambulatory) ⁴⁶
Metro Health Medical Center	2500 Metrohealth Dr. Cleveland, OH 44109	860 beds	7-10 / hour (ambulatory) 7 / hour (non-ambulatory) ⁴⁶
UH Parma Medical Center	7007 Powers Blvd. Parma, OH 44129	287 beds	30 / hour (ambulatory) 4 / hour (non-ambulatory) ⁴⁶
South Pointe Hospital	20000 Harvard Rd. Warrensville Heights, OH 44122	213 beds	2-4 / hour (ambulatory) 4 / hour (non-ambulatory) ⁴⁶
Southwest General Health Center	18697 Bagley Rd. Middleburg Heights, OH 44130	316 beds	6 / hour (ambulatory) 2 / hour (non-ambulatory) ⁴⁶

Continued on next page

⁴⁶ Cannot sustain for 24 hours.

Table XI-C: Medical Facilities Capable of Treating Contaminated, Injured Individuals (PNPP Planning Area),
Continued

Hospital	Address	Capacity	Decon Rate
Cuyahoga County			
St. John Medical Center	29000 Center Ridge Rd. Westlake, OH 44145	189 beds	30 / hour (ambulatory) 4 / hour (non-ambulatory) ⁴⁷
St. Vincent Charity Medical Center	2351 E. 22 nd St. Cleveland, OH 44115	198 beds	18 / hour (ambulatory) 4 / hour (non-ambulatory) ⁴⁷
UH Ahuja Medical Center	3999 Richmond Rd. Beachwood, OH 44122	144 beds	2 / hour (ambulatory) 4 / hour (non-ambulatory) ⁴⁷
UH Bedford Medical Center	44 Blaine Ave. Bedford, OH 44146	77 beds	10 / hour (ambulatory) 4 / hour (non-ambulatory) ⁴⁷
UH Case Medical Center and UH Rainbow Babies & Children's Hospital	11100 Euclid Ave. Cleveland, OH 44106	800 beds	30-60 / hour (ambulatory) 5 / hour (non-ambulatory) ⁴⁷
UH Richmond Medical Center	27100 Chardon Rd. Richmond Heights, OH 44143	80 beds	6 / hour (ambulatory) 4 / hour (non-ambulatory) ⁴⁷
Lorain County			
UH Elyria Medical Center	630 E. River St. Elyria, OH 44035	285 beds	12 / hour (ambulatory) 4 / hour (non-ambulatory) ⁴⁷
Mercy Allen Hospital	200 W. Lorain St Oberlin, OH 44074	25 beds	15 / hour (ambulatory) 4 / hour (non-ambulatory) ⁴⁷
Mercy Regional Medical Center	3700 Kolbe Rd. Lorain, OH 44053	251 beds	8 / hour (ambulatory) 2 / hour (non-ambulatory)

Continued on next page

⁴⁷ Cannot sustain for 24 hours.

Table XI-C: Medical Facilities Capable of Treating Contaminated, Injured Individuals (PNPP Planning Area),
Continued

Hospital	Address	Capacity	Decon Rate
Mahoning County			
Akron Children's Hospital Mahoning Valley	6505 Market St. Boardman, OH 44512	50 beds	
Northside Medical Center	500 Gypsy Lane Youngstown, OH 44504	188 beds	
St Elizabeth Health Center	1044 Belmont Ave. Youngstown, OH 44504	610 beds	10/hour
St. Elizabeth Boardman Health Center	8401 Market St. Boardman, OH 44512	134 beds	10/hour
Medina County			
Lodi Community Hospital	225 Elyria St. Lodi, OH 44254	25 beds	
Medina Hospital	1000 E Washington St. Medina, OH 44256	180 beds	
Portage County			
Robinson Memorial Hospital	6847 N Chestnut St. Ravenna, OH 44266	117 beds	Up to 24/hr
Summit County			
Akron Children's Hospital	1 Perkins Square Akron, OH 44308	241 beds	
Akron City Hospital	525 E. Market St. Akron, OH 44304	463 beds	
Akron General Medical Center	400 Wabash Ave. Akron, OH 44307	500 beds	
Barberton Hospital	155 Fifth St. NE Barberton, OH 44203	185 beds	5-8/hour
St. Thomas Hospital	444 N. Main St. Akron, OH 44310	81 beds	
Western Reserve Hospital	1900 23rd St. Cuyahoga Falls, OH 44223	50 beds	3-6/hour

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Table XI-C: Medical Facilities Capable of Treating Contaminated, Injured Individuals (PNPP Planning Area),
Continued

Hospital	Address	Capacity	Decon Rate
Trumbull County			
St Joseph Health Center	667 Eastland Ave. SE Warren, OH 4484	219 beds	10/hour
Trumbull Memorial Hospital	1350 E Market St. Warren, OH 44482	167 beds	

Table XI-D: Facilities with Whole Body Counting Capabilities for Individuals who are Potentially Contaminated

AGENCY/DEPARTMENT	RESPONSE TIME
REAC/TS Methodist Medical Center of Oak Ridge 990 Oak Ridge Turnpike Oak Ridge, TN 37831	12 Hours
Argonne National Laboratory 9700 South Cass Avenue Argonne, IL 60439	12 Hours

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XII. Recovery & Reentry Planning & Post-Accident Operations

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Overview

General plans for recovery and reentry are developed by State and local organizations.

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Ingestion Zone Recovery & Reentry Advisory Group (IZRRAG)

Overview

1. The Ingestion Zone Recovery and Reentry Advisory Group (IZRRAG) will form at the State of Ohio Emergency Operations Center (SEOC) at a point after the initial plant event and the late stages of the initial emergency phase. They will be briefed by the SEOC Radiological Assessment Branch.
 2. The group will be comprised of representatives from the following:
 - a. Ohio Department of Health (ODH) (IZRRAG Chair)
 - b. Ohio Department of Agriculture (ODA)
 - c. Ohio Emergency Management Agency (Ohio EMA)
 - d. Ohio Environmental Protection Agency (OEPA)
 - e. Ohio Department of Natural Resources (ODNR)
 3. The following agencies serve as support agencies for ODA in communicating with local level food producers and in determining bans of food products:
 - a. Ohio State University (OSU) Extension
 - b. Farm Service Agency (FSA - USDA)
 4. The commercial nuclear power plant utility liaison at the SEOC will advise the IZRRAG.
 5. During the emergency phase the IZRRAG will consolidate data pertaining to:
 - a. Initial contaminated area based on projected plume path and radiation levels.
 - b. Levels of radiation within, and bordering the initially defined areas, including potentially isolated hot spots.
 - c. Size of the population involved in evacuation and relocation.
 - d. Maintenance of access control points through continued isolation of the affected areas.
-

Reentry

Emergency Workers & Public

1. Initially, reentry to evacuated areas shall be restricted to those designated as emergency workers, as well as certain farmers, industrial workers, institutional workers, public service/utility workers, and others who apply and qualify for emergency worker entry authorization.
2. Local officials will prepare and implement procedures using IZRRAG dose guidelines for reentry by required personnel and monitor stay times of personnel who enter restricted areas.
3. Evacuated residents will not routinely be admitted. After the official declaration that recovery actions may commence, residents with proof of domicile or residence status may be allowed controlled, escorted reentry to recover valuable possessions, but all reentries will be controlled.
4. Local officials will prepare and implement procedures using IZRRAG allowable dose and entry authorization guidelines for reentry by public who are granted local authorization to reenter and recover important possessions. Local officials will also monitor stay times of public individuals who enter restricted areas.
5. People desiring to reenter a Restricted Zone (RZ) will be notified by county officials, through the media, to report to the Reentry Verification and Orientation Center (REVOC) or other specified location.
 - a. These orientation centers shall be established and operated by county and local agencies.
 - b. County and local authorities shall establish reentry verification and orientation procedures in coordination with state recommendations.
6. Dosimetry
 - a. Persons seeking reentry will be issued a DRD before allowed into the RZ.
 - b. When issued dosimetry, the person (public or emergency worker) will receive just in time (JIT) training on the use and reading of the DRD.
 - c. The person will take a final reading before surrendering the DRD to the emergency workers upon exit.
7. Monitoring and decontamination
 - a. When exiting the RZ, both emergency workers and the public will be monitored for contamination.
 - b. If a person is contaminated, then decontamination will be performed.

Continued on next page

Reentry, Continued

Reentry Responsibilities

1. IZZRAG will:
 - a. In coordination with local officials, establish conditions for temporary reentry and permanent return into restricted areas.
 - b. In coordination with local officials, establish reentry requirements.
 - c. Determine dose and entry authorization guidelines for any emergency worker or member of the public who needs to enter affected areas.
 2. Local officials will, with assistance from the state, as necessary, staff reentry control/access points for individuals accessing the restricted area.
-

Relocation

Ohio EMA

The Ohio EMA will coordinate with federal, state, local and voluntary organizations to assist local officials in determining the relocation and housing needs of the evacuated population.

1. The impact on the community:
 - a. Ohio EMA, with other state agency and federal assistance, will make a detailed analysis of the numbers of people, homes, farms, businesses, etc. impacted by the event and the evacuation.
 - b. This community impact will be necessary to request federal assistance, including the level of declaration made and financial assistance available as a result of the appropriate federal declaration.
2. Ohio EMA, with local official assistance, will determine the:
 - a. Short-term needs that can be met by state and local governments not already addressed by ANI.
 - b. Long-term needs that may be required, and what level of assistance may be available.
 - c. With federal assistance, will develop information centers to provide affected populations with the required information for assistance not already addressed by ANI.

IZRRAG

IZRRAG will:

1. Using sample analysis, determine the area to be considered the Restricted Zone (RZ). Communicate the RZ to the counties, along with a suggested buffer zone. Counties are then responsible for determining an RZ based on geo-political boundaries.
2. Using sample analysis, continue to monitor and revise RZ as necessary.
3. Assess and determine the methods to meet the needs of nuclear utility, emergency management, public, and insurance personnel.
4. Upon implementing relocation, in coordination with counties, shall consider:
 - a. The areas from which individuals should be relocated are determined on the basis of laboratory measurements of radionuclide mix in deposited materials and the calculated exposure rates corresponding to the relocation protective action guidelines of 2 rem TEDE for the first year, 100 rem DE skin beta for the first year, or 0.5 rem TEDE for the second and subsequent years.

Continued on next page

Relocation, Continued

IZRRAG,
continued

- b. Vacating and relocating people from contaminated areas to avoid exposure to deposited radioactive materials.
 - c. Making transportation and assistance available for restricted mobility and transportation-dependent people relocating from the RZ.
 - d. Identifying and advising evacuees who are not allowed to return to their homes of their status change (from evacuated to relocated).
 - e. Coordinating with social service organizations to develop instructions for people to be relocated and make the instructions available for issue.
 - f. Coordinating with Ohio Department of Job and Family Services and ARC and other appropriate agencies for demands on social service programs, such as food stamps, counseling, follow-up medical treatment, and extended lodging.
 - g. Coordinating with Ohio Department of Mental Health and Addiction Services for counseling support for psychological distress resulting from the emergency.
-

Return

Executive State Actions

If the state and counties determine it is feasible to return the population to previously evacuated areas, then the areas of importance/concern are:

1. The notification of county officials to facilitate the re-establishment of essential public services before the return of evacuees (e.g. water, power, police, fire, etc.).
2. New access control points must be established along boundaries of the redefined RZ.
3. The return area, if the size warrants, may be divided into subareas in order to return the population in stages to ensure more efficient use of public service resources and manpower.
4. The notification of the American Red Cross (ARC), and any other organization with responsibilities for the care of evacuees, in order to inform the people in their care of the return, and to make any special arrangements, as in the case of people with disabilities or access/functional needs (including those in hospitals).
5. The public will be informed of those areas suitable for return and any advisories in place through media releases provided by the JIC.
6. If the ingestion PAG is exceeded in an area and return is implemented, then return should be preceded by public announcement of instructions or restrictions, and should include as much precautionary information and procedures as possible and determined necessary (e.g., the washing of garden produce, etc.).
7. Recommendations for changing the definition of the RZ over time due to the decay of radioactivity, weathering and/or recovery efforts.
 - a. Recommendations will be made based on field and laboratory measurements of radiological ground deposition dose levels projected to lead to 2 rem TEDE for the first year, 100 rem DE skin beta for the first year, or 0.5 rem TEDE for the second and subsequent years.
 - b. The recommendations will be provided to the affected counties for their consideration. County officials, with assistance from state and federal agencies, will determine and implement appropriate actions for the population.

IZRRAG

IZRRAG will:

1. Using sample analysis, determine the area to be considered for public return.
 2. Provide instructions to the public to reduce any contamination that may remain (e.g., hose down the driveway, etc.).
-

Recovery

Executive State Actions

The Recovery Phase of the accident/event begins after:

1. The immediate emergency conditions on-site have stabilized.
2. Off-site release of radioactive material has ceased, and there is little or no potential for further unintentional off-site releases.
3. The off-site contamination is characterized, its extent determined, and the immediate consequences are assessed.
4. Immediate protective actions for public health and safety, and for property, have been accomplished.
5. An initial long-range monitoring plan has been developed in conjunction with the affected state and local governments and appropriate federal agencies. This initial long-range plan is necessary to ensure sufficient preparation is made to ensure the extent of the recovery effort is realized, that state, local and federal agencies develop a common goal, and that duplicated efforts are prevented.
6. Under the NRF, state and local governments are primarily responsible for planning the recovery of the affected area.
 - a. The term “recovery,” as used here, encompasses any action dedicated to the continued protection of the public and resumption of normal activities in the affected area.
 - b. Upon request, the federal government will assist state and local governments in developing and executing recovery plans.
 - c. Federal recovery planning generally will not take place until the initiating conditions of the incident have stabilized and immediate actions to protect public health, safety, and property are accomplished.

Ohio EMA

1. Ohio EMA will assist the federal agencies in start-up of the FRMAC, and assist with its long term operational needs. Ohio EMA will coordinate any FRMAC requests for assistance, information, and communications from state agencies, as needed.
 2. Continuing Public Information
 - a. Ohio EMA will develop and maintain an ongoing public information outreach effort.
 - b. Ohio EMA will continue to provide information about the ongoing recovery actions, activities, timetables to both the public and the media.
-

IZRRAG Responsibilities

IZRRAG

The IZRRAG will:

1. Establish recovery guidance in coordination with state and local officials to maximize restoration of affected areas (as closely as possible) to their pre-incident conditions.
 2. Focus on the issues and actions outlined in the section below.
 3. Work in cooperation and liaise with the Federal Advisory Team established per the NRF, Nuclear/Radiological Incident Annex (NUC-1).
 4. Develop and implement procedures to monitor and coordinate state, federal, local, and contiguous governments' protective actions and activities.
 5. Consider the financial impact of restrictions placed on the sale of commercial foodstuffs and the curtailment of wholesale and retail marketing in affected communities.
 6. Continue to monitor the spread of radioactive contamination by humans, animals, and resuspension. Recommendations and advisories will be made as necessary to prevent and/or control the spread of contamination, including controlling waterways and water runoff to prevent contaminating waterways outside the RZ.
-

Broad Recovery Issues

This includes assistance and resources needed to return impacted areas to habitability, and maximize the return of areas without great risk to the public. The IZRRAG will implement each of the following:

1. In coordination with local officials:
 - a. Establish locations of temporary, and then permanent boundaries to restricted areas that cannot be re-inhabited. The IZRRAG will recommend the location of these boundaries to local officials.
 - b. Establish criteria for security of restricted areas. Local officials, based on IZRRAG recommendations, will establish physical boundaries and security for restricted areas to restrict access for exposure control. Local officials will establish controls for access, including personnel and material contamination monitoring and may include contaminated material segregation and storage, as necessary. IZZRAG will approve methods taken by local officials to secure long-term restricted areas.
-

Continued on next page

IZRRAG Responsibilities, Continued

Broad Recovery Issues, continued

2. The IZRRAG will coordinate state and local efforts:
 - a. To reduce the extent of permanently restricted areas within established guidelines, using (1) accurate survey and sampling of affected areas, and (2) recommendation of decontaminating select areas.
 - b. To develop a prioritized list of restoration activities for affected areas, identifying state and federal agencies available for providing assistance.
 - c. To help limit duplication of efforts and prevent conflicts in federal, state, county, and local recovery.
 3. The IZRRAG will develop decontamination and restoration plans, including establishing decision levels that preclude decontamination due to cost and recoverability. Plans should include the types of decontamination action and establish priorities in these decontamination efforts.
 4. The IZRRAG will direct the implementation of reentry using the guidelines in this section as requirements/actions on access control. Local officials will carry out reentry using locally developed procedures, in coordination with IZRRAG.
 5. The IZRRAG will provide return and/or relocation technical assistance for local and county governments aiding evacuated residents, businesses, and industries.
-

Decontamination

The IZRRAG will:

1. Determine needs for decontamination of possessions, vehicles, property, and people.
 2. Employ all state and federal resources available to carry out these decontamination actions.
 3. Establish decontamination priorities, plans, and procedures.
 4. Establish record keeping for monitoring and decontamination of residents and emergency personnel.
 5. Advise local officials on decontamination and restoration projects including, but not limited to the following:
 - a. Decontaminating and restoring buildings and equipment used to provide basic services for the public including: government, fire, law enforcement, postal, water, utility services, sewage, and trash disposal.
-

Continued on next page

IZRRAG Responsibilities, Continued

Decontamination, continued

- b. Decontaminating and restoring hospitals, nursing homes, prisons, businesses, and industrial sites, including buildings and equipment.
 - c. Removing and disposing of materials, equipment, soils, pets, livestock, food products, farm or garden produce, and other items which cannot be decontaminated or which have spoiled or perished while the areas have been restricted.
 - d. Decontaminating or otherwise restoring agricultural lands to productive use.
6. Based on sampling results, determine limitations on hunting and fishing, to include: prohibition, reduction in lengths of season and bag limits. The IZRRAG will then recommend protective action advisories, as necessary.
 7. Use decision level guidance for protective action recommendations or decisions related to decontamination of possessions, vehicles, and people.
 - a. Decontamination decision levels for property, land, buildings and other fixed objects are determined using appropriate federal agency guidance.
 - b. The IZRRAG will consider all existing guidance, the actual conditions, and the circumstances of an accident or event.
-

Actions for Contaminated Property

The IZRRAG, will:

1. Coordinate with local officials the appropriate actions relative to contaminated foods, land, and property.
 2. The IZRRAG will review conditions and provide guidance / recommendations for:
 - a. Temporary storage of contaminated property for decontamination.
 - b. Temporary storage of contaminated food and food products, and a determination of whether it will be returnable for human use/ consumption at a later time.
 - c. Long term disposition of contaminated food and food products.
 - d. Long term disposition and relocation of sheltered livestock.
-

Continued on next page

IZRRAG Responsibilities, Continued

Decontamination of Select Properties

The IZRRAG will assist local officials in determining the need for and methods of decontamination of selected possessions, vehicles, buildings, equipment and other properties. The IZRRAG will determine:

1. The types of property that can be economically decontaminated based on the property value and the levels of contamination which would make decontamination efforts cost prohibitive.
2. Assistance and resources from other organizations or contractors to assist in the decontamination effort, and costs involved, in cooperation with local officials.
3. The IZRRAG will develop plans and guidelines for:
 - a. Conditions by which foods, food products, and soils may require disposal.
 - b. Disposal of contaminated soils and other property and/or possessions; and
 - c. Conditions by which restrictions on food consumption, marketing, and other economic/commercial activities may be relaxed.

