



State of Ohio

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

January 2020

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Plan Overview

Introduction & Contents

Introduction

1. The State of Ohio is within the 10-mile EPZ for Davis-Besse Nuclear Power Station, Perry Nuclear Power Plant, Beaver Valley Power Station (PA), and Fermi II Power Plant (MI).
 2. Preparation for managing an incident at a nuclear power plant is a joint cooperative effort by state, county and local governments, federal agencies, private organizations and the utility company.
 3. This manual defines the State of Ohio's roles, responsibilities, and resources. It identifies the interface that must exist between involved agencies at all levels.
 4. 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.
 5. 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 nuclear power plant.
 6. This manual, related SOPs, and the Ohio Department of Health's (ODH) manual can be found on ODH's server and the Ohio Emergency Management Agency's (Ohio EMA) RADIOL and SEOC shared drives.
 7. In the case of a Hostile Action at a nuclear power plant, parts of this plan may be utilized in a way that does not follow typical actions. For instance, some Site Area Emergency typical actions may take place at an Alert (i.e., notification of railroads).
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Acronyms

Description of Acronyms

Acronym	Definition
AAR/IP	After Action Report/Improvement Plan
AG	Attorney General's Office
ALARA	As Low As Reasonably Achievable
ALC	Annual Letter of Certification
AMS	US Department of Energy Aerial Measuring System
ANI	American Nuclear Insurers
ARIO	Advance Radiological Incident Operations
Bq	Becquerel
BVPS	Beaver Valley Power Station
CBP	U.S. Customs and Border Patrol
cc	cubic centimeter
CDE	Committed Dose Equivalent
CEDE	Committed Effective Dose Equivalent
CFR	Code of Federal Regulations
CMAC	Consequence Management Advance Command
CMHT	Consequence Management Home Team
CMRT	Consequence Management Response Team
C&O	Concept and Objectives Meeting
CPM	Counts Per Minute
CPP	County Plans and Procedures
CPS	Counts Per Second
CST	Civil Support Team
DAS	Ohio Department of Administrative Services
DBNPS	Davis-Besse Nuclear Power Station
DHHS	U.S. Department of Health & Human Services
DHS	U.S. Department of Homeland Security
DIL	Derived Intervention Level
DOD	US Department of Defense

Acronym	Definition
DOE	US Department of Energy
DPS	Ohio Department of Public Safety
DRD	Direct Reading Dosimeter
DRL	Derived Response Level
EAL	Emergency Action Level
EAS	Emergency Alert System
ECL	Emergency Classification Level
EDE	Effective Dose Equivalent
EM&HS	Emergency Management & Homeland Security
EMA	Emergency Management Agency
EO	Executive Order
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EOP	Emergency Operations Plan
EPD	Electronic Personal Dosimeter
EPZ	Emergency Planning Zone
ERDS	Emergency Response Data System
ESF	Emergency Support Function
FAA	Federal Aviation Administration
FBI	Federal Bureau of Investigation
FDA	Food & Drug Administration
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	US Department of Agriculture Farm Service Agency
FTC	Field Team Center
GE	General Emergency
GM	Geiger-Mueller

Acronym	Definition
HAB	Hostile Action Based
HSEEP	Homeland Security Exercise and Evaluation Program
HSOC	Homeland Security Operations Center
IA	Individual Assistance
IPM	Initial Planning Meeting
IPZ	Ingestion Planning Zone
IZRRAG	Ingestion Zone Recovery and Reentry Advisory Group
JDF	Joint Dispatch Facility
JFO	Joint Field Office
JIC	Joint Information Center
JIT	Just in Time
kg	kilogram
KI	Potassium Iodide
LEADS	Law Enforcement Automated Data System
MARCS	Multi-Agency Radio Communication System
MCL	Maximum Contaminant Level
mR	milliRoentgen
mRem	milliRem
N/A	Not Applicable
NARAC	National Atmospheric Release Advisory Center
NAWAS	National Warning System
NGO	Non-Governmental Organization
NOAA	National Incident Management System
NOC	National Operations Center
NOUE	Notice of Unusual Event
NRC	U.S. Nuclear Regulatory Commission
NRCC	National Response Coordination Center
NRF	National Response Framework
NUREG	Nuclear Regulatory Commission Regulation
OAC	Ohio Administrative Code
OC	Ottawa County