Dose Assessment

1. The IZRRAG will perform assessments of the health effects to the public resulting from the accident, including both short and long term effects.
 2. The IZRRAG may consider contracting assistance of other agencies or outside vendors to assist in these assessment functions.
 3. The IZRRAG may seek assistance from the affected nuclear power plant and federal agencies in this assessment.
-

Assistance & Restitution

General

1. Ohio EMA, with federal assistance, will coordinate support to persons, property and business owners, and government entities in the affected areas with respect to financial restitution for losses and costs. Assistance and restitution may be available from the American Nuclear Insurers (ANI), and then from the federal government under the Stafford Act, or other state programs. Refer to the State of Ohio Emergency Operations Plan (Ohio EOP) and NUREG-1457 for additional information.
 2. Damage Assessments - Ohio EMA, with IZRRAG and federal assistance, will consider alternate assessment methods and criteria for determining the extent of damage, including those situations that prohibit normal inspections by walk-through, drive-by, or fly-over. These methods could include the use of radiological surveys and assessments for large areas, and combining these findings with community impact analysis.
 3. Price Anderson Act - Nuclear Liability Insurance: American Nuclear Insurers:
 - a. The ANI shall establish a liaison with the Utility JIC and the SEOC to coordinate creation of and public notification about claim centers set up to handle claims and financial reimbursement.
 - b. ANI may establish one main field office and satellite offices located outside the evacuation area.
 - c. If more than one office is established, ANI shall designate a main office to coordinate with the state, counties, and the utility.
 4. Individual Assistance - Individual Assistance (IA) is supplementary federal assistance provided under the Stafford Act to individuals, families, and businesses affected by a major disaster after all sources of private insurance have been exhausted. IA is provided directly by the federal government to recipient(s).
 5. Public Assistance - Public Assistance (PA) is supplementary federal assistance provided under the Stafford Act to state and local agencies, or certain private, non-profit organizations. PA is administered by the state.
 6. Ohio EMA will provide information for state and federal assistance to affected public and government entities.
 7. Ohio EMA will establish and implement a system to track and recover costs incurred in state, county, and local activities.
-

Agency Responsibilities

Purpose To indicate those actions required within a 50-mile ingestion pathway to protect the public from consumption of contaminated animals, food, and water.

General The primary and secondary responsibilities for planning, coordinating and implementing protective actions for the public within the IPZ and the coordination of these responsibilities in an overall response effort rests with selected state, county, federal and private agencies as listed below.

Ohio EMA The Ohio EMA shall:

1. Establish procedures for:
 - a. Field Monitoring Teams to identify areas of deposition.
 - b. Field Monitoring Teams to provide escort and any necessary protective equipment to other agency sampling teams should the need arise to enter the RZ.
2. Estimate dose commitment consequences by providing computers, operators and programs designed to translate sample information into dose commitment for key isotopes and compare these estimates with protective action guides.
3. Provide for common facilities of operation.
4. Maintain the SEOC at which each agency will provide a representative with specific authority relating to ingestion zone decision making.
5. Identify an off-site Field Team Center (FTC) which will include the cognizant agency representative with authority for direction of the sample teams.
6. Coordinate transportation (via ESF-1) for ingestion zone samples to be delivered to a designated laboratory.
7. Ensure the incorporation of federal response capability into plans and procedures to include state and county resources available to support assisting federal agencies.
8. Ensure the notification of the county directors within the 50-mile IPZ.
 - a. Upon declaration of a Site Area Emergency, an Ohio EMA representative in the SEOC will notify all counties located within the 50-mile IPZ of the affected facility.
 - b. Notification will be made via telephone, facsimile transmission, or e-mail to the affected 50-mile counties and confirmation of receipt of notification will be made.

Continued on next page

Agency Responsibilities, Continued

Ohio EMA, continued

- c. Updates will be provided periodically and as conditions warrant.
 - 9. Design and implement a program that will inform and educate targeted groups and the public within the ingestion zone about existing emergency plans.
 - 10. Provide maps for recording various data, whether paper or electronic.
 - 11. Ohio EMA will keep all involved response organizations (local, state, and federal) informed of recovery phase plans being developed, such as remedial measures, how long they will take, and what final outcome is expected through conference calls, Situation Reports (SitReps), and briefings.
-

ODA

The Ohio Department of Agriculture (ODA) shall:

- 1. Coordinate the annual production and distribution of information to the producers, processors and distributors within a 10-mile radius of a nuclear power facility. This information will be available to producers, processors and distributors within a 50-mile radius at the time of an emergency.
 - 2. Maintain maps showing up-to-date key land use data (e.g., farming), dairies, food processing plants, nurseries, farm stands, and farmer markets.
 - 3. Maintain up-to-date lists of the names and locations of all facilities which regularly process milk products and other large amounts of food or agricultural products in the Ingestion Pathway.
 - 4. Division of Animal Health
 - a. Sample feeds and impose quarantines pertaining to the sale, transfer and transport of livestock and poultry.
 - b. Provide information to practicing veterinarians and livestock owners on the effects of radiation on animals.
 - 5. Division of Food Safety
 - a. Embargo food products as deemed necessary.
 - 6. Division of Plant Health
 - a. Apiary Section
 - i. Maintain a list of bee keepers.
 - ii. Impose restriction and/or cessation of the handling, processing and sales of honey products.
-

Continued on next page

Agency Responsibilities, Continued

- ODA**, continued
- b. Feeds and Fertilizer Section
 - i. Maintain a list of feed mills and feed haulers.
 - ii. Check feed mills in Ohio to verify they are free of radioactive contamination.
 - c. Plant Pest Control Section
 - i. Ensure that nursery stock sold in Ohio is free of radioactive contamination.
 - ii. Ensure pest control is maintained.
 - d. Seed Section
 - i. Maintain seed crop control and inventory.
 - ii. Inspect and sample seed to be tested for radioactive contamination.
 - iii. Determine, through coordination with the county cooperative extension service agents, types, sizes, and locations of commercial crops being grown.
7. Meat Inspection Section
- a. Inspect meat and poultry plants in Ohio to assure the consumer that these products are wholesome and unadulterated.
8. Division of Dairy
- a. Impose restrictions and/or cessation of the handling, processing, and sale of milk and manufactured milk products.
-

- ODH**
- The Ohio Department of Health (ODH) shall:
- 1. Bureau of Environmental Health
 - a. Coordinate with the local health departments any activities regarding the safety of private water supplies within the 50-mile IPZ.
 - 2. Laboratory
 - a. Perform sample analysis.
 - b. Relay information to Dose Assessment.
 - 3. Bureau of Radiation Protection
 - a. Chair the Ingestion Zone/Recovery and Reentry Advisory Group (IZRRAG).
-

Continued on next page

Agency Responsibilities, Continued

- ODH, continued**
- b. Utilize water, milk, and vegetation sample data to calculate Derived Intervention Levels (DIL). DILs will determine which foodstuffs are consumable by the public.
 - c. Utilize soil sample data to calculate Derived Response Levels (DRL). DRLs will assist IZRRAG in determining the Restricted Zone.
 - d. Perform long-range dose assessment activities to estimate total population exposure.
-

OEPA

The OEPA shall:

1. Division of Drinking and Ground Water
 - a. Provide technical coordination and assistance for the determination of quality limitations for established public drinking water supplies.
 - b. According to the provisions of Annex C, Appendix 2 of Ohio Administrative Code 3745-81, the OEPA will conduct the following with regard to public drinking water supplies:
 - i. Sampling
 - ii. Monitoring
 - iii. Testing
 - iv. Providing advisories based on findings
 - c. Provide information on available water treatment facilities, locations, capacities for treatment, and community usage data.
 - d. Maintain a listing of public drinking water intake locations.
 2. Equip and maintain the Radiological Assessment Teams capable of sampling of soil, forage (ground cover), snow, drinking water, and surface water.
 3. Division of Surface Water
 - a. Provide sampling of industrial and municipal wastewater discharge.
 - b. Provide personnel and equipment in support of sampling stream waters.
 4. Division of Materials and Waste Management
 - a. Provide, with the concurrence of ODH for radiologically contaminated material, a selection of disposal sites, including appropriate disposal methods, for any condemned food and other wastes.
-

Continued on next page

Agency Responsibilities, Continued

OEPA,
continued

5. Division of Air Pollution Control
 6. Provide, in conjunction with FRMAC, the ability to determine resuspension of contaminated dust by long-term sampling.
-

ODNR

The Ohio Department of Natural Resources (ODNR) shall:

1. Division of Soil and Water Resources
 - a. Maintain a listing of locations of water intake points (to assist OEPA concerning semi-public water sources).
 - b. Maintain maps showing water sheds, water supply intake and water treatment plants.
 2. The Division of Wildlife
 - a. Sample indigenous fish and wildlife to ensure wholesomeness of fish and wildlife entering the human food supply and will consider the impact of the migration of fish, aquaculture (farm-raised fish) game, and fowl.
 - b. Suspend fishing, hunting and trapping as needed.
 3. The Division of Forestry
 - a. Sample and ensure the wholesomeness of wood product harvesting.
 - b. Suspend timber harvesting and the burning of woody debris as needed.
-

Continued on next page

Agency Responsibilities, Continued

USDA

The USDA shall:

1. The OSU Extension
 - a. Serve as a support agency for ODA.
 - b. Inform all county extension agents of specific protective actions that the agricultural industry should be taking.
 - c. Provide emergency information to farmers.
 2. Farm Service Agency (FSA)
 - a. Provide a list of food and feed facilities.
 - b. Provide a list of fertilizer facilities.
 - c. Provide a list of grain facilities and the availability of grain.
 - d. Provide a list of farmers in the affected area including local information on crop production, acreage, and farm capability.
 - e. Provide through its county newsletter system, a means of informing farmers about protective actions.
 - f. Provide office space and clerical help for a local crisis center.
-

County EMA Directors

The County EMA Directors shall:

1. Advise county commissioners of protective actions that will take place within the county.
 2. Assist state agencies with logistical problems by providing liaisons to state and federal response teams who may be unfamiliar with the areas involved.
-

Utilities

The Utilities shall:

1. Provide state government the analysis results of environmental samples.
 2. The utilities may have a liaison at the SEOC during the recovery phase of the emergency. This liaison will communicate with the IZRRAG.
-

Methods of Accomplishment

General

1. The primary function of the IZRRAG will be to advise county officials and the public in those counties lying either wholly or partially within a 50-mile ingestion pathway (boundaries to follow easily identifiable points of reference such as county / township lines) on actions necessary for the protection of life and property. Major advisory categories include:
 - a. Growing and Non-Growing Season Precautionary Restrictions
 - b. Evacuated Area Opened for Essential Workers
 - c. Livestock/Poultry
 - d. Water
 - e. Produce/Fruit
 - f. Honey
 - g. Cultivation/Harvesting
 - h. Grain/Feeds
 - i. Fish and Wildlife
2. The State of Ohio agrees to adopt, as a basis for interagency planning and emergency protective actions, guidance contained in U.S. Environmental Protection Agency, EPA 400-R-92-001 (May 1992); U.S. Environmental Protection Agency PAG Manual 2013; U.S. Department of Health and Human Services/Food and Drug Administration (DHHS/FDA), Accidental Radioactive Contamination of Human Food and Animal Feeds; Recommendations for State and Local Agencies (Aug 1998); and Federal Emergency Management Agency (FEMA) Decision Flow for the Ingestion Pathway Protective Actions, copies of which are maintained on file as a matter of record by the Ohio EMA.
3. Based on information from and in consultation with Radiological Assessment Branch, the IZRRAG will make recommendations for ingestion pathway protective actions to the individual agencies with responsibility for the wholesomeness of each food category. The advisory group will determine and recommend appropriate actions based on its assessment. The IZRRAG will:
 - a. Make recommendations to the Executive Group, and keep them informed of local decisions and actions taken.
 - b. Directly notify county officials.
 - c. Notify the public of any advisories through the Joint Information Center (JIC).

Continued on next page

Methods of Accomplishment, Continued

General,
continued

- d. Make the recommendation, based on data obtained from projections of potential food and milk contamination, of a temporary ban on the sale of food from the area until data from actual food samples can be obtained.
-

Public
Information

Categories for consideration to ensure full compliance with the cited guidance include the following as they apply to the ingestion pathway zone:

1. Public education and information for the use of food and water regarding:
 - a. Type of contamination likely to occur.
 - b. The need for and means of cleansing exposed food (especially garden produce).
 - c. The proper means for storage and preservation of food.
 - d. The locations of emergency food and water distribution points and times for distribution of emergency supplies for:
 - i. Hospitals and medical facilities.
 - ii. Residential users.
 - iii. Schools.
 - iv. Restaurants.
 - v. Industrial and other users.
 2. Information on the priorities for imposing curtailments and restrictions on the use of water.
 - a. Private industrial users.
 - b. Schools, nonessential businesses and services.
 - c. Residential use and other services.
 - d. Hospitals/medical and key government users.
 3. Information with regard to shortages, contamination, legal water usage, purification, and any other restrictions.
-

Continued on next page

Methods of Accomplishment, Continued

Milk & Dairy Products

1. In the event of a radiological incident resulting in offsite contamination, the IZRRAG will coordinate the following actions and information flow:
 - a. The ODA, as the inspecting agency for all milk and milk products, maintains and will make available to the IZRRAG a current listing of milk producers, milk plants, transfer and receiving stations, and a general census of dairy stock within given pathways.
 - b. The IZRRAG will coordinate with the agencies:
 - i. With monitoring responsibilities for milk upon its arrival at a milk plant, transfer or receiving station.
 - ii. Responsible for the sampling of milk currently under processing or stored for processing within the zone.
 - iii. In the redirection for sale of milk and milk by-products considered safe for use after sampling.
 - c. The IZRRAG may recommend advisories based on projections or grid surveys. They may establish temporary bans and advise the sheltering of livestock up to 50 miles, before confirming the Derived Intervention Levels.
2. In the event of offsite contamination above the protective action guides for ingestion, the IZRRAG will coordinate the following actions:
 - a. Recommend a quarantine on the transfer, sale or shipment of milk and dairy products within the IPZ.
 - b. Recommend a ban on the use, sale or transfer of unprotected animal feed.
 - c. Recommend alternative uses for contaminated milk and milk products.
 - d. Recommend and coordinate the destruction of contaminated foods.
 - e. Coordinate with the responsible agencies the importation of milk and dairy products from processors outside the IPZ.

Honey

1. ODA is tasked with registering and inspecting bee hives.
2. ODA will maintain and make available a current listing of both commercial and private bee hives within the IPZ.
3. The IZRRAG, based on sample data, will recommend the need for any restrictions or curtailments of honey-producing industry.

Continued on next page

Methods of Accomplishment, Continued

Meat & Poultry Products

1. The Meat Inspection Division of the ODA will maintain and make available to the IZRRAG a current listing of meat producers and meat processing plants.
 2. The Wildlife Division of the ODNR will maintain a program of sampling of indigenous wildlife that may be harvested by the public during appropriate hunting seasons.
 3. The IZRRAG will recommend, based on data from samples taken by the ODA or ODNR, a ban on the use of meat or meat products from within the IPZ.
-

Animal Feed Products

1. As the state agency tasked with inspecting and licensing grain warehouses and feed mills, the ODA will sample feeds produced within the IPZ and will make available to the IZRRAG a current listing of feed mills as alternate sources of prepared feeds outside the IPZ.
 2. The IZRRAG, based on sample data from field crops and feed mills, will recommend controls in the distribution and use of animal feed in the natural and processed states.
 - a. Recommend actions to ensure that uncovered stocks stored in bins or in the open, have the outer or top layer of feed removed before use.
-

Other Farm Products

1. As the agencies responsible for the monitoring of other farm products, the ODA and the USDA will make available to the IZRRAG the following data specific to local situations:
 - a. The number, type, size and location of farms.
 - b. The growing season and time of harvest for various crops grown on each farm.
 - c. The end use of food produced on each farm (what percentage of the foods produced are sold for processing or sold at roadside stands).
 - d. The distribution of food sold for processing (how and where the food is transported for processing and/or marketing).
 2. In the event of an incident involving the IPZ, the IZRRAG will recommend actions required for the protection of foods and produce to ensure public safety.
 - a. Maintain a program of sampling and analyzing crops and food processors.
-

Continued on next page

Methods of Accomplishment, Continued

Other Farm Products, continued

- b. Supervise the destruction of contaminated items through the burning or burial of such items.
 3. The IZRRAG will determine:
 - a. Feasibility of decontaminating existing crops.
 - b. Types of packaging that protected foods within the affected area.
-

Water Supplies

The IZRRAG, based on sample data, will recommend actions to maintain a safe level of radionuclides in water supplies for both public drinking water and agricultural/industrial users. IZRRAG may recommend:

1. Intakes closed from a contaminated river, lake, or reservoir water supply to allow diversion and use of only the uncontaminated water supplies already in the system.
 2. Draw water from the least contaminated reservoir levels, since radionuclides may not be homogeneously mixed in large reservoirs.
 3. The chemical treatment of raw water at the treatment facility to reduce radionuclide concentrations to an acceptable level.
 4. Depending on the radionuclides present, their concentration, and half-lives, a time delay allowing for the reduction of radionuclides to an acceptable level for safe water consumption.
 5. Restriction on the transport, application, and/or use of contaminated sludge from waste water treatment facilities to agriculture producers.
 6. The proper disposal of contaminated sludge from waste treatment facilities to designated disposal sites.
-

Establishment of a Sampling Program

1. An FTC will be established at pre-determined locations and may co-locate with the Federal Radiological Monitoring and Assessment Center (FRMAC).
 2. The FTC, based on information received from assessment and the IZRRAG, will be the central dispatch point for all state sampling teams and will coordinate the dispatching of teams with the FRMAC.
 3. The Ohio EMA will provide for communications between the FTC and the SEOC.
-

Continued on next page

Methods of Accomplishment, Continued

Establishment of a Sampling Program, continued

4. Sampling will be carried out by each agency according to modified sampling procedures within its normal field of operations. This requires a minimum amount of training and equipment on the part of each agency. The Ohio EMA and the ODH will assist all agencies with sampling responsibilities, in the training of personnel for sampling teams.
5. In the event it is determined necessary to obtain samples from the Restricted Zone, the Ohio EMA will provide personnel to accompany and monitor any individuals not trained as radiation workers assigned to sample within the Restricted Zone.
6. The Ohio EMA will coordinate with ESF-7 to acquire any needed sampling supplies and coordinate with the FRMAC for the requisition of items obtainable from federal resources. The National Response Framework (NRF) also may be utilized to identify other federal assistance programs and resources.
7. Based on data received from assessment concerning the extent and direction of the plume and its deposition, the identification of geographical areas and individual farms will be determined, for the purposes of sampling. IZRRAG will then forward instructions to the FTC coordinator.

Identification of Milk, Meat & Other Foods

1. Lists of meat, milk, and other food processing plants maintained by the USDA and ODA are available for each area surrounding the nuclear power plants.
 2. The ODA maintains a list of dairy farms in each area and the USDA maintains information on the types of crops being grown in any given county, which is updated annually.
-

Protective Actions

Precautionary PARs

Precautionary actions taken prior to confirmation of contamination include, but are not limited to:

1. Covering exposed products.
 2. Moving animals to shelter.
 3. Providing protected feed and water.
 4. Temporary embargoes.
-

Food PARs

Potential protective action recommendations for foods exceeding the DILs include, but are not limited to:

1. Normal food production and processing actions that reduce the amount of contamination in or on food to below the DILs (e.g., polishing grains).
 2. Temporary embargo until radionuclides have decreased to acceptable levels.
 3. Condemnation of foodstuff.
-

Animal Feed and Water PARs

Protective action recommendations when animal feeds are contaminated include, but are not limited to:

1. Substituting uncontaminated water for contaminated water.
 2. Removing lactating dairy animals and meat animals from contaminated pastures.
 3. Substituting uncontaminated feed for contaminated feed.
-

Protective Action Decisions

The agricultural community will be notified of Protective Action Decisions (PADs) by:

1. Media briefings
 2. News releases
 3. OSU Extension
 4. USDA Farm Service Agency
-

Figure XII-C: Counties Affected in Ohio by Nuclear Power Stations

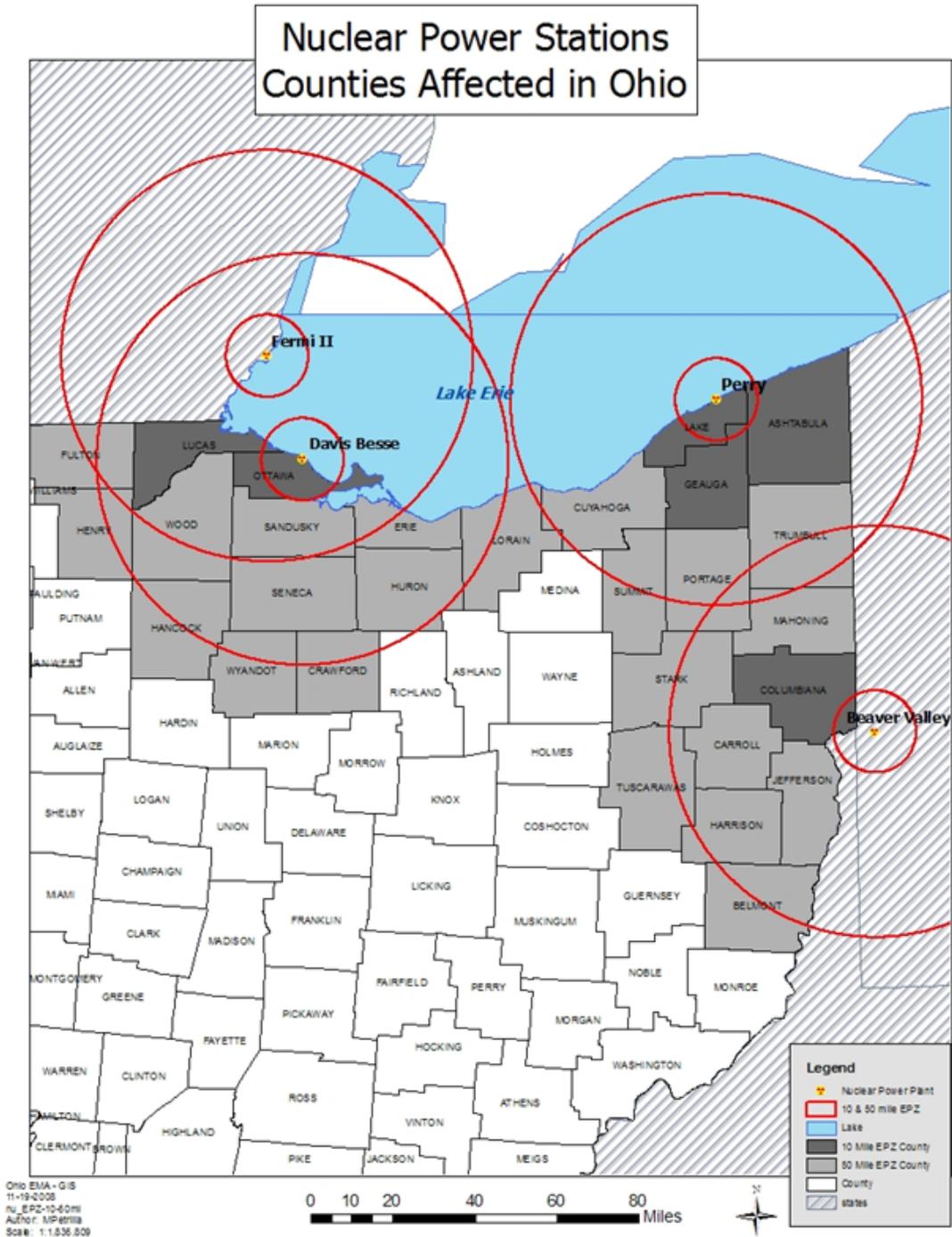


Table XII-D: Recommended Derived Intervention Levels (DIL)⁴⁸

Criterion for Each Radiological Group^{(a),(b)}

All Components of the Diet		
Radionuclide Group	(Bq/kg)	(pCi/kg)
Sr-90	160	4300
I-131	170	4600
Cs-134 + Cs137	1200	32,000
Pu-238 + Pu-239 + Am-241	2	54
Ru-103 + Ru-106 ^(c)	$C_{103}/6800 + C_{106}/450 < 1$	$C_{103}/180000 + C_{106}/12000 < 1$

Notes:

- (a) The DIL for each radionuclide group (except for Ru-103 + Ru-106) is applied independently. Each DIL applies to the sum of the concentrations of the radionuclides in the group at the time of measurement.
- (b) Applicable to foods as prepared for consumption. For dried or concentrated products such as powdered milk or concentrated juices, adjust by a factor appropriate to reconstitution, and assume the reconstitution water is not contaminated. For spices, which are consumed in very small quantities, use a dilution factor of 10.
- (c) Due to the large difference in DILs for Ru-103 and Ru-106, the individual concentrations of Ru-103 and Ru-106 are divided by their respective DILs and then summed. The sum must be less than one. C3 and C6 are the concentrations, at the time of measurement, for Ru-103 and Ru-106 respectively.

⁴⁸ FDA, Accidental Radioactive Contamination of Human Food and Animal Feeds: Recommendations for State and Local Agencies, 1998, Table 2

Table XII-E: Sample Size for Analysis

Sample Medium	Average Sample Size	Agency
Soil	100 cm ² x 2 cm deep	OEPA
Water	3.8 liters (1 gallon) (if snow - 7 liters)	OEPA
Vegetation	1 kilogram (2.2 lbs)	OEPA
Produce	1 kilogram (2.2 lbs)	ODA
Leafy Vegetation	1 kilogram (2.2 lbs)	ODA
Animal Feed & Grain		
Granular Feed	1 kilogram cubitainer (2.2 lbs)	ODA
Cubed Feed	16" x 24" plastic bag	ODA
Hay/Green Chop	1 kilogram cubitainer (2.2 lbs)	ODA
Silage Grain/Pasture	16" x 24" plastic bag	ODA
Meat & Meat Products	1 kilogram (2.2 lbs)	ODA
Poultry	1 kilogram (2.2 lbs)	ODA
Grade A Milk	3.8 liters (1 gallon)	ODA
Grade B Milk	3.8 liters (1 gallon)	ODA
Eggs	3.8 liters (1 gallon)	ODA
Honey	3.8 liters (1 gallon)	ODA
Game Meat	1 kilogram (2.2 lbs)	ODNR
Fish	1 kilogram (2.2 lbs)	ODNR
Farm-Raise Aquatic Life	1 kilogram (2.2 lbs)	ODNR

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XIII. Exercise & Drills

NUREG-0654 FEMA-REP-1 Criteria N

Overview

Periodic exercises are conducted to evaluate major portions of emergency response capabilities, periodic drills are conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are corrected.

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Overview

Purpose	To ensure maximum effectiveness is obtained from the planning effort, personnel must be trained in radiological emergency preparedness planning and the plans must be tested.
Responsibilities	<ol style="list-style-type: none">1. The primary county response agency is required to maintain its ability to respond effectively to offsite releases by conducting training programs, providing refresher courses for those trained and conducting local drills and exercises.2. It is the responsibility of the Ohio EMA to ensure that county plans are tested and personnel are trained.3. Each state agency noted in this plan shall participate in drills and exercises to ensure personnel can perform the roles specified and that timely adequate response will occur.4. Plant owner/operator training and onsite exercises are conducted in accordance with NRC regulations. Plant training and exercises will be coordinated with programs involving offsite emergency response operations.
HSEEP Requirements	<p>Key features of the Homeland Security Exercise and Evaluation Program (HSEEP) methodology:</p> <ol style="list-style-type: none">1. Scheduling through the use of an annual Training and Exercise Planning Workshop (TEPW) and Multi-year Training and Exercise Plan (TEP).2. Planning and implementation in accordance with guidelines set forth in HSEEP methodology.3. A properly formatted After-Action Report/Improvement Plan (AAR/IP).4. Tracking and implementation of corrective actions identified in the AAR/IP.

Eight Year Cycle

Plume Phase Requirements

Scenarios shall vary such that the major elements of emergency plans are exercised within an 8-year exercise cycle. Each scenario variation shall be demonstrated at least once during the 8-year exercise cycle and shall include, but not be limited to, the following:

1. Hostile action directed at the plant site involving the integration of offsite resources with onsite response;
2. An initial classification of or rapid escalation to a Site Area Emergency or General Emergency;
3. No radiological release or an unplanned minimal radiological release that requires the site to declare a Site Area Emergency, but does not require declaration of a General Emergency. For this scenario variation the following conditions shall apply:
 - a. The licensee is required to demonstrate the ability to respond to a no/minimal radiological release scenario at least once within the 8-year exercise cycle. State and local response organizations have the option to participate jointly in this demonstration.
 - b. When planning for a joint no/minimal radiological release exercise, affected state and local jurisdictions, the licensee, and FEMA will identify offsite capabilities that may still need to be evaluated and agree upon appropriate alternative evaluation methods to satisfy FEMA's biennial requirements. Alternative evaluation negotiations include expansion of the exercise scenario, out of sequence activities, plan reviews, staff assistance visits or other means as described in FEMA guidance.
 - c. If the offsite organizations elect not to participate in the licensee's required minimal or no-release exercise, they will still be obliged to meet the exercise requirements as specified in 44 CFR 350.9.

Ingestion Phase Requirements

1. At least once every eight years, an exercise will require ingestion pathway protective actions to be implemented.
2. The State of Ohio will rotate full participation between DBNPS and PNPP. Regulations allow partial participation at BVPS.
3. OROs who do not participate during the state's Ingestion Pathway exercise will be required to demonstrate the Ingestion Pathway criteria at least once an exercise cycle, via table top or other activity.
4. Protective actions will be consistent with EPA Protective Action Guide recommendations. Participants will demonstrate decision-making, implementation, and coordination with all appropriate jurisdictions.

Continued on next page

Eight Year Cycle, Continued

Ingestion Phase Requirements,
continued

5. Personnel participating in the exercise will be sufficient for carrying out ingestion measures required by the event scenario.
-

Optional Scenario Variations

1. Varied radiological release effects and meteorological conditions.
 2. A broader spectrum of initiating/concurrent events may include:
 - a. Natural disaster historically applicable to the area (e.g., tornado, earthquake, flooding).
 - b. Site-specific all-hazards incidents (e.g., accident involving near-site facility, train derailment on or adjacent to site owner controlled area).
 - c. Seasonal factors impacting the PARs and decision process (e.g., transient populations, weather conditions, agricultural seasons).
-

Exercise Requirements

Conditions

Exercises are used to test plans, to familiarize personnel with the interrelationship of the various phases of the plan, to establish working relationships with other involved agencies, and to maintain a high degree of readiness.