Acronym	Definition
ODA	Ohio Department of Agriculture
OEPA	Ohio Environmental Protection Agency
ODH-BEHRP	Ohio Department of Health, Bureau of Environmental Health & Radiation Protection
ODH-LAB	Ohio Department of Health, Bureau of Public Health Laboratory
ODH-OHP	Ohio Department of Health, Office of Health Preparedness
ODI	Ohio Department of Insurance
ODJFS	Ohio Department of Jobs and Family Services
ODNR	Ohio Department of Natural Resources
ODOT	Ohio Department of Transportation
OhioMHAS	Ohio Department of Mental Health and Addiction Services
OHS	Ohio Homeland Security
OHNG	Ohio National Guard
ORC	Ohio Revised Code
ORO	Offsite Response Organization
OSHA	Occupational Health & Safety Administration
OSHP	Ohio State Highway Patrol
OSLD	Optically Stimulated Luminescent Dosimeter
OSU	Ohio State University
PA	Public Assistance
PAD	Protective Action Decision
PAG	Protective Action Guide
PAR	Protective Action Recommendation
pCi	picoCurie
PVO	Private Voluntary Organizations
PNPP	Perry Nuclear Power Plant
PPE	Personal Protective Equipment
PRD	Permanent Record Dosimeter
PUCO	Public Utilities Commission of Ohio
R	Roentgen
RAAC	Radiological Accident Assessment Concept Course
RAC	Regional Assistance Committee

Acronym	Definition
RAD	Radiation Absorbed Dose
RAP	Radiological Assistance Program
RASCAL	Radiological Assessment System for Consequence Analysis
RAT	Radiological Assessment Team
REAC/TS	Radiological Emergency Assistance Center/Training Site
REM	Roentgen Equivalent Man
REP	Radiological Emergency Preparedness
RERO	Radiological Emergency Response and Operations Course
REVOC	Reentry Verification and Orientation Center
RIM&C	Radiological Instrument Maintenance and Calibration Facility
ROM	Radiological Operations Manual
RZ	Restricted Zone
SAE	Site Area Emergency
SAIC	Strategic Analysis and Information Center
SEOC	State of Ohio Emergency Operations Center
STACC	Statewide Terrorism Analysis and Crime Center
SDWA	Safe Drinking Water Act
T/ACP	Traffic and Access Control Point
TSA	Transportation Security Administration
TEDE	Total Effective Dose Equivalent
TLD	Thermoluminescent Dosimeter
URI	Unified RASCAL Interface
US	United States
USCG	US Coast Guard
USDA	US Department of Agriculture
USEPA	US Environmental Protection Agency
VHF	Very High Frequency

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I. NUREG-0654 Criteria A

Assignment of Responsibility

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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1. Overview

A. Purpose This section provides an overview of the responsibilities each state agency has during a nuclear power plant incident.

- B. 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
 - f. Ohio Homeland Security (OHS), ORC, Section 5502.03
 2. Federal authority
 - a. 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
 - a. ORC, Sections 5502.21 through 5502.51 and OAC, Chapter 4501
-

- C. Designated Authority**
1. The Governor of Ohio 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, evacuations, or a radiological release from an affected plant. The Ohio EMA personnel authorized to request federal assistance from the US Nuclear Regulatory Commission (USNRC) and the US Department of Energy (USDOE) are the:
 - a. Executive Director
 - b. Assistant Director
 - c. Preparedness Administrator

- d. Operations Administrator
- e. Radiological Branch Chief

The Ohio EMA personnel authorized to request federal assistance from the Federal Emergency Management Management Agency (FEMA) are the:

- a. Executive Director
 - b. Assistant Director
 - c. Administration Administrator
 - d. Operations Administrator
 - e. Preparedness Administrator
-

D. Utility

The utility will provide:

1. Timely notification to state, county, federal, and local agencies of emergency incidents.
 2. Pertinent data from onsite and offsite radiological monitoring and current accident assessment data.
 3. Timely and appropriate recommendations to counties and the State Emergency Operation Center (SEOC) for offsite protective response actions in the plume exposure pathway.
 4. Equipment needed by the state, county, and federal responders at the Emergency Operations Facility (EOF). This equipment will be maintained by the utility.
 5. Management for the Utility's Joint Information Center (JIC).
 6. A liaison to the SEOC to provide updates on plant status and to assist state officials in understanding technical information.
-

E. State

The State of Ohio develops and maintains emergency operations plans for response to radiological incidents involving licensed nuclear power plants. The following pages contain a summary of the primary and support functions of the state departments/agencies with response roles.

2. Office of the Governor

A. Responsibilities The Office of the Governor shall:

1. Through ORC 5502.22, 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 emergency response to protect the public's health, safety, and property during an incident at a commercial nuclear power plant affecting Ohio.
 2. Designate the Ohio EMA as the planning and implementing agency for radiological response.
 3. Authorize designated officials at Ohio EMA to request federal radiological response assistance from appropriate federal agencies.
 4. Recommend protective actions for the public to county commissioners as developed by state agencies and executives.
 5. Issue orders, directives, and declarations appropriate to facilitate state support to local officials.
 6. Provide representatives to SEOC and Utility JIC, if the situation warrants.
 7. Determine if the situation is beyond local resources or when the emergency at the nuclear power plant reaches the Site Area Emergency (SAE) level, consider if a "State of Emergency" exists to activate the Ohio National Guard (OHNG), to use state resources to assist local officials, and to suspend purchasing and contracting requirements.
 8. Determine if the emergency is beyond the state's resources for recovery, request disaster recovery assistance from the President through the Federal Emergency Management Agency (FEMA), by requesting a federal "emergency" or "general disaster" declaration, or both, as appropriate for the incident.
 9. Ensure the public is kept informed throughout the emergency.
 10. Participate (or provide representatives to participate) in periodic exercises to test response plans.
-

3. Ohio DPS: Emergency Management Agency

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

1. Provide the Executive Director to act for the Governor to provide direction and control, and to carry out the state's response to protect the public's health, safety, and property during an incident 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; ESF-6 Mass Care; ESF-7 Logistics; ESF-14 Recovery and Mitigation; and ESF-15 Emergency Public Information and External Affairs.
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 utility, private organizations, and federal, state, and local governments.
6. Request restriction of air, rail, and water traffic, as necessary.
7. Serve as a member of the Ingestion Zone Recovery & Reentry Advisory Group (IZRRAG).
8. Provide personnel to staff the SEOC.
9. Provide legal counsel, draft proclamations and requests.
10. Designate a Public Information Officer(s) who will be located at the SEOC JIC and/or Utility JIC.
11. Provide resources and participate in exercises to test response plans.

B. Notification In the event of an emergency, Ohio EMA shall notify:

1. State agencies to initiate internal alert and mobilization procedures.
2. Applicable federal agencies.
3. Contiguous states and nations (Canada) of the situation.

C. Planning

1. Serve as the lead planning agency for the development and maintenance of "The Ohio Radiological Emergency Preparedness (REP) Operations Manual" and related plans and procedures.
2. Assist and coordinate in the 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 within the SEOC.
 5. Determine which state agencies should perform specific tasks within their capabilities and ensure assignment of responsibilities.
-

D. 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 radiation monitoring capability by training local responders and providing equipment to risk and host counties.
-

E. Communication

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

F. 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 by Federal Radiological Monitoring and Assessment Center (FRMAC) personnel.
 3. Upon request, arrange for transport of federal response teams and equipment into the operational area.
-

G. Executive Group

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

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 (PARs) to the County Commissioners based on information provided by the State Radiological Assessment Branch.
3. Coordinate protective actions recommendations for the general public, institutionalized persons, and emergency workers via a conference call with the County Executive Group.