1. REP exercises will be conducted in accordance with NRC and FEMA rules and policy.
2. Exercises at the state level will be as follows:
 - a. The state shall conduct a full participation exercise biennially and shall partially participate in exercises held during off years.
 - b. A drill (non-evaluated) often referred to as a “dry run,” will be conducted approximately one month prior to all scheduled FEMA evaluated exercises.
 - c. Preparation for all exercises should meet the following schedule:

	Initial Planning Meeting (IPM)
180 days	Concept and Objectives (C&O) Meeting
90 days	Submission of Objectives
60 days	Submission of Scenario

- d. Scenarios will be developed to test the response capabilities of the county and state governments, and will vary from exercise to exercise to ensure that all major elements and organizations are tested within an eight-year period.
3. Exercises at the county level will be as follows:
 - a. County plans will be exercised on a biennial basis in conjunction with the nuclear power facility affecting that county. The county has the option to conduct separate exercises or drills at times other than the required exercise dates.
 - b. To comply with the REP Program Manual, the state will participate with each county in each scheduled exercise, although these may be on a partial participation basis due to the fact that the State of Ohio has more than one plant within its boundaries. During a partial participation exercise at a minimum the State of Ohio will demonstrate:

Continued on next page

Exercise Requirements, Continued

Conditions,
continued

- i. Direction and control
 - ii. Communications
 - iii. Accident assessment
 - iv. Protective action decision making
4. All exercises shall include mobilization of adequate state and county personnel and resources to verify the capability to respond to an accident scenario requiring a response, but need not include a population evacuation or otherwise cause the area population to respond in any manner.
-

Scenario Requirements

Requisites

Scenarios used in exercises are to be drafted in such a manner to reflect a realistic series of events which may serve to develop, or evaluate, the professional response capabilities of the agency under evaluation. They should include the following major criteria to achieve all exercise goals and objectives:

1. The basic objectives of each drill and exercise and appropriate evaluation criteria;
 2. Dates, times, places, and participating organizations;
 3. The simulated event;
 4. A time schedule of real and simulated initiating events;
 5. A narrative summary describing the conduct of exercises or drills to include such things as simulated casualties, offsite fire department assistance, rescue of personnel, use of protective clothing, deployment of radiological monitoring teams, and public information activities; and
 6. A description of the arrangements for and advance materials to be provided to official observers.
-

Exercise Evaluations & Critiques

- Federal**
1. The FEMA review team will evaluate the state and county government plans. This should occur prior to the exercise.
 2. The scenario will be provided to FEMA representatives in advance to prepare the necessary reviews and evaluation procedures.
-

- Local Governments**
1. Local governments will critique their exercise as provided for in each county plan.
 2. State agency personnel will assist as requested in the event that separate exercises are conducted.
-

- Critiques**
1. Within five days of the completion of a FEMA-evaluated exercise, a briefing involving the exercise participants and federal observers shall be conducted by the Exercise Director to discuss the preliminary results of the exercise.
 2. If the exercise discloses any deficiencies in the ability of the state and county governments to implement the plans, the FEMA representatives shall make them known promptly in writing to appropriate state officials.
-

After Action Report (AAR) A properly formatted After Action Report/Improvement Plan, as required by the REP Program Manual and HSEEP, will be developed after every federally evaluated exercise. Corrections will be tracked and implemented, if valid.

- Corrections**
1. It is the responsibility of state and county EMAs to ensure all emergency plans and procedural problems identified by participants or observers during exercises and drills and plan reviews are addressed, even if it means the issue is tabled due to valid reasons.
 2. The process will include a description of the issue, the organization and individual, by title/position, responsible for implementing the chosen corrective action, and the timeframe for completing the corrective action.
 3. The state and county EMAs will assist the participants with any revisions necessary to improve response.
 4. Problems identified by federal agencies will be addressed to the Executive Director of Ohio EMA through FEMA, Region V, Regional Assistance Committee (RAC) Chairman.
 5. It is the responsibility of the Executive Director of Ohio EMA to ensure a timely response to such correspondence.
-

Drills

Overview

Drills are supervised instruction periods aimed at testing, developing and maintaining skills in a particular operation. Drills are components of exercises and are evaluated by the instructor or evaluation team for the drill.

Communication Drills

Each organization shall conduct communication drills, in addition to the biennial exercise at the frequencies indicated below:

1. Utility, state and county governments within the 10-mile EPZ shall be tested monthly.
 2. Federal emergency response organizations and states within the IPZ shall be tested quarterly.
 3. The nuclear facility, state and county EOCs and FMTs shall be tested annually.
 4. Communications with all counties within the 50-mile IPZ, excluding the 10-mile EPZ counties, of a nuclear power facility will be tested at least quarterly. The primary and alternate methods of communications include, but are not limited to e-mail, fax, cell phone, or MARCS radios.
 5. A message content check will be performed, if applicable. The term “content check” means a message should be read by the initiator and is either repeated back or is otherwise verified as accurately received.
-

Radiological Monitoring Drills

Radiological monitoring drills will be conducted annually. All sample media (water, vegetation, soil and air) will be collected. Provisions are made for communications and record keeping.

Health Physics Drills

The response to and analysis of simulated elevated airborne and liquid samples and direct radiation measurements in the environment will be evaluated during graded and dry run exercises and/or integrated drills with utility drills, in conjunction with the OEPA and the ODH.

Table XIII-A: Minimum Time Frame for Exercises and Drills

TYPE	FREQUENCY
POWER PLANT EXERCISES	
Partial Participation	Biennially
Full Participation	Biennially
Ingestion Pathway	Once in an 8 year cycle
Hostile Action Based (HAB)	Once in an 8 year cycle
COMMUNICATION DRILLS⁴⁹	
State/Local Government	Weekly
State/Federal Government ⁵⁰	Quarterly
State/Local EOCs, EOF, Field Teams	Annually
State/Operator/Local Government	Monthly
State - Adjacent States/Nations (Canada)	Quarterly
MEDICAL DRILLS	Annually
RADIOLOGICAL MONITORING DRILLS	Annually
HEALTH PHYSICS DRILLS	Biannually

⁴⁹ See county plans for additional local level communication drills.

⁵⁰ In addition to quarterly notification checks, the FEMA National Radio System (FNARS) is tested monthly and the FEMA National Teletype System (FNATS) is tested weekly.

Table XIII-B: State of Ohio Exercise Schedule

	2014	2015	2016	2017	2018	2019	2020	2021
BVPS	FP* (06/14) HAB		PP** (06/16)		FP (06/18)		FP (03/17)	
DPNPS		FP (05/15) HAB†		PP (03/17)		FP (04/19) IP††		PP (??/21)
PNPP	PP (09/14) HAB		FP (09/16)		PP (09/18)		PP (09/20)	

- * Full Participation
- ** Partial Participation
- † Hostile Action Based
- †† Ingestion Pathway

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XIV. Radiological Emergency Response Training

NUREG-0654 FEMA-REP-1 Criteria O

Overview Radiological emergency response training is provided to those who may be called on to assist in an emergency.

Contents

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Responsibilities

Purpose To establish guidelines for the conduct of training required for personnel responding to an incident at a commercial nuclear power plant that will affect the State of Ohio.

Ohio EMA The Ohio EMA shall:

1. Ensure training programs are conducted for state agencies as required by the REP Program. As the primary agency for planning, training, and exercise associated with disaster preparedness, Ohio EMA is required to ensure that proper training is provided to all state agencies.
2. Provide training programs for local government and private organizations. Training for local government and private organizations is normally provided by the assigned Resident Radiological Analyst. The associated county emergency management agency director may choose to have this training provided by other personnel at their discretion.
3. Coordinate federal training programs with state and local agencies to ensure personnel are provided the opportunity to attend federal training programs when applicable. Ohio EMA has personnel assigned to aid state and local agencies in obtaining training from federal sources.
4. Coordinate with ODH to provide:
 - a. Field Monitoring Team training.
 - b. Dose assessment training covering both the early and intermediate phases.
 - c. An on-going review of the curriculum content and lesson plans for the training program.
5. Coordinate training for health care facilities in radiological emergency response and contamination control
6. Ohio EMA is responsible for the initial and annual refresher training for its personnel.

ODH The Ohio Department of Health (ODH) shall:

1. Coordinate with Ohio EMA to complete the following:
 - a. Field Monitoring Team training.
 - b. Dose assessment training covering both the early and intermediate phases.
 - c. An on-going review of the curriculum content and lesson plans for the training program.

Continued on next page

Responsibilities, Continued

- ODH**, continued
2. Ensure that ODH laboratory personnel tasked with analysis of environmental samples are trained in proper analytical techniques and procedures.
 3. Provide guidance to local health department personnel on instruction concerning the use of KI.
 4. ODH is responsible for the initial and annual refresher training for its personnel.
-

- OEPA**
1. The Ohio Environmental Protection Agency (OEPA) shall coordinate with Ohio EMA and ODH to provide Field Sampling Teams with annual training covering sampling procedures, contamination control, exposure limits, monitoring and decontamination.
 2. OEPA is responsible for the initial and annual refresher training for its personnel.
-

Other State Agencies Each state agency is responsible for ensuring their personnel receive initial and annual refresher training.

County Each county is responsible for ensuring their personnel receive initial and annual refresher training.

Training Requirements

Responsibilities Training of 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.

General Requirements Training will be made available to:

1. Directors or coordinators of the response organizations
2. Personnel responsible for accident assessment
3. Radiological monitoring teams and radiological analysis personnel
4. Police, security, and fire-fighting personnel
5. First aid and rescue personnel
6. Local support services personnel
7. Medical support personnel
8. Personnel responsible for the transmission of emergency information and instructions.

State Personnel Training will be made available to:

1. Personnel assigned to positions in the SEOC Executive Room during a radiological event
2. Early phase radiological Field Monitoring Team members, couriers, and sample screening personnel (e.g. Ohio EMA calibration lab staff)
3. Personnel responsible for accident assessment (e.g. ODH personnel and the Radiological Branch)
4. Intermediate phase Field Sampling Team members, couriers, and sample screening personnel (e.g. Ohio EMA calibration lab staff)
5. Ohio Department of Agriculture
6. Ohio Environmental Protection Agency
7. Ohio Department of Natural Resources, Division of Wildlife, District 1 – Columbus
8. Personnel responsible for clearing waterways
9. Any personnel performing duties as a Dosimetry Coordinator

Continued on next page

Training Requirements, Continued

State Personnel,
continued

10. Personnel dispatched to the area, including personnel assigned to the Ohio EMA Communications support activities (the Utility Joint Information Center (JIC), the Utility's Emergency Operations Facility (EOF) and the County Liaisons)
 11. Any state personnel requiring dosimetry.
-

Local Personnel

Training will be made available to:

1. Local law enforcement agencies and firefighting personnel (to include personnel assigned to decontamination teams)
 2. First aid and rescue personnel
 3. Local/state support services personnel
 4. Medical support personnel
 5. Transportation operators/bus drivers
 6. Personnel responsible for transmission of emergency instructions
 7. Personnel performing duties as a Dosimetry Coordinator
 8. Personnel assigned to fulfill duties at Care Centers
 9. School staff responsible for the relocation and protection of children
 10. Any personnel requiring dosimetry.
-

Initial & Refresher Training

1. All personnel with emergency response duties during a nuclear power plant emergency shall receive initial training for their applicable position(s).
 2. All response positions require refresher training performed on an annual or biennial basis.
-

Required Training

Positions and their required training is provided in Table XIV-D.

Training may be provided by the Resident Radiological Analysts, FEMA, Center for Domestic Preparedness (CDP), or other acceptable source.

Continued on next page

Training Requirements, Continued

Just in Time (JIT) Training

1. State training will be provided by:
 - a. Resident Radiological Analysts
 - b. Radiological Branch staff
 - c. Individual state agencies
 2. County
Refer to individual county plans.
-

Training Sources

- State**
1. Refer to Table XIV-A for a listing of state training modules offered in support of nuclear power plant response.
 2. State agencies requesting training will submit the request to Ohio EMA. Local agencies requesting training will submit the request to their county EMA Director/Coordinator, who will forward the request to Ohio EMA.
 3. A listing and description of available training can be found on Ohio EMA's website, or may be obtained by contacting the Ohio EMA Preparedness Branch.
-

- Federal**
1. Refer to Table XIV-B and XIV-C for a listing of federal courses offered in support of nuclear power plant emergency response.
 2. State and local agencies requesting federal courses are required to complete the proper application and submit the request to the Ohio Preparedness Branch.
 3. A listing and description of course offerings may be found at FEMA's, U.S. Department of Energy National Nuclear Security Administration's (DOE/NNSA), and U.S. Department of Homeland Security's Center for Domestic Preparedness's (CDP) websites.
-

- Local**
1. Local training is coordinated through the county EMA Director/Coordinator.
 2. A listing and description of available training may be obtained by contacting the county EMA Director.
-

Utility

The utility is required to provide site-specific emergency response training for those offsite emergency organizations that may be called upon to provide assistance during an incident within the owner controlled area.

Commercial

A number of courses exist, offered by such providers as universities, national labs, and utilities, which may be used to supplement local and state training programs. Commercially offered courses vary widely in topic and date of availability. As a result, these courses will be announced when information is available.

Table XIV-A: State Training Modules Available

- General**
1. The Ohio EMA training modules are designed to provide a standard set of basic building blocks from which an informative class can be constructed to meet the unique needs of a variety of target audiences.
 2. The modules selected should be based on the suggested target audience for each module. However, if the instructor thinks that there is a reasonable need to include a module not listed for that audience, the instructor may include the module as part of the class.
 3. In addition to the modules presented to a specific group, the instructor will also include appropriate material that will educate the group on their specific responsibilities related to a nuclear power plant incident, including those duties and tasks specifically outlined in the group's standard operating procedure (SOP), if applicable.
-

Module 1

Basic Radiation Principles

- Scope:** To provide information on basic radiological principles and concepts, including the structure of an atom, the various types of ionizing radiation and the definitions of common terms.
- Target Audience:** All emergency workers who could potentially be exposed to elevated levels of ionizing radiation.
- Location:** Courses are offered at host counties and at each response organization, facilities permitting.
-

Module 2A

Biological Effects - General

- Scope:** To provide basic information concerning the biological effects on the human body due to exposure to the different types and levels of radiation.
- Target Audience:** All emergency workers who could potentially be exposed to elevated levels of ionizing radiation.
- Location:** Courses are offered at host counties and at each response organization, facilities permitting.
-

Continued on next page

Table XIV-A: State Training Modules Available, Continued

Module 2B	<u>Biological Effects – Medical Personnel</u> <i>Scope:</i> To provide basic information concerning the biological effects on the human body due to exposure to the different types and levels of radiation. <i>Target Audience:</i> All hospital workers who could potentially be exposed to elevated levels of ionizing radiation. <i>Location:</i> Courses are offered at medical facilities.
Module 3	<u>Contamination Pathways</u> <i>Scope:</i> To provide information on the common pathways of radiological contamination and to define related terminology. <i>Target Audience:</i> All emergency workers who are expected to be exposed to radioactive contamination. <i>Location:</i> Courses are offered at host counties and at each response organization, facilities permitting.
Module 4	<u>Exposure Control</u> <i>Scope:</i> To explain the basic principles in limiting a person’s exposure to radiation and what the regulatory limits for exposure are. <i>Target Audience:</i> All emergency workers who could potentially be exposed to elevated levels of ionizing radiation. <i>Location:</i> Courses are offered at host counties and at each response organization, facilities permitting.
Module 5	<u>Basics: Radiological Emergency Response</u> <i>Scope:</i> To provide information on the basics of the radiological emergency response plan, including the Emergency Planning Zone (EPZ), Emergency Classification System (ECS), County Emergency Operations Center (EOC), notifications, protective actions, and recommendations versus decisions.

Continued on next page

Table XIV-A: State Training Modules Available, Continued

Module 5, continued	Target Audience: All emergency workers. Location: Courses are offered at host counties and at each response organization, facilities permitting.
<hr/>	
Module 6A	<u>Instrumentation: Dosimetry</u> Scope: To provide information on direct-reading dosimetry (DRD), including the various types available, their use, and the advantages and disadvantages of each. Target Audience: Any personnel assigned dosimetry. Location: Courses are offered at host counties and at each response organization, facilities permitting.
<hr/>	
Module 6B	<u>Instrumentation: Survey Instruments</u> Scope: To provide information on survey meters, including the different types available, their operation, and the advantages and disadvantages of each. Target Audience: All emergency workers expected to use survey instruments in their duties. Location: Courses are offered at host counties and at each response organization, facilities permitting.
<hr/>	
Module 6C	<u>Instrumentation: Portal Monitors</u> Scope: To provide information on the use of and the advantages and disadvantages of portal monitors. Target Audience: All emergency workers expected to utilize portal monitors to screen for possible radioactive contamination. Location: Courses are offered at host counties and at each response organization, facilities permitting.

Continued on next page

Table XIV-A: State Training Modules Available, Continued

Module 7A **Personal Protective Equipment (PPE) – Medical Personnel**
Scope: To provide personnel information on personal protective equipment (PPE) for radioactive contamination control, including the types of equipment/clothing available and how to use them.
Target Audience: All hospital personnel who are likely to come into contact with radioactive contamination.
Location: Courses are offered at medical facilities.

Module 7B **Personal Protective Equipment (PPE) – Fire/Police/EMS**
Scope: To provide personnel information on personal protective equipment (PPE) for radioactive contamination control, including the types of equipment/clothing available and how to use them.
Target Audience: All fire, police, and EMS who are likely to come into contact with radioactive contamination.
Location: Courses are offered at host counties and at each response organization, facilities permitting.

Module 7C **Personal Protective Equipment (PPE) – Field Monitoring Teams**
Scope: To provide personnel information on personal protective equipment (PPE) for radioactive contamination control, including the types of equipment/clothing available and how to use them.
Target Audience: All Field Monitoring Teams who are likely to come into contact with radioactive contamination.
Location: Courses are offered at host counties and at each response organization, facilities permitting.

Module 7D **Personal Protective Equipment (PPE) – Monitoring and Decontamination Facility**
Scope: To provide personnel information on personal protective equipment (PPE) for radioactive contamination control, including the types of equipment/clothing available and how to use them.

Continued on next page

Table XIV-A: State Training Modules Available, Continued

Module 7D,
continued

Target Audience: All monitoring and decontamination personnel who are likely to come into contact with radioactive contamination.

Location: Courses are offered at host counties and at each response organization, facilities permitting.