4. Coordinate with the adjacent states of Michigan, Pennsylvania, West Virginia, and the Province of Ontario for ingestion pathway PARs during emergencies at the 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 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 United States (U.S.) Nuclear Regulatory Commission (NRC).
-

H. Liaisons

Ohio EMA will provide:

1. Representatives to the utility EOF, county EOC, and utility JIC.
 2. A Resident Radiological Analyst to live and work full-time in the respective power plant host county as the state's liaison.
-

I. Dose Assessment

1. Ohio EMA will support the Ohio Department of Health – Bureau of Environmental Health & Radiation Protection (ODH-BEHRP) in the performance of dose assessment activities during the early, intermediate, and late phases of an emergency.
 2. Ohio EMA will provide personnel to support ODH-BEHRP in performing dose assessment at the SEOC.
 3. Dose projections will be compared with dose projections provided by the utility.
-

J. Dosimetry & KI

Ohio EMA will:

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 emergency worker 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.
 3. Distribute KI to emergency worker locations through the Resident Radiological Analysts.
-

K. Field Monitoring Teams

Ohio EMA will:

1. Provide a Field Monitoring Team (FMT) Coordinator to coordinate the tracking and dispatching of the state's field monitoring and sampling teams.
 2. Provide personnel to staff FMTs in conjunction with ODH.
 3. Provide prompt field radiological measurements and assist in the development of, and provision for, accident assessment information, and the recommendation of protective, recovery, and reentry actions.
-

4. Ohio DPS: Homeland Security

A. Responsibilities

For a security related event, Ohio Department of Public Safety, Homeland Security (OHS) shall:

1. Furnish an activation order for the Statewide Terrorism Analysis and Crime Center (STACC) and the Strategic Analysis and Information Center (SAIC).
 2. Provide personnel to staff the SEOC. This may include:
 - a. OHS Executive Director
 - b. OHS Security Point of Contact
 3. Secure space at the SEOC for OHS and OSHP intelligence and investigatory efforts.
 4. Notify uninvolved nuclear power plants for situational awareness of a potential or actual hostile action at another facility, enabling them to take necessary steps to protect their facility against multi-staged attacks.
 5. Notify the Federal Bureau of Investigation (FBI) to ensure awareness and response.
 6. Notify the FAA and Transportation Security Administration (TSA) for on-site support of air domain awareness.
 7. Notify the U.S. Customs and Border Patrol (CBP) Sandusky station for maritime awareness.
 8. Participate in exercises to test response plans.
-

5. Ohio DPS: Legal

- A. Responsibilities** Upon activation of the SEOC, ODPS Legal, representing Ohio EMA, shall be present to address legal questions that may arise.
- ODPS Legal will also participate in exercises to test response plans.
-

6. Ohio DPS: State Highway Patrol

- A. Responsibilities** Ohio Department of Public Safety, State Highway Patrol (OSHP) shall:
1. Serve as the primary agency for ESF-13, Law Enforcement.
 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 an alternate for state notification, and confirm or secure information through its districts, posts or units regarding a radiological incident.
 3. Staff and maintain the state's primary point of contact for notification of nuclear power plant emergencies.
 - a. This location is staffed 24-hours/day.
 - b. It is located at 2855 West Dublin-Granville Road, Columbus, OH.
 - c. Contact will be made by the utility through dedicated phones.
 - d. Backup communications are available through Multi-Agency Radio Communication System (MARCS) radios, commercial phones and cell phones.
 - e. The Dispatcher Supervisor is responsible for managing this emergency response function. They will maintain a personnel roster that is available upon request.
 4. Provide for security at the SEOC.
 5. Provide aerial transportation for authorized emergency personnel in coordination with ESF-1 Transportation.
 6. Provide logistical support in air or ground transport of radiological samples and dosimeters, in accordance with 10-BEHRP-M01 ODH Radiological Emergency Preparedness Manual, from sample screening point to designated laboratories, as coordinated through ESF-1.
 7. Instruct local posts to operate traffic and access control points and assist in traffic control and local law enforcement.
 8. Provide transportation assistance, as necessary, to federal response teams.
 9. Provide security for state properties and facilities, as needed.
 10. Provide a liaison to the SEOC and a local liaison to county EOCs.