Module 8A

Sampling Techniques - Early Phase

Scope: To provide information on the types of samples to be taken, the reasons for taking them and how to take them during the early phase of a nuclear power plant emergency.

Target Audience: All Field Monitoring Team personnel.

Location: Courses are offered at host counties and at each response organization, facilities permitting.

Module 8B

Sampling Techniques - Intermediate Phase: EPA

Scope: To provide information on the soil and water samples to be taken, the reasons for taking them and how to take them during the intermediate phase of a nuclear power plant emergency.

Target Audience: All OEPA Field Sampling Team personnel.

Location: Courses are offered at host counties and at each response organization, facilities permitting.

Module 8C

Sampling Techniques - Intermediate Phase: ODA

Scope: To provide information on the food and milk samples to be taken, the reasons for taking them and how to take them during the intermediate phase of a nuclear power plant emergency.

Target Audience: All ODA Field Sampling Team personnel.

Location: Courses are offered at host counties and at each response organization, facilities permitting.

Continued on next page

Table XIV-A: State Training Modules Available, Continued

Module 8D **Sampling Techniques - Intermediate Phase: ODNR**

Scope: To provide information on the fish and wildlife samples to be taken, the reasons for taking them and how to take them during the intermediate phase of a nuclear power plant emergency.

Target Audience: All ODNR Field Sampling Team personnel.

Location: Courses are offered at host counties and at each response organization, facilities permitting.

Module 9A **Radiological Monitoring & Decontamination: Personnel (Monitoring)**

Scope: To provide information on the criteria for the use of survey instruments to detect radioactive contamination on people, the process to monitor the people, and the documentation of the process.

Target Audience: All emergency workers expected to utilize survey instruments to screen people for possible radioactive contamination.

Location: Courses are offered at host counties and at each response organization, facilities permitting.

Module 9B **Radiological Monitoring & Decontamination: Personnel (Decontamination)**

Scope: To provide information on the method to decontaminate people, and the documentation of the decontamination.

Target Audience: All emergency workers whose duties include the decontamination of people.

Location: Courses are offered at host counties and at each response organization, facilities permitting.

Continued on next page

Table XIV-A: State Training Modules Available, Continued

Module 9C	<u>Radiological Monitoring & Decontamination: Vehicles/Equipment (Monitoring)</u>
<i>Scope:</i>	To provide information on the criteria for the use of survey instruments to detect radioactive contamination on vehicles and equipment, the process to monitor the vehicles and equipment, and the documentation of the process.
<i>Target Audience:</i>	All emergency workers expected to utilize survey instruments to screen vehicles or equipment for possible radioactive contamination.
<i>Location:</i>	Courses are offered at host counties and at each response organization, facilities permitting.

Module 9D	<u>Radiological Monitoring & Decontamination: Public Vehicles (Decontamination)</u>
<i>Scope:</i>	To provide information on the method to decontaminate public vehicles, and the documentation of the method of decontamination.
<i>Target Audience:</i>	All emergency workers whose duties include the decontamination of vehicles owned by the public.
<i>Location:</i>	Courses are offered at host counties and at each response organization, facilities permitting.

Module 9E	<u>Radiological Monitoring & Decontamination: Emergency Vehicles and Equipment (Decontamination)</u>
<i>Scope:</i>	To provide information on the method to decontaminate emergency vehicles and equipment, and the documentation of the method of decontamination.
<i>Target Audience:</i>	All emergency workers whose duties include the decontamination of emergency vehicles and equipment.
<i>Location:</i>	Courses are offered at host counties and at each response organization, facilities permitting.

Continued on next page

Table XIV-A: State Training Modules Available, Continued

Module 10	<u>Medical Transport</u>
<i>Scope:</i>	To provide information to emergency medical personnel on how to identify, treat, package and transport contaminated and injured patients to the hospital.
<i>Target Audience:</i>	Emergency Medical Services (EMS) personnel who are expected to transport contaminated and injured patients.
<i>Location:</i>	Courses are offered at host counties and at each response organization, facilities permitting.
<hr/>	
Module 11	<u>Hospital Radiation Exclusion Area (REA)</u>
<i>Scope:</i>	To provide information to hospital personnel on how to identify and treat contaminated, injured patients.
<i>Target Audience:</i>	Hospital personnel who are expected to treat contaminated, injured patients.
<i>Location:</i>	Courses are offered at hospitals.
<hr/>	
Module 12	<u>Potassium Iodide (KI)</u>
<i>Scope:</i>	To provide information to emergency workers on the purpose for taking KI, what agency will recommend the distribution of KI, when to take KI and how to distribute and educate the public on the use of KI.
<i>Target Audience:</i>	All emergency workers expected to take KI, as a protective measure, during the course of their duties. All workers expected to distribute KI to the general public.
<i>Location:</i>	Courses are offered at host counties and at each response organization, facilities permitting.

Continued on next page

Table XIV-A: State Training Modules Available, Continued

Module 13A	<u>Protective Actions: Early Phase</u>
<i>Scope:</i>	To provide information on the purpose of protective actions during the early phase of a nuclear power plant accident, the conditions that initial decisions on protective actions are based, the criteria used for making protective action decisions and the protective action decision-making process in the early phase.
<i>Target Audience:</i>	Directors/Coordinators, Assessment Personnel, IZRRAG members, Field Monitoring and Sampling Teams, and Public Information Personnel.
<i>Location:</i>	Courses are offered at host counties and at each response organization, facilities permitting.

Module 13B	<u>Protective Actions: Intermediate Phase</u>
<i>Scope:</i>	To provide information on the purpose of protective actions during the intermediate phase of a nuclear power plant accident, the conditions that decisions on protective actions are based, the criteria used for making protective action decisions and the protective action decision-making process in the intermediate phase.
<i>Target Audience:</i>	Directors/Coordinators, Assessment Personnel, IZRRAG members, Field Monitoring and Sampling Teams, and Public Information Personnel.
<i>Location:</i>	Courses are offered at host counties and at each response organization, facilities permitting.

Module 14A	<u>Early Phase Dose Assessment Overview: Non-Rad Personnel</u>
<i>Scope:</i>	To provide an overview to non-technical personnel of the three phases of a nuclear power plant incident and the purpose of dose assessment for the early phase, including the basic steps in performing a dose assessment and the definitions of terms used in dose assessment.
<i>Target Audience:</i>	Directors, Coordinators, Public Information Personnel and EOC Personnel.

Continued on next page

Table XIV-A: State Training Modules Available, Continued

Module 15B

Intermediate Phase (I-Phase) Dose Assessment Overview: Rad Personnel

Scope: To provide an overview to radiological technical personnel of the three phases of a nuclear power plant incident and the purpose of dose assessment for the intermediate phase, including the basic steps in performing a dose assessment and the definitions of terms used in dose assessment.

Target Audience: Assessment Personnel, IZRRAG members, Field Monitoring and Sample Teams.

Location: Courses are offered at host counties and at each response organization, facilities permitting.

Table XIV-B: State Professional Development Modules Available⁵¹

Module 16

IZRRAG Training

Scope: To provide information on the purpose of protective actions during the intermediate and recovery phases of a nuclear power plant accident, the conditions that decisions on protective actions are based, the criteria used for making protective action decisions and the protective action decision-making process in the different phases.

Target Audience: IZRRAG members and Field Sampling Teams

Location: Courses are offered at Ohio EMA, facilities permitting.

Module 17

Basics: Plant

Scope: To provide information on how the major processes and components of U.S. designed nuclear plants generate electricity, possible accident scenarios and related protective actions.

Target Audience: All emergency workers.

Location: Courses are offered at host counties and at each response organization, facilities permitting.

⁵¹ Professional development series are not required annually.

Table XIV-C: FEMA Courses Available – Independent Study

IS-3 **FEMA: Radiological Emergency Management**
Description: This independent study (IS) course contains information on a variety of radiological topics such as fundamentals principles of radiation, nuclear threat and protective measures, nuclear power plants, radiological transportation accidents, and other radiological hazards.

IS-100.b **FEMA: Introduction to Incident Command System**
Description: IS-100, Introduction to the Incident Command System, introduces the Incident Command System (ICS) and provides the foundation for higher level ICS training. This course describes the history, features and principles, and organizational structure of the Incident Command System. It also explains the relationship between ICS and the National Incident Management System (NIMS).

IS-200.b **FEMA: ICS for Single Resources and Initial Action Incidents**
Description: IS-200 is designed to enable personnel to operate efficiently during an incident or event within the Incident Command System (ICS). IS-200 provides training on and resources for personnel who are likely to assume a supervisory position within the ICS.

Prerequisite: IS-100 Introduction to the Incident Command System is required. Completion of IS-700.A, National Incident Management System (NIMS), An Introduction is recommended.

IS-301 **FEMA: Radiological Emergency Response**
Description: The goal of this IS course is to provide a learning experience in which participants demonstrate a comprehensive understanding of radiological protection and response principles, guidelines, and regulations to prepare them for the Radiological Emergency Response Operations (RERO) course.

Continued on next page

Table XIV-C: FEMA Courses Available – Independent Study, Continued

IS-302	<u>FEMA: Modular Emergency Radiological Response Transportation Training (MERRTT)</u>
<i>Description:</i>	This course includes the following topics: radiological basics, biological effects, hazard recognition (markings, labels, and placards), initial response actions, radioactive material shipping packages, on-scene patient handling, radiological terminology and units, assessing package integrity, radiation detection instrumentation, and radiological decontamination.
IS-303	<u>FEMA: Radiological Accident Assessment Concepts</u>
<i>Description:</i>	In this course, you will learn how to assess the off-site radiological consequences to the public following a release of radioactivity from nuclear power reactors and non-reactor incidents and how to use this assessment as a basis for recommending protective actions to decision makers.
IS-700.a	<u>FEMA: National Incident Management System (NIMS) An Introduction</u>
<i>Description:</i>	This course introduces and overviews the National Incident Management System (NIMS). NIMS provides a consistent nationwide template to enable all government, private sector, and nongovernmental organizations to work together during domestic incidents.
IS-800.b	<u>FEMA: National Response Framework, An Introduction</u>
<i>Description:</i>	The course introduces participants to the concepts and principles of the National Response Framework.

Continued on next page

Table XIV-C: FEMA Courses Available – Independent Study, Continued

IS-836

FEMA: Nuclear/Radiological Incident Annex

Description: The National Response Framework (NRF) presents the guiding principles that enable all response partners to prepare for and provide a unified national response to disasters and emergencies from the smallest incident to the largest catastrophe. As part of the NRF, the Incident Annexes describe the concept of operations to address specific contingency or hazard situations or an element of an incident requiring specialized application of the NRF. This course provides an introduction to the Nuclear/Radiological Incident Annex (NRIA) to the NRF.

Prerequisite: Successful completion of IS-800, National Response Framework, An Introduction.

Table XIV-D: FEMA/CDP Courses Available– Resident

CDP 004-14	<p><u>CDP: Radiological Emergency Preparedness (REP) Core Concepts Course (RCCC)</u></p> <p><i>Description:</i> This course focuses on nuclear power plant offsite Radiological Emergency Preparedness (REP) Program. It addresses the REP Program history and sentinel events, federal regulatory policies, basic radiation principles, REP planning guidance (planning standards), REP demonstration guidance (exercise evaluation areas), and the REP Disaster Initiated Review (DIR) process.</p> <p><i>Selection Criteria:</i> Personnel involved in off-site nuclear power plant emergency planning. This course is recommended for new planners and managers.</p> <p><i>Prerequisite:</i> IS-3 Radiological Emergency Management.</p> <p><i>Length:</i> 1 ½ days</p> <p><i>Location:</i> Noble Training Facility, Ft. McClellan/Anniston, Alabama</p>
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CDP 005-14	<p><u>CDP: Radiological Emergency Preparedness (REP) Planning</u></p> <p><i>Description:</i> This course focuses on nuclear power plant offsite emergency preparedness. It addresses federal regulatory policies, development and testing of plans, and public perception. This course provides a sound understanding of basic planning assumptions and policy issues.</p> <p><i>Selection Criteria:</i> Personnel involved in off-site nuclear power plant emergency planning. This course is recommended for new planners and managers.</p> <p><i>Prerequisite:</i> IS-235 Emergency Planning is recommended.</p> <p><i>Length:</i> 4 days</p> <p><i>Location:</i> Noble Training Facility, Ft. McClellan/Anniston, Alabama</p>
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Table XIV-D: FEMA/CDP Courses Available– Resident,
Continued

CDP 006-14	<u>CDP: Radiological Emergency Preparedness (REP) Exercise Evaluation (Offsite Resident) Regional Delivery</u>
<i>Description:</i>	Course topics include regulations and guidelines for evaluating exercises and techniques for exercise evaluation.
<i>Selection Criteria:</i>	State, local, tribal, and utility personnel who are involved in the development of offsite REP plans and exercises.
<i>Prerequisite:</i>	IS-331, Introduction to Radiological Emergency Preparedness (REP) Exercise Evaluation.
<i>Length:</i>	3 days
<i>Location:</i>	Noble Training Facility, Ft. McClellan/Anniston, Alabama

CDP 007-14	<u>CDP: Radiological Accident Assessment Concepts (RAAC)</u>
<i>Description:</i>	This course addresses radiological consequences of accidents involving radiological materials. This includes accidents or incidents involving commercial power reactors, lost sources, dispersion devices, and transportation. The focus of the sources is concepts involved in formulating protective action recommendations following a radiological accident, such as dose quantities, atmospheric dispersion, dose projection, Protective Action Guides, and Derived Intervention Levels. Participants engage in problem solving sessions and a tabletop exercise. There are two required evening sessions and a final examination in the course.
<i>Selection Criteria:</i>	Enrollment is limited to local, state, and federal technical radiological accident assessment staff. Private sector staff also may apply. This course requires familiarity with mathematical equations, and exponential manipulations. Participants must bring a scientific calculator which they know how to use to perform the required calculations. Participants should also know how to use Microsoft Excel and the Nuclear Regulatory Commission computer code, RASCAL.

Continued on next page

Table XIV-D: FEMA/CDP Courses Available– Resident,
Continued

CDP 007-14,
continued

Prerequisite: IS-303 Radiological Accident Assessment Concepts. IS-301 Radiological Emergency Response is recommended.

Length: 5 days

Location: Noble Training Facility, Ft. McClellan/Anniston, Alabama

E-300

FEMA: ICS-300, Intermediate Incident Command System for Expanding Incidents

Description: This course provides training for personnel who require advanced application of the Incident Command System (ICS). This course expands upon information covered in the IS-100 and IS-200 courses.

Selection Criteria: Individuals who may assume a supervisory role in Type 1, 2, or 3 level incidents.

NOTE: During a Type 3 incident, some or all of the Command and General Staff positions may be activated, as well as Division/Group Supervisor and/ or Unit Leader level positions. These incidents may extend into multiple Operational Periods.

Prerequisites: IS-0100.b Introduction to the Incident Command System, ICS-100; IS-0200.b Incident Command System for Single Resources and Initial Action Incidents; IS-0700.a National Incident Management System, An Introduction; and IS-0800.b National Response Framework, An Introduction.

Course Length: 3 days

Location(s): NETC; Noble Training Facility, Ft. McClellan/Anniston, Alabama

Continued on next page

Table XIV-D: FEMA/CDP Courses Available– Resident,
Continued

G-346 **FEMA: Hospital Emergency Department Management Of Hazardous Materials Accidents (HMA)**

Description: This course introduces medical personnel to the procedures for handling radiation and other hazardous materials accident victims in the hospital environment. The goal is to enable participants to provide prompt and appropriate care for hazardous materials/radiological accident victims while minimizing exposure and preventing the spread of contamination. Part 1 concentrates on radiation accidents whereas part 2 covers other hazardous materials incidents.

Selection Criteria: Physicians, nurses, and others who provide emergency medical services in hospitals.

Prerequisite: IS-346 Orientation to Hazardous Materials for Medical Personnel.

Length: 1 day

E-400 **FEMA: ICS-400: Advanced Incident Command System for Command and General Staff— Complex Incidents**

Description: This course provides training for personnel who require advanced application of the Incident Command System (ICS) within a Type 1 or Type 2 level incident or event. This course expands upon information covered in the IS-100, IS-200 and ICS-300 courses.

Selection Criteria: Senior personnel expected to perform in a management capacity in an Area Command or Multi-Agency Coordination Entity.

Prerequisite: IS-0100.b Introduction to the Incident Command System, ICS-100; IS-0200.b Incident Command System for Single Resources and Initial Action Incidents; G0300 ICS-300: Intermediate Incident Command System for Expanding Incidents; IS-0700.a National Incident Management System, An Introduction; and IS-0800.b National Response Framework, An Introduction.

Length: 3 days

Continued on next page

Table XIV-D: FEMA/CDP Courses Available– Resident,
Continued

PER-904

CDP: Radiological Emergency Response Operations (RERO)

Description: Radiological Emergency Response Operations (RERO) is a five-day course offering lectures, hands-on training, and team exercises. The lectures include operational-level radiological concepts using guidance and information from the U.S. Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA), U.S. Nuclear Regulatory Commission (NRC), U.S. Department of Energy (DOE), and the Environmental Protection Agency (EPA). Use of the hands-on training will provide students with the knowledge and skills to perform in a radiological emergency response operation regardless of the type of event. The RERO course culminates on the fifth day with a final exercise involving the emergency response operations skills and training learned during the course.