11. Coordinate access to the turnpike with the Ohio Turnpike and Infrastructure Commission, should it become necessary to use this route.
 12. Provide aircraft to perform aerial perimeter/traffic control for the evacuated area, in coordination with ESF-1.
 13. Participate in exercises to test response plans.
-

7. Ohio Department of Agriculture

- A. Responsibilities** The Ohio Department of Agriculture (ODA) shall:
1. Serve as the primary agency for ESF-11, Agriculture.
 2. Direct a state-wide program for protection against radiological contamination of livestock, food, and crops.
 3. Coordinate activities with federal and local counterparts.
 4. Assist federal, state, and local counterparts in issuing advisories to the public on matters pertaining to agricultural products 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 food 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. Provide personnel to staff the SEOC. Control through quarantine, confiscation, embargo, or destruction of contaminated crops and foods on the stalk or harvested.
 9. Dispatch sampling teams to sample milk, milk products, meat, and crops, during the intermediate phase.
 10. Serve as a member of the IZRRAG.
 11. Participate in exercises to test response plans.
-

8. Ohio Environmental Protection Agency

A. 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-BEHRP is the lead agency).
2. Coordinate activities with federal, state, and local counterparts.
3. Provide a district level representative to serve as the agency's liaison in the host county EOC.
4. Provide personnel to staff the SEOC.
5. Dispatch a representative to the SEOC to act as the Field Team Communicator.
6. Sample public water supplies in the potentially affected area to determine if the water has radioactive contamination.
7. Ensure the public water suppliers run appropriate analysis with their contracted lab to determine that the Safe Drinking Water Act (SDWA) limits have not been exceeded.
8. Evaluate public wastewater treatment facilities for the affected area to ensure they are functional.
9. Coordinate radioactive waste management disposal locations and practices, as well as contaminated material disposal with ODH.
10. Dispatch sampling teams to the Field Team Center (FTC) to take environmental samples during the intermediate phase.
11. Serve as a member of the IZRRAG.
12. Participate in exercises to test response plans.

9. Ohio Department of Health

A. Responsibilities ODH-BEHRP shall:

1. Serve as the primary state agency for radiation protection and associated functions as part of ESF-10, Hazardous Materials, including:
 - a. Oversight of health physics functions, such as, but not limited to: dose limits, contamination controls, access controls, posting, personal protective equipment (PPE), work plan, and as low as reasonably achievable (ALARA) evaluations;
 - b. Coordination with other federal, state, and local agencies in the formulation of monitoring and sampling activities;
 - c. Coordination with OEPA in development of radioactive waste management plans; and

- d. Lead the direction and oversight of reentry, recovery, and mitigation activities.
 2. Provide personnel to support ESF-5, Information and Planning.
 - a. Radiological dose assessment.
 - b. Development of protective action recommendations (PARs) for the public.
 - c. Advising the Executive Group with regard to radiological safety issues.
 - d. Serve as the primary radiological technical liaison agency.
 3. Provide personnel to staff the SEOC.
 4. Provide subject matter experts to:
 - a. Utility JIC.
 - b. Utility EOF.
 - c. ODH-Laboratory (ODH-Lab).
 5. Assist in the development of intermediate phase advisories.
 6. Provide personnel to staff Field Monitoring Teams (FMT) in conjunction with Ohio EMA.
 7. Provide personnel to the area to screen and prepare radiological samples for transport to an approved radiological laboratory.
 8. Ensure that proper standards for private water systems, sewage treatment systems, recreation areas, and indoor environments are maintained.
 9. Provide staff to serve as the Chair of the IZRRAG.
 10. Provide necessary training to ODH emergency workers.
 11. Participate in exercises to test response plans.
-

B. Dose Assessment

1. ODH-BEHRP is responsible for, with support from the Ohio EMA, the performance of dose assessment activities during the early, intermediate, and late phases of an emergency.
 2. ODH-BEHRP will provide personnel to staff dose assessment at the SEOC.
 3. Dose projections will be compared to the dose projections provided by the utility.
 4. ODH-BEHRP will coordinate long-term dose assessment activities.
-

C. Dosimetry & KI

ODH-BEHRP will:

1. Apply criteria for the administration of KI which can be found in the ODH KI Directive, 10-BEHRP-01.
2. Be responsible for making the PAR for the administration of KI to emergency workers, institutionalized, and the general public then presenting it to the Ohio EMA Executive Director.
3. Make dose record forms available which may be used by state and county agencies.
4. Obtain KI from the NRC and provide it to the Ohio EMA Resident Radiological Analysts to distribute to emergency worker locations in the counties.
5. Coordinate with an independent laboratory for shelf life extension of both public and emergency worker KI. Refer to ODH Memorandum, "Notice of Potassium Iodide (KI) Shelf Life Extension," dated November 4, 2019.