Selection Criteria: Participants must be members of an organized federal, state, local, or tribal radiological/hazardous materials response team that provides assistance to first-level responders.

Prerequisite: AWR-160 Standardized Awareness Training; IS-100.b Introduction to the Incident Command System; IS-200.b ICS for Single Resources and Initial Action Incidents; IS-700.a National Incident Management System (NIMS); IS-800.b National Response Framework (NRF); IS-3 Radiological Emergency Management; and IS-301 Radiological Emergency Response.

Meet the requirements and standards of Hazardous Waste Operations and Emergency Response (HAZWOPER), 29 C.F.R. § 1910.120(q)(6)(ii), (2009) and/or National Fire Protection Association (NFPA) 472 Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents, Chapters 5, 6 and 7.

Length: 5 days

Location: Noble Training Facility, Ft. McClellan/Anniston, Alabama

Continued on next page

Table XIV-D: FEMA/CDP Courses Available– Resident,
Continued

PER-905

CDP: Advanced Radiation Incident Operations (ARIO)

Description:

The Advanced Radiological Incident Operations course is a five-day course providing participants with the advanced skills necessary to safely respond to and manage incidents involving radiological hazards. Participants apply these skills in tabletop exercises based on realistic radiological incident scenarios, set within the ICS structure.

At the conclusion of this course, participants will be able to accomplish the following:

- Identify hazards created by a release of nuclear power plant radioactivity and fallout created by a nuclear detonation;
- Outline protective actions that must be taken for the public and other responders during an incident;
- Apply relocation, reentry, and return procedures relative to ingestion exposure pathways;
- Recognize the benefits of using plume modeling for making response decisions during an incident involving radiological materials;
- Identify selected radiation responder kits that may be used during radiological response; and
- Generate an Incident Action Plan.

Selection Criteria:

Those individuals who are assigned to or are responsible for responding to and possibly managing a radiation incident. These individuals may be members of federal, state, local and private sector response teams.

Prerequisite:

IS-100.b Introduction to the Incident Command System; IS-200.b ICS for Single Resources and Initial Action Incidents; and IS-700.a National Incident Management System (NIMS).

Also either PER-904 Radiological Emergency Response Operations, PER-240 WMD Radiological/Nuclear Responder Operations, or PER-241 WMD Radiological/Nuclear Course for HazMat Technicians.

Length:

5 days

Location:

Noble Training Facility, Ft. McClellan/Anniston, Alabama

Table XIV-E: Training Requirement Matrix

Module	1	2		3	4	5	6				7				8					9	10	11	12	13		14		15		16*	17*
		A	B				A	B	C	D	A	B	C	D	A	B	C	D	E					A	B	A	B	A	B		
Transportation Provider, Supervisor	X	X		X	X	X	X																X								X
Special Facility						X																	X								X
Fire Department, Mon/Decon EW/Public	X	X		X	X	X	X	X		X		X					X	X	X	X	X			X							X
Fire Department, Backup Route	X	X		X	X	X	X	X		X														X							X
Fire Department, Mutual Aid	X	X		X	X	X	X	X		X						X	X	X	X	X			X								X
Care Center, Red Cross						X																									X
Care Center						X																									X
MS-1 Hospital	X		X	X	X	X	X		X														X	X							X
EMS Provider, Supervisor	X		X	X	X	X	X		X													X		X							X
School Administration						X																									X
Risk Facilities	X	X		X	X	X	X																	X							X
Communication Provider, Supervisor						X																									X
Police T/ACP, Supervisor	X	X		X	X	X	X		X															X							X
OEPA	X	X		X	X	X	X							X										X					X	X	X
ODNR	X	X		X	X	X	X				X				X									X				X	X	X	X
ODA	X	X		X	X	X	X				X				X									X				X	X	X	X
FMT/ Sampling	X	X		X	X	X	X	X		X			X			X	X	X	X	X				X				X	X	X	X
PIO						X																			X	X		X			X
Directors						X																			X	X	X		X		X
Assessment Personnel						X																			X	X		X	X	X	X
IZZRAG						X																			X	X		X	X	X	X
EOC Personnel						X																				X		X			X
Radiological Analyst	X	X		X	X	X																									X
Dispatchers, Initial Notification	X					X																									X
Highway Worker, Supervisor	X	X	X		X	X	X																	X							X
Executive Group						X																			X	X					X
Operations Group						X																			X	X					X
Post Accident Operations Committee						X																			X	X		X	X		X

* Professional development series. Annual training is not required.

XV. Responsibility for the Planning Effort: Development, Periodic Review & Distribution of Emergency Plans

NUREG-0654 FEMA-REP-1 Criteria P

Overview Responsibilities for plan development and review and for distribution of emergency plans are established, and planners are properly trained.

Contents

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Table XV-A: Plan Distribution List	279

Overview

Purpose The purpose of this section is to assure that responsibilities for plan development, review and distribution are established and that planners receive the proper training.

Authority Ohio Revised Code, Chapter 5502

Responsibility

1. The Governor and Director of Public Safety have designated the Executive Director of Ohio EMA, as the individual with the overall authority and responsibility for radiological emergency response planning in Ohio at the state level.
2. The Executive Director of Ohio EMA, has designated the Radiological Branch Chief as the emergency planning coordinator and as such, is responsible for developing and updating emergency plans, and coordinating these plans with other response organizations.
3. Governmental entities at the county level will designate individuals by title with the overall authority and responsibility for radiological emergency response planning. This shall be included in individual county plans.

Annual Review

1. The Ohio EMA will review and certify the state plan taking into account any changes identified through drills, exercises and plan reviews. This shall be done as often as necessary, but at least annually.
2. Telephone listings associated with contacting affected agencies and response organizations are separate from the plan. These telephone listings should be reviewed and revised, if required, on a quarterly basis.
3. Once updated, changes and/or revisions will be furnished to every plan holder based upon original and subsequent distribution. In the event there is no change during the annual review, certification to this effect will be furnished to every plan holder. Revised pages of the plan will be dated and marked to show clearly where changes have been made.
4. Distribution of the state plan is made to all public and private entities having a response role.

Ingestion Pathway Ohio Department of Agriculture is responsible for the annual update and dissemination of ingestion pathway information relating to agriculture.

Continued on next page

Overview, Continued

Training

1. The Executive Director of Ohio EMA, has overall responsibility for radiological emergency response training in Ohio.
 2. The Executive Director has designated the Radiological Branch Chief as the radiological emergency response coordinator.
 3. The Radiological Branch Chief is responsible for ensuring Radiological Analysts are adequately trained.
 - a. Training will include, but will not be limited to, conferences, lectures, seminars, formal in-house and on-the-job training.
 - b. Planners are expected to develop the required degree of expertise in their assigned areas of planning and establish liaison with the response entities involved in order to provide for response plans that may be effectively executed.
-

Letters of Agreement

1. Letters of Agreement (LOA) are reviewed annually to verify their validity. LOA remain in effect until one party chooses to change or revoke the agreement.
 2. LOAs include details on what services will be provided and how the agreements will be activated.
 3. For a list of Letters of Agreement, see Appendix C.
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Table XV-A: Plan Distribution List

Changes & Updates

1. The following is the distribution list of the " The Ohio Radiological Emergency Preparedness (REP) Operations Manual."
2. Changes to the distribution list should be addressed to the Ohio Emergency Management Agency, 2855 West Dublin-Granville Road, Columbus, Ohio 43235-2206, ATTN: Radiological Analyst.
3. Local reproduction and maintenance of notices of changes/updates to those copies are the responsibility of the primary receiving agency, as identified in this listing.
4. Changes and updates to this plan and a return-requested receipt will be sent to the listed agencies at least annually or as needed.

Agency	Number of Copies
OFFICE OF THE GOVERNOR	
Executive Assistant	1
Assistant Press Secretary	1
OHIO EMERGENCY MANAGEMENT AGENCY	
Executive Director	1
Assistant Director	1
Operations Division Director	1
Administrative Division Director	1
Policy and Legislative Advisor	1
WebEOC Incident Management Support Branch Chief	1
Executive Room	1
Radiological Branch Chief	1
Radiological Analyst Supervisor	1
RI/M&C Supervisor	1
Radiological Analyst	2
DBNPS Resident Radiological Analyst	1
BVPS Resident Radiological Analyst	1
PNPP Resident Radiological Analyst	1
Fiscal	1

Continued on next page

Table XV-A: Plan Distribution List, Continued

Agency	Number of Copies
Mitigation and Recovery Branch Chief	1
Facilities and Logistics Branch Chief	1
Preparedness Branch Chief	1
Public Information Officer	1
Public Affairs Office	1
Regional Operations Branch Chief	1
Training Supervisor	1
Northeast Regional EMA Office	1
Northwest Regional EMA Office	1
Assessment Room	1
Communications and IT Branch Chief	1
Communications Branch Supervisor	1
Plans Supervisor	1
ADJUTANT GENERAL'S DEPARTMENT	
OHIO NATIONAL GUARD	
Adjutant General	1
Director, Joint Operations (J3)	1
Assistant Director, Joint Operations (J3)	1
OHIO DEPARTMENT OF ADMINISTRATIVE SERVICES	
Director	1
OHIO DEPARTMENT OF AGRICULTURE	
Director	1
Enforcement Division	1
Division of Food Safety	1
Public Information Officer	1
AMERICAN RED CROSS	
Ohio Buckeye Region	1
Greater Cleveland Chapter	1
American Red Cross of Northwest Ohio	1
American Red Cross, Crossroads Division	1

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Table XV-A: Plan Distribution List, Continued

Agency	Number of Copies
American Red Cross of Southeastern Ohio	1
OHIO ENVIRONMENTAL PROTECTION AGENCY	
Radiological Response Coordinator	1
Central Office, DERR Emergency Response Unit Supervisor	1
Chief, Division of Drinking & Ground Water	1
NW District Field Team Leader (Bowling Green)	1
NE District Field Team Leader (Twinsburg)	1
Chief, Division of Materials and Waste Management	1
Chief, Division of Surface Water	1
Radiation Assessment Team Leader	1
OHIO DEPARTMENT OF HEALTH	
Director	1
Bureau of Radiation Protection (BRP) Library	1
Bureau Chief, Bureau of Public Health Preparedness (BHP)	1
Bureau Chief, Bureau of Environmental Health & Radiation Protection	1
Supervisor, ODH Laboratory	1
Supervisor, Technical Support Section	1
OHIO STATE HIGHWAY PATROL	
Highway Patrol Superintendent	1
Findlay District Commander	1
Bucyrus District Commander	1
Columbus Field Operations	1
Warren District Commander	1
Chardon Post Commander	1
Toledo Post Commander	1
Sandusky Post Commander	1
Fremont Post Commander	1
Communications Center (Columbus)	1

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Table XV-A: Plan Distribution List, Continued

Agency	Number of Copies
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Bowling Green Post Commander	1
OSHP Hub Commander	1
OHIO HOMELAND SECURITY	
Executive Director	1
SAIC	1
OHIO DEPARTMENT OF INSURANCE	
Director	1
OHIO DEPARTMENT OF JOB AND FAMILY SERVICES	
Director	1
Emergency Coordinator	1
OHIO DEPARTMENT OF MENTAL HEALTH	
Director	1
OHIO DEPARTMENT OF NATURAL RESOURCES	
Assistant Director	1
Chief Law Administrator	1
Staff Officer	1
Division of Watercraft, Chief	1
Division of Watercraft, Northern Region Coordinator	1
Division of Wildlife, Chief	1
Division of Parks, Chief	1
Division of Parks, Northeast Law Supervisor	1
OHIO STATE UNIVERSITY EXTENSION	
Director of Extension	1

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Table XV-A: Plan Distribution List, Continued

Agency	Number of Copies
OHIO DEPARTMENT OF PUBLIC SAFETY	
Director	1
Communications Director	1
PUBLIC UTILITIES COMMISSION OF OHIO	
Chairman	1
Utility Specialist	1
Chief, Transportation Enforcement Division	1
Agency Emergency Coordinator	1
OHIO DEPARTMENT OF TRANSPORTATION	
Director	1
Emergency Response Coordinator	1
District 2 Operations Engineer (Bowling Green)	1
District 12 Roadway Services Manager (Garfield Heights)	1
District 4 Highway Management (Ravenna)	1
District 11 Operations Engineer (New Philadelphia)	1
ASHTABULA COUNTY, OHIO	
County Commissioners	1
County Sheriff	1
County Emergency Management Agency	1
County Health Department	1
COLUMBIANA COUNTY, OHIO	
County Commissioners	1
County Sheriff	1
County Sheriff's Office, Chief Deputy	1
County Emergency Management Agency	1
County Health Department	1
ERIE COUNTY, OHIO	
County Homeland Security and Emergency Management	1

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Table XV-A: Plan Distribution List, Continued

Agency	Number of Copies
GEAUGA COUNTY, OHIO	
County Commissioners	1
County Sheriff	1
County Department of Emergency Services	1
County Health District	1
LAKE COUNTY, OHIO	
County Commissioners	1
County Sheriff	1
County Emergency Management Agency	1
Planner/LEPC Information Coordinator	1
County Health Department	1
LUCAS COUNTY, OHIO	
County Emergency Management Agency	1
Emergency Operations Center	1
County Commissioners	1
County Sheriff	1
County Sheriff's Office	1
Toledo-Lucas County Health Department	1
OTTAWA COUNTY, OHIO	
County Commissioners	1
County Sheriff	1
County Emergency Management Agency	1
County Health Department	1
ADDITIONAL COUNTIES	
BVPS PLANNING AREA	
Belmont County Emergency Management Agency	1
Carroll County Emergency Management Agency	1
Harrison County Emergency Management Agency	1
Jefferson County Emergency Management Agency	1

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Table XV-A: Plan Distribution List, Continued

Agency	Number of Copies
Mahoning County Emergency Management Agency	1
Stark County Emergency Management Agency	1
Trumbull County Emergency Management Agency (Also part of PNPP Planning Area)	1
Tuscarawas County Homeland Security and Emergency Management	1
DBNPS PLANNING AREA	
Crawford County Emergency Management Agency	1
Fulton County Emergency Management Agency	1
Hancock County Emergency Management Agency	1
Henry County Emergency Management Agency	1
Huron County Emergency Management Agency	1
Lorain County Emergency Management (Also part of PNPP Planning Area)	1
Sandusky County Emergency Management Agency	1
Seneca County Emergency Management Agency	1
Wood County Emergency Management Agency	1
Wyandot County Emergency Management Agency	1
PNPP PLANNING AREA	
Cuyahoga County Emergency Management Agency	1
Portage County Emergency Management Agency	1
Summit County Emergency Management Agency	1
BEAVER VALLEY POWER STATION	
BVPS Emergency Planning Staff	1
BVPS Emergency Operations Facility (EOF)	1
BVPS Joint Information Center (JIC)	1
DAVIS-BESSE NUCLEAR POWER STATION	
Emergency Operations Facility	1
Sr. Nuclear Specialists (Offsite)	1
DBNPS Public Relations (For Ohio EMA PIO use in offsite JIC)	1

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Table XV-A: Plan Distribution List, Continued

Agency	Number of Copies
Station Document Control	1
Emergency Planning	1
PERRY NUCLEAR POWER PLANT	
PNPP Emergency Planning (Ohio EMA Liaison)	1
PNPP Emergency Planning Staff Supervisor	1
PNPP Public Relations (For Ohio EMA Public Information Office use)	1
PNPP Back-up EOF	1
PNPP Emergency Planning (EOF)	1
PNPP TEC Building (Training Section, Library)	1
FERMI-2 NUCLEAR POWER PLANT	
Emergency Planning	1
COMMONWEALTH OF PENNSYLVANIA	
Pennsylvania Emergency Management Agency	1
Beaver County Emergency Services	1
STATE OF WEST VIRGINIA	
West Virginia Division of Homeland Security and Emergency Management	1
Hancock County Office of Emergency Management	1
STATE OF MICHIGAN	
Department of State Police, Emergency Management Division	1
CANADA	
Ministry of Community Safety and Correctional Services, Emergency Management Ontario	1
FEDERAL EMERGENCY MANAGEMENT AGENCY	
Regional Assistance Committee	16
U.S. NUCLEAR REGULATORY COMMISSION	
Office of Nuclear Security and Incident Response Operations	1
Division of Licensing	1
Region I State Liaison Officer	1
Region III State Liaison Officer	1

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Table XV-A: Plan Distribution List, Continued

Agency	Number of Copies
U.S. ARMY CORPS OF ENGINEERS	
Pittsburgh District (Ohio River Watershed)	1
Buffalo District (Lake Erie Watershed)	1
U.S. COAST GUARD	
Ninth Coast Guard District	1
Marine Safety Unit Toledo	1
Sector Detroit	1
FARM SERVICE AGENCY - USDA	
Agriculture Program Specialist	1
PUBLIC DOCUMENT READING ROOMS	
Copies of this plan were withdrawn from Public Libraries due to homeland security considerations.	

Appendix A – Glossary

Disclaimer Most definitions are given in the context as each term relates to this plan. Many of these definitions are verbatim from the National Response Framework (NRF), National Management System (NIMS), and the REP Program Manual. The definitions list is not all-inclusive.

Definitions **ACCIDENT ASSESSMENT:** The evaluation of the actual and potential consequences of a radiological incident.

ACTIVATION: An Emergency Operations Center (EOC) is considered “Activated” as soon as notification of an incident is received and the director/EOC representative makes the determination to activate the facility. The facility is not considered “Operational” until it is ready to carry out full emergency operations with key decision makers in place.

AGENCY REPRESENTATIVE: A person assigned by a primary, assisting, or cooperating federal, state, local, or tribal government agency or private entity that has been delegated authority to make decisions affecting that agency’s or organization’s participation in incident management activities following appropriate consultation with the leadership of that agency.

ALERT: 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.

AREA REQUIRING CORRECTIVE ACTION (ARCA): An observed or identified inadequacy of organizational performance in a radiological emergency preparedness exercise that is not considered, by itself, to adversely impact public health and safety. Correction of ARCAs is verified before or during the next biennial exercise at the site.

BACKGROUND RADIATION: The level of naturally occurring and man-made radiation in the environment. Sources include air, water, soil, potassium-40 in the body, and cosmic radiation from the sun. The usually quoted individual background radiation exposure in a man’s natural environment is an average of 125 millirem per year.

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Appendix A - Glossary, Continued

Definitions,
continued

CARE CENTER: Location (usually a school) set aside for the mass care and feeding of members of the public evacuated from the EPZ during an emergency at a nuclear power station. In some counties, radiation monitoring and decontamination of the public, if needed, also occurs at care centers (see **RECEPTION CENTERS**).

COMMITTED DOSE EQUIVALENT (CDE): The dose equivalent to organs or tissues of reference that will be received from intake of radioactive material by an individual during the 50-year period following the ingestion.

COMMITTED EFFECTIVE DOSE EQUIVALENT (CEDE): The sum of the 50-year committed doses to individual organs from inhalation (or ingestion) of radionuclides, where the individual organ doses have been weighted so that the associated risk of fatal cancer can be added to the risk of fatal cancer from whole-body dose.

CONTAMINATED: The condition resulting from the adhesion of radioactive particulates to the surface of structures, areas, objects, or personnel.

COUNTING: Using an instrument to detect individual particles or gamma rays which interact with the detector on the instrument. For example, ambient radiation can be counted, or, alternatively, the radiation emitted by specific samples can be counted in units of counts per minute (cpm) or counts per second (cps).

DECONTAMINATION: The process of making any person, object, or area safe by absorbing, destroying, neutralizing, making harmless, or by removing radioactive material clinging to or around it.

DEFICIENCY: An observed or identified inadequacy of organizational performance in a radiological emergency preparedness exercise that could cause a finding that offsite emergency preparedness is not adequate to provide reasonable assurance that actions can be taken to protect the health and safety of the public in the vicinity of a commercial nuclear power facility. A deficiency must be resolved through remedial actions, including exercises, drills, or other actions. Demonstration of the corrective actions should be evaluated within 120 calendar days of the exercise in which the deficiency was identified.

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Appendix A - Glossary, Continued

Definitions, continued

DERIVED INTERVENTION LEVEL (DIL): Concentration derived from the intervention level of dose at which the Food and Drug Administration recommends consideration of protective measures. DILs correspond to the radiation concentration in food throughout the relevant time period that, in the absence of any intervention, could lead to an individual receiving a radiation dose equal to the protective action guide or in international terms the intervention levels of dose.

DERIVED RESPONSE LEVEL (DRL): The calculated concentration of a particular radionuclide in a particular medium (e.g., soil) that will produce a dose equal to a protective action guide.

DIRECT READING DOSIMETER (DRD): A small ionization detection instrument that indicates radiation exposure directly. An auxiliary charging device is usually necessary. DRDs can be read in real time by the user. A DRD is also referred to as a “pocket dosimeter.”

DIRECTION AND CONTROL: The management of emergency functions within a particular context (e.g., emergency operations center) through leadership and use of authority.

DOSE: The quantity of energy absorbed from ionization per unit mass of tissue. The rad is the unit of absorbed dose.

DOSE EQUIVALENT: (1) A term used to express the amount of effective radiation when modifying factors have been considered. (2) The product of absorbed dose multiplied by a quality factor multiplied by a distribution factor. It is expressed numerically in rem. (3) The product of the absorbed dose in rad, a quality factor related to the biological effectiveness of the radiation involved and any other modifying factors.

DOSE RATE: The radiation dose delivered per unit time. The dose rate may be expressed numerically in rads per second or rads per hour (frequently expressed in rem per hour).

DOSIMETERS: Devices such as a thermoluminescent dosimeter (TLD), optically stimulated luminescent dosimeter (OSLD), and/or direct-reading ionization chamber for measuring and registering the total accumulated exposure to ionizing radiation. The devices come in various ranges and types.

DOSIMETRY COORDINATOR: The individual responsible for dispensing dosimetry packets to emergency workers and tracking their dose.

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Appendix A - Glossary, Continued

Definitions, continued

EARLY PHASE: The period at the beginning of a nuclear incident when immediate decisions for effective use of protective actions are required and must therefore usually be based primarily on the status of the nuclear power plant and the prognosis for worsening conditions. When available, predictions of radiological conditions in the environment based on the condition of the source or actual environmental measurements may also be used. Precautionary actions may precede protective actions based on the protective action guides. This phase lasts hours to several days and ends when the radioactive release stops. (Also referred to as the plume or emergency phase.)

EFFECTIVE DOSE EQUIVALENT (EDE): The sum of the products of the dose equivalent to each organ on a weighting factor, where the weighting factor is the ratio of the risk of mortality from delayed health effects arising from irradiation of a particular organ or tissue to the total risk of mortality from delayed health effects when the whole body is irradiated uniformly to the same dose.

EFFLUENT: Liquid, gas or particulate discharges.

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 FACILITY (EOF): A facility that is the primary base of emergency operations for the licensee in a radiological incident.

EMERGENCY PLANNING ZONE (EPZ): A geographic area surrounding a commercial nuclear power plant for which emergency planning is needed to ensure that prompt and effective actions can be taken by offsite response organizations to protect the public health and safety in the event of a radiological accident. The plume pathway EPZ is approximately 10 miles in radius, while the ingestion pathway EPZ has a radius of approximately 50 miles.

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Appendix A - Glossary, Continued

Definitions, continued

EMERGENCY WORKER: An individual who has an essential mission 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; fire and rescue personnel, including ambulance crews; medical facilities personnel; emergency operation center personnel; personnel carrying out route alerting procedures; essential services or utility personnel; and evacuation vehicle (e.g., bus, van, etc.) drivers. Note that evacuation vehicle drivers who will be transporting individuals or groups out of the emergency planning zone and who are not expected to return to the emergency planning zone are not considered “Emergency Workers.”

EXPOSURE: The absorption of radiation or ingestion of a radionuclide. The exposure at a given point is a measurement of radiation in relation to its ability to produce ionization. The unit of measurement of the exposure is the roentgen. A measure of radiation dose received by a person, usually broken down and used to refer to whole-body exposure compared with exposure to the hands only.

EXPOSURE RATE: The amount of gamma radiation that an individual would receive in one hour as measured in air (typically expressed in units of microrem per hour, millirem per hour or rem per hour).

FAST-BREAKING EVENT: A nuclear power plant event or incident that, either instantaneously or in a very short time period, progresses to a General Emergency situation with a release in progress, which requires immediate (prompt) notification of the public, and requires urgent and immediate actions on the part of the general public.

For the purpose of this definition, a fast breaking event includes any event that requires “prompt notification of the public in the event of a general emergency with a release in progress at a nuclear power plant requiring urgent and immediate actions on the part of the general public.” Urgent and immediate actions by the public could include any action, such as seeking shelter, evacuation, or standing-by and monitoring news or emergency information updates for further action, as determined necessary by the situation.

The regulatory discussion and the expected sequence of actions in any fast-breaking event are provided in 44 CFR Part 350.5 (a) (5) and 10 CFR Part 50, Appendix E. See also Federal Register Vol. 68, No. 160 dated August 19, 2003, Notices, pp. 49783 – 49785.

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Appendix A - Glossary, Continued

Definitions,
continued

FIELD MONITORING TEAM (FMT) COORDINATOR: The individual responsible for directing the Field Monitoring Teams. This person will be located at the affected county EOC.

GENERAL EMERGENCY (GE): 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.

HOSTILE ACTION: As defined in Nuclear Regulatory Commission Bulletin 2005-02 *Emergency Preparedness and Response Actions for Security-Based Events*, a hostile action is “an act toward a nuclear power plant or its personnel that includes the use of violent force to destroy equipment, take hostages, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, projectiles, vehicles, or other devices used to deliver destructive force.

INGESTION EXPOSURE PATHWAY EMERGENCY PLANNING ZONE (IPZ): A geographic area, approximately 50 miles in radius surrounding a commercial nuclear power plant, in which it has been estimated that the health and safety of the general public could be adversely affected through the ingestion of water or food which has been contaminated through exposure to radiation primarily from the deposition of radioisotopes after a radiological accident. The duration of such exposures could range in length from hours to months.

INCIDENT: An occurrence or event, natural or manmade, which requires a response to protect life or property. Incidents can, for example, include major disasters, emergencies, terrorist attacks, terrorist threats, civil unrest, wildland and urban fires, floods, hazardous materials spills, nuclear accidents, aircraft accidents, earthquakes, hurricanes, tornadoes, tropical storms, war-related disasters, public health and medical emergencies, and other occurrences requiring an emergency response.

INGESTION PHASE – See “intermediate phase.”

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Appendix A - Glossary, Continued

Definitions,
continued

INSTITUTIONALIZED INDIVIDUALS: Individuals who reside in institutions, such as nursing homes or correctional facilities, who may need to depend on others for assistance with protective actions. Institutionalized individuals may or may not have disabilities and access/functional needs.

INTERMEDIATE PHASE: The period beginning after the utility has verified that the release has been terminated. Reliable environmental measurements are available for use as a basis for decisions on additional protective actions. It extends until these additional protective actions are terminated. This phase may overlap the late phase and may last from weeks to many months. The intermediate phase encompasses REP post-plume activities associated with both ingestion and relocation.

ISOTOPE: Nuclides having the same number of protons in their nuclei and the same atomic number, but differing in the number of neutrons and atomic mass number. Some isotopes of a particular element may be radioactive while others are not.

JOINT INFORMATION CENTER (JIC): A central point of contact for all news media at the scene of the incident. News media representatives are kept informed of activities and events via public information officials from all participating Federal, State, and local agencies, which, ideally, are collocated at the JIC.

JUST IN TIME TRAINING (JIT): Instructions provided to personnel immediately prior to performing the assigned task or function.

LACTATING: Any dairy animal (cows, goats, etc.) that produces milk for human consumption and has the potential for affecting the food supply with contaminated milk by grazing on contaminated pasture during or after a release of radiation from a nuclear power station.

LATE PHASE: The period beginning when recovery action designed to reduce radiation levels in the environment to acceptable levels for unrestricted use are commenced, and ending when all recovery actions have been completed. This period may extend from months to years. REP post-plume activities associated with return and recovery occur during the late phase.

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Appendix A - Glossary, Continued

Definitions, continued

LICENSEE: The utility or organization that has applied for or has received from the Nuclear Regulatory Commission (1) a license to construct or operate a commercial nuclear power plant, (2) a possession-only license for a commercial nuclear power plant, with the exception of licensees that have received an NRC-approved exemption to 10 CFR § 50.54(q) requirements, (3) an early site permit for a commercial nuclear power plant, (4) a combined construction permit and operating license for a commercial nuclear power plant, or (5) any other NRC license that is now or may become subject to requirements for offsite radiological emergency planning and preparedness activities. This plan focuses on the nuclear power plants that affect the State of Ohio.

LETTERS OF AGREEMENT (LOA): A document executed between two or more parties outlining specific agreements relating to the accomplishment of an action. REP letters of agreement may cover personnel, equipment, or other types of emergency support, and may take the form of letters, contracts, purchase orders, or other procurement mechanisms.

MONITORING: The act of detecting the presence of radiation and the measurement of radiation levels usually performed with a portable survey instrument. Monitoring may also be referred to as “surveying.”

NATIONAL OPERATIONS CENTER (NOC): The primary national hub for situational awareness and operations coordination across the federal government for incident management. The NOC is a standing 24/7 interagency organization fusing law enforcement, national intelligence, emergency response, and private sector reporting. The NOC facilitates homeland security information-sharing and operational coordination with other federal, state, local, tribal, and nongovernmental EOCs.

NATIONAL RESPONSE COORDINATION CENTER (NRCC): A multi-agency center that provides overall federal response coordination and emergency management program implementation. Department of Homeland Security/Federal Emergency Management Agency (DHS/FEMA) maintains the NRCC as a functional component of the NOC in support of incident management operations.

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Appendix A - Glossary, Continued

Definitions,
continued

NATIONAL RESPONSE FRAMEWORK (NRF): In recent years, our nation has faced an unprecedented series of disasters and emergencies, and as a result, our national response structures have evolved and improved to meet these threats. The NRF reflects those improvements and replaces the former National Response Plan (NRP). The NRF presents the guiding principles that enable all response partners to prepare for and provide a unified national response to disasters and emergencies – from the smallest incident to the largest catastrophe. The NRF establishes a comprehensive, national, all-hazards approach to domestic incident response. The NRF is comprised of the core document, the Emergency Support Functions (ESF), Support and Incident Annexes, and the Partner Guides.

NOTICE OF UNUSUAL EVENT (NOUE): 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.

NUCLEAR INCIDENT RESPONSE TEAM (NIRT). Created by the Homeland Security Act to provide DHS with a nuclear/radiological response capability. When activated, the NIRT consists of specialized federal response teams drawn from DOE and/or EPA. These teams may become DHS operational assets providing technical expertise and equipment when activated during a crisis or in response to a nuclear/radiological incident as part of the DHS federal response.

OFFSITE: Beyond the boundaries of the owner controlled area around a commercial nuclear power plant.

ONSITE: The owner-controlled area of a commercial nuclear power plant.

PANCAKE PROBE: A handheld probe with a “thin” window GM tube for the detection of alpha, beta and gamma radiation. Generally used for contamination surveys.

PERMANENT READING DOSIMETER (PRD): A general term referring to a dosimeter used to provide an official dose of record in accordance with 10CFR20. These devices do not provide a direct reading to the wearer, nor can the wearer clear, erase, or otherwise reset the device. A PRD must be sent to an accredited facility to be processed and obtain a reading. Common types include Thermo-luminescent Dosimeters (TLDs), Film Badges, and Optically Stimulated Luminescent Dosimeters (OSLDs).

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Appendix A - Glossary, Continued

Definitions,
continued

PERSONS WITH DISABILITIES AND ACCESS/FUNCTIONAL NEEDS: Individual(s) within a community that may have additional needs before, during, and after an incident in one or more of the following functional areas: maintaining independence, communication, transportation, supervision, and medical care. Individual(s) in need of additional response assistance may include those who have disabilities (sensory, motor skills, mental/emotional); who live in institutionalized settings; who are elderly; who are children; who are from diverse cultures; who have limited or no English-speaking proficiency; or who are transportation-disadvantaged.

PLANNING ISSUE: An identified inadequacy in the organization's emergency plan/procedures, rather than in the organization's performance. Plan Issues are required to be corrected through the revision of the appropriate plans/procedures during the next annual plan review and update, submitted for FEMA review, and reported in the State's Annual Letter of Certification.

PLUME: Generally a gaseous atmospheric release from a nuclear power plant, in an accident or emergency, which may contain radioactive noble gases and volatile solids. While emergency plans 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 release of noble gases and volatiles such as radioiodines. This cloud is not visible to the eye, but can be measured, or seen with radiation measurement equipment.

POTASSIUM IODIDE (KI): A prophylactic compound commonly referred to as a radioprotective drug containing a stable (i.e., non-radioactive) form of iodide that can be used effectively to block the uptake of radioactive iodine by the thyroid gland in a human being.

PRECAUTIONARY PROTECTIVE ACTION: Any preventive or emergency protective actions implemented without the verification of radionuclide measurements by field monitoring or laboratory analysis.

PREPAREDNESS ORGANIZATIONS: The groups that provide interagency coordination for domestic incident management activities in a non-emergency context. Preparedness organizations can include all agencies with a role in incident management, for prevention, preparedness, response, or recovery activities. They represent a wide variety of committees, planning groups, and other organizations that meet and coordinate to ensure the proper level of planning, training, equipping, and other preparedness requirements within a jurisdiction or area.

Continued on next page

Appendix A - Glossary, Continued

Definitions, continued

PREVENTIVE PROTECTIVE ACTIONS: Protective actions to prevent or reduce contamination of milk, food, and drinking water such as covering water sources and providing dairy cows with stored feed. Preventive protective actions also include washing, brushing, scrubbing, or peeling fruits and vegetables to remove surface contamination.

PRINCIPAL FEDERAL OFFICIAL (PFO): Pursuant to the Homeland Security Act of 2002 and HSPD-5, the Secretary of Homeland Security is the principal Federal official for all domestic incidents requiring multiagency Federal response. The Secretary may elect to designate a single individual to serve as his or her primary representative to ensure consistency of Federal support as well as the overall effectiveness of the Federal incident management. When appointed, such an individual serves in the field as the Principal Federal Official for the incident.

PRIVATE SECTOR: Organizations and entities that are not part of any governmental structure. It includes for-profit and not-for-profit organizations, formal and informal structures, commerce and industry, and private voluntary organizations (PVO).

PROCESSES: Systems of operations that incorporate standardized procedures, methodologies, and functions necessary to provide resources effectively and efficiently. These include resource typing, resource ordering and tracking, and coordination.

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 FOR INGESTION: Actions taken to limit the radiation dose from ingestion by avoiding or reducing the contamination in or on human food and animal feeds.

PROTECTIVE ACTION GUIDES (PAG): Projected dose to an individual in the general population that warrants the implementation of protective action. The Food and Drug Administration and Environmental Protection Agency have recommended specific protective action guides in terms of the level of projected dose that warrants the implementation of evacuation and sheltering, relocation, and limiting the use of contaminated food, water, or animal feed.

Continued on next page

Appendix A - Glossary, Continued

Definitions,
continued

PROTECTIVE ACTION RECOMMENDATION (PAR): Advice from the State or Utility on emergency measures the counties should consider in determining action for the public to take to avoid or reduce their exposure to radiation.

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 the absorbing material or tissue (see roentgen).

RADIATION AREA: Any area, accessible to personnel, in which radiation levels could result in an individual receiving a dose equivalent in excess of 5 millirem in 1 hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.

RADIATION WORKER: An individual who might come into contact with radioactive materials as a result of the incident and whose job assignment may be inside or outside the plume EPZ.

RADIOACTIVITY: The spontaneous decay or disintegration of an unstable atomic nucleus usually accompanied by the emission of ionizing radiation, generally alpha or beta particles, often accompanied by gamma rays from the nuclei of an unstable isotope.

RADIOISOTOPE: An unstable isotope of an element that decays or disintegrates spontaneously, emitting radiation. Approximately 5000 natural and artificial radioisotopes have been identified.

RECEPTION CENTER: A pre-designated facility outside the EPZ (minimum is 15 miles from the nuclear power facility) at which the evacuated public can register, receive radiation monitoring and decontamination; receive assistance in contacting others; receive directions to congregate Care Centers; reunite with others; and receive general information. It generally refers to a facility where monitoring, decontamination, and registration of evacuees are conducted. A reception/relocation center is also referred to as a registration center or public registration and decontamination center.

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.

Continued on next page

Appendix A - Glossary, Continued

Definitions, continued

RECOVERY PLAN: A plan developed by a state to restore the affected area with federal assistance if needed.

REENTRY: Temporary entry of persons into the Restricted Zone under controlled conditions.

RELEASE: A radiological release (airborne or liquid) to the outside environment attributable to the emergency event.

RELOCATION: The removal or continued exclusion of people (households) from contaminated areas to avoid chronic radiation exposure.

RESTRICTED ZONE (RZ): An area of controlled access from which the population has been evacuated, relocated, or sheltered-in-place.

RETURN: Reoccupation of areas cleared for unrestricted residence or use by previously evacuated or relocated populations.

SERVICE ANIMAL: Dogs that are individually trained to do work or perform tasks for people with disabilities. Examples of such work or tasks include guiding people who are blind, alerting people who are deaf, pulling a wheelchair, alerting and protecting a person who is having a seizure, reminding a person with mental illness to take prescribed medications, calming a person with Post Traumatic Stress Disorder (PTSD) during an anxiety attack, or performed other duties. Service animals are working animals, not pets. The work or task a dog has been trained to provide must be directly related to the person's disability. Dogs whose sole function is to provide comfort or emotional support do not qualify as service animals under the Americans with Disabilities Act (ADA).

SHELTER-IN-PLACE: A protective action that includes going indoors listening to an Emergency Alert System radio or television station, closing all windows and doors, closing exterior vents, and turning off heating and air conditioning equipment using outside air.

SITE AREA EMERGENCY (SAE): 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 boundaries.

Continued on next page

Appendix A - Glossary, Continued

Definitions,
continued

TOTAL EFFECTIVE DOSE EQUIVALENT (TEDE): The sum of the deep dose equivalent (for external exposures) and for committed effective dose equivalent (for internal exposures).

TRAFFIC CONTROL: Activities accomplished for the purpose of facilitating the evacuation of the general public in vehicles along specific routes.

TRANSIENT POPULATION: Non-residents and persons who do not permanently reside in the EPZ, but may be present during an emergency.

TURN-BACK VALUES: Total accumulated exposure limits or exposure rates at which the emergency or radiation worker should leave the area without further consultation or direction.

WHOLE BODY COUNTER: Detection device that measures ingested or contaminating radiation in or on a person.

Appendix B – References

Federal

1. U.S. Nuclear Regulatory Commission and Federal Emergency Management Agency. Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, NUREG-0654/FEMA-REP-1, Rev. 1, November 1980.
2. U.S. Department of Homeland Security (2008). National Response Framework.
3. U.S. Food and Drug Administration. Accidental Radioactive Contamination of Human and Animal Feeds: Recommendations for State and Local Agencies, August 13, 1998.
4. U.S. Code of Federal Regulations, Title 10, Part 50, App. E; Title 44, Part 350, App. E.
5. U.S. Environmental Protection Agency. Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, EPA-400-R-92-001, May 1992.
6. U.S. Environmental Protection Agency. PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents, March 2013.
7. Department of Energy. FRMAC Operations Manual , DOE/NV/25946-080, May 2010.
8. Department of Energy. FRMAC Radiation Monitoring, Volume 1, Operations, DOE/NV 25946-1554, July 2012.
9. Department of Energy. FRMAC Monitoring, Volume 2, Radiation Monitoring and Sampling, DOE/NV 25946-1558, July 2012.
10. Department of Energy. FRMAC Assessment Manual, Volume 1 – Overview and Methods, SAND2013-0184P, December 2012.
11. Department of Energy. FRMAC Assessment Manual, Volume 2 – Pre-assessed Default Scenarios, SAND2010-2575P, February 2010.
12. Federal Emergency Management Agency. Radiological Emergency Preparedness (REP) Program Manual, June 2013 and its associated references.
13. Federal Emergency Management Agency. Contamination Monitoring Guidance for Portable Instruments Used for Radiological Emergency Response to Nuclear Power Plant Accidents. FEMA-REP-22 / October 2002.

Continued on next page

Appendix B – References, Continued

State

1. Ohio Revised Code; State of Ohio.
 2. Ohio Administrative Code, State of Ohio.
 3. Ohio Department of Agriculture. Radiological Emergency Information for Food Producers, Processors, and Distributors, 2015.
-

Utility

1. Beaver Valley Power Station Emergency Preparedness Plan, Vol. I, II, and III; First Energy Nuclear Operating Company.
 2. Davis-Besse Nuclear Power Station Emergency Preparedness Plan, Vol. I, II, and III; First Energy Nuclear Operating Company.
 3. Perry Nuclear Power Plant Emergency Preparedness Plan; First Energy Nuclear Operating Company.
 4. Radiation in Perspective; First Energy Nuclear Operating Company.
 5. Development of Evacuation Times for the Beaver Valley Nuclear Power Station; prepared for First Energy Nuclear Operating Company by KLD Engineering, P.C., December 2012.
 6. Development of Evacuation Time Estimate for the Davis-Besse Nuclear Power Station; prepared for First Energy Nuclear Operating Company by KLD Engineering, P.C., October 2012.
 7. Development of Evacuation Time Estimates for the Perry Nuclear Power Plant; prepared for First Energy Nuclear Operating Company by KLD Engineering, P.C., October 2012.
 8. Fermi 2 Radiological Emergency Response Preparedness Plan; Detroit Edison.
-

Other

1. Ashtabula County Emergency Response Plan
 2. Beaver County (PA) Emergency Response Plan
 3. Columbiana County Emergency Response Plan
 4. Erie County Emergency Response Plan
 5. Geauga County Emergency Response Plan
 6. Hancock County (WV) Emergency Response Plan
 7. Lake County Emergency Response Plan
-

Continued on next page

Appendix B – References, Continued

Other,
continued

8. Lucas County Emergency Response Plan
 9. Ottawa County Emergency Response Plan
 10. Sandusky County Emergency Response Plan
 11. Wood County Emergency Response Plan
 12. Michigan Emergency Response Plan
 13. Pennsylvania Emergency Response Plan
 14. West Virginia Emergency Response Plan
 15. Pennsylvania Department of Agriculture. Farmer’s Emergency Information.
 16. Province of Ontario Canada Nuclear Emergency Plans
-

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Appendix C – Letters of Agreement

1. State of Ohio Interagency Letter of Agreement
2. Ohio Department of Education; School Bus Use Permissibility
3. Ohio State University Nuclear Reactor Laboratory; Availability of Radiological Assistance
4. American National Red Cross; Statement of Understanding
5. U.S. Coast Guard; Memorandum of Understanding
6. Pennsylvania EMA, Statement of Agreement for Response Coordination for the Beaver Valley PS and Perry NPP
7. West Virginia Office of Emergency Services; Letter of Agreement for Response Coordination
8. Norfolk and Western Railway Company; Rail Traffic Restrictions during Radiological Emergencies
9. Consolidated Rail Corporation; Rail Traffic Restrictions during Radiological Emergencies
10. Province of Ontario; Actions to be taken in the Event of an Emergency Involving Nuclear Power Stations
11. First Energy Nuclear Operating Company, Letter of Agreement
(Davis-Besse Nuclear Power Station, Perry Nuclear Power Plant, and Beaver Valley Power Station)
12. Michigan State Police, Emergency Management Division, Letter of Agreement
(Davis-Besse NPS and Enrico Fermi 2 NPP)
13. The Wheeling & Lake Erie Railway Company, Letter of Agreement for Response Actions and Restrictions

Letters of Agreement are on file at the Ohio Emergency Management Agency.

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Appendix D – State Procedures

PROCEDURE	SECTION
101 – SEOC Activation	I, III, IV
321 – Media Advisory and Release	VI
650 – Radiological Assessment Branch Director	I
651 – Radiological Assessment Support Unit Leader	IV
652 – State Dose Assessment Systems Operator	VIII
653 – Assessment Room Activation	I, III, IV
658 – FMT Member	I, III, VII, VIII, X, XIII
659 – Dosimetry Coordinator	I, X
657 – FMT Coordinator	IX
663 – FTC Coordinator	I, VII, VIII
Ingestion Zone, Recovery and Reentry Advisory Group	XII
Public Information Group	VI
NPCT 1-5 Communications Tests	XIII

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Appendix E – NUREG-0654 Crosswalk

Criterion	EOP	RIRP	ROM	Location
A.1.a	X			ESF-1 – ESF-15
		X		Agency listings; VII
			X	I; Table I-A; Figures I-B, I-C
A.1.b	X			ESF-1 V.B; ESF-2 V.B; ESF-3 IV; ESF-4 V; ESF-5 IV; ESF-6 V.B; ESF-7 IV.B; ESF-8 V.B; ESF-9 IV; ESF-10 IV; ESF-11 IV.B; ESF-12 IV; ESF-13 IV.B; ESF-14 V.B; ESF-15 IV
		X		VII
			X	I
A.1.c			X	Figures I-B, I-C, II-A
A.1.d	X			V.A.1.a; V.A.1.h - V.A.1.i
		X		II.A - II.B
			X	I
A.1.e		X		VI.A.2; VI.C.3
			X	I; IV
A.2.a	X			II.E; Tab-A
		X		VII
			X	I; Table I-A
A.2.b	X			I.C; II.C.1 – II.C.2
			X	I; XII; XV
A.3	X			V.G; ESF-1 – ESF-15; TIA-1
			X	XV; Appendix C
A.4			X	I
C.1.a	X			III.B.4.c
			X	I; IX
C.1.b			X	II; Tables II-B, II-C, II-D
C.1.c	X			ESF-4.II.D.5
			X	II
C.2.a		X		VII.A.1.c; VII.A.5.b
			X	I; III.Alert.4.a; IX
C.3			X	II; Table II-B
C.4			X	See A.3
C.6			X	See A.3
			X	IX; XIV
D.3		X		VI.B.2
			X	III
D.4			X	III

Continued on next page

Appendix E – NUREG-0654 Crosswalk, Continued

Criterion	EOP	RIRP	ROM	Location
E.1		X		VI.A; VI.C.3
			X	IV; Table IV-A; Figure IV-B
E.2			X	IV; Table IV-A; V
E.5			X	IV
E.6			X	IV; IX
E.7			X	IV
F.1.a	X			ESF-2
		X		VI.C; Figure 2
			X	IV; V
F.1.b		X		VI.C
			X	IV
F.1.c	X			II.E.2; ESF-2 IV.2 – ESF-2 IV.3
		X		VI.C.7; Figure 2
			X	IV; V
F.1.d	X			II.E.2
		X		VI.C.2; VI.C.3.g; VI.C.5; VI.C.11.d; VI.E.1.h; Figure 2
			X	IV; V
F.1.e			X	IV
F.2		X		VI.C.9
			X	V
F.3			X	V; XIII; Figure XIII.A
G.1			X	VI
G.2			X	VI
G.3.a			X	VI
G.4.a	X			TIA-IV.B.8
			X	VI
G.4.b			X	VI
G.4.c			X	VI
G.5			X	VI
H.3	X			III.B.3
			X	VII
H.4			X	III; VII
H.7			X	VII; Table VII-B
H.10			X	VII
H.11			X	VII

Continued on next page

Appendix E – NUREG-0654 Crosswalk, Continued

Criterion	EOP	RIRP	ROM	Location
H.12		X		VI.E.1.j.xi
			X	VII
I.7		X		VI.E.1.b.x; VI.E.1.i
			X	VII; VIII
I.8		X		VI.E.1.b; VI.E.1.f.ii; VI.E.1.g.i; VI.E.h; VI.E.1.i; Attachment 1
			X	I; II; III.Alert; VIII
I.9		X		VII.A.1.p
			X	VIII
I.10		X		VI.E.1.a; VI.E.1.j.ii; VI.E.1.j.ix; VII.A.1.q; VII.A.1.r; VII.A.5.f
			X	I; VIII
I.11			X	VIII
J.2			X	IX
J.9		X		VI.E.1.j.i – VI.E.1.j.viii; VI.E.1.j.xi – VI.E.1.j.xiv
			X	IX; XII
J.10.a			X	IX
J.10.b			X	IX
J.10.c			X	IV; VI; IX
J.10.d			X	IX
J.10.e		X		VI.E.1.j.v; VI.F.3.a.iv; VII.A.5.d; VII.A.5.k
			X	IX; X
J.10.f			X	I; IX; X
J.10.g			X	IX
J.10.h			X	VI
J.10.i			X	Appendix B
J.10.j	X			ESF-1.V.A.5.a; ESF-1.V.A.5.c; ESF- 1.V.A.5.d; ESF-13.IV.A.4.b
			X	IX
J.10.k	X			ESF-1.IV.A.2.f; ESF-1.V.B.2.a; ESF- 1.V.B.4.b
			X	IX
J.10.l			X	Appendix B
J.10.m		X		VI.E.1.j.i – VI.E.1.j.ix
			X	IX
J.11		X		VI.E.1.j.x – VI.E.1.j.xiv
			X	II; VI; VIII; XII

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Appendix E – NUREG-0654 Crosswalk, Continued

Criterion	EOP	RIRP	ROM	Location
J.12			X	I; IX; X
K.3.a			X	VII; VIII; X
K.3.b			X	X
K.4			X	X
K.5.a			X	X, Tables X-C, X-D
K.5.b		X		VI.F.5.b
L.1			X	X
L.3			X	XI
L.4			X	XI
M.1			X	XII
M.3			X	XII
M.4			X	X; XII
N.1.a			X	XIII; Tables XIII-A, XIII-B
N.1.b			X	XIII; Tables XIII-A, XIII-B
N.1.d			X	XIII; Tables XIII-A, XIII-B
N.2.a			X	XIII; Table XIII-A
N.2.c			X	XIII; Table XIII-A
N.2.d			X	XIII
N.2.e.1			X	XIII
N.3			X	XIII
N.4			X	XIII
N.5			X	XIII
O.1			X	XIV
O.1.b			X	XIV; Tables XIV-A – XIV.E
O.4.a			X	XIV; Tables XIV-A – XIV.E
O.4.b			X	XIV; Tables XIV-A – XIV.E
O.4.c			X	XIV; Tables XIV-A – XIV.E
O.4.d			X	XIV; Tables XIV-A – XIV.E
O.4.f			X	XIV; Tables XIV-A – XIV.E
O.4.h		X		VI.G.7
			X	XIV; Tables XIV-A – XIV.E
O.4.j			X	XIV; Tables XIV-A – XIV.E
O.5			X	XIV
P.1			X	XIV; XV
P.2			X	XV
P.3			X	XV
P.4			X	XV, Appendix C

Continued on next page

Appendix E – NUREG-0654 Crosswalk, Continued

Criterion	EOP	RIRP	ROM	Location
P.4			X	XV, Appendix C
P.5			X	XV; Table XV-A
P.6			X	Appendix B
P.7			X	Appendix D
P.8			X	Table of Contents; Appendix E
P.10			X	XV