D. Dose Limits

ODH-BEHRP shall:

1. Recommend radiation dose limits for emergency workers.
2. Evaluate then approve or reject any requests for emergency workers to exceed dose limits.

E. ODH-LAB

Ohio Department of Health – Laboratory (ODH-LAB) shall:

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

F. ODH-OHP

Ohio Department of Health – Office of Health Preparedness shall:

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

10. Attorney General's Office (AG)

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

11. Adjutant General's Office/Ohio National Guard

- A. Responsibilities**
- For Ohio National Guard (OHNG) support, other than the Civil Support Team (CST), a Governor's Proclamation either in writing and/or verbal is required.
- The OHNG shall:
1. Be called upon to provide support for a wide variety of missions during an emergency at a nuclear power plant affecting Ohio.
 2. Assist local officials with notification, and public information.
 3. Assist local officials in area patrol and traffic and access control activities through ESF-13.
 4. Provide logistical support in air or ground transport of radiological samples and dosimeters, in accordance with 10-BEHRP-M01 ODH Radiological Emergency Preparedness Manual, from sample screening point to designated laboratories, as coordinated through ESF-1.
 5. Provide liaisons to the state and local EOCs.
 6. 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.
 7. Provide appropriate transportation assets and drivers for medical evacuation missions in response to a radiological emergency at a nuclear power plant affecting Ohio through ESF-8.
 8. Participate in exercises to test response plans.
-

12. Ohio Department of Natural Resources

A. 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 10-mile Emergency Planning Zone (EPZ).
3. Provide access, evacuation assistance, and notification to Lake Erie islands by providing watercraft and aircraft, as needed.
4. 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 (USCG) efforts. ODNR responders shall also assist in marina traffic control.
5. Provide ground transport of radiological samples and dosimeters, in accordance with 10-BEHRP-M01 ODH Radiological Emergency Preparedness Manual, from sample screening point to designated laboratories, as coordinated through ESF-1.
6. Maintain information on waterways (e.g., lakes, streams and rivers).
7. Secure navigable or ODNR maintained waterways, as needed.
8. Provide personnel to staff the SEOC.
9. Provide liaisons to local unified command, if established.
10. Dispatch sampling teams to the Field Team Center (FTC) for the sampling of fish and wildlife during the intermediate phase.
11. Serve as a member of the IZRRAG.
12. Participate in exercises to test response plans.

13. Ohio Department of Administrative Services

A. Responsibilities The Ohio Department of Administrative Services (DAS) shall:

1. Provide personnel to staff the SEOC and support ESF-7, Logistics.
 2. 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.
 4. Participate in exercises to test response plans.
-

14. Ohio Department of Insurance

- A. Responsibilities** The Ohio Department of Insurance (ODI) shall:
1. Provide personnel to staff the SEOC.
 2. Administer Ohio's insurance laws.
 3. License insurance companies and personnel.
 4. If necessary, a representative may be dispatched to the affected area outside the Restricted Zone.
 5. Participate in exercises to test response plans.
-

15. Ohio Department of Job and Family Services

- A. Responsibilities** The Ohio Department of Job and Family Services (ODJFS) shall:
1. Coordinate activities of interagency operations.
 2. Provide personnel to staff the SEOC.
 3. If requested by ESF-6, coordinate assistance from local County Department of Job and Family Services with staffing reception and care centers.
 4. Participate in exercises to test response plans.
-

16. Ohio Department of Mental Health & Addiction Services

- A. Responsibilities** The Ohio Department of Mental Health and Addiction Services (OhioMHAS) shall:
1. Provide personnel to staff the SEOC.
 2. If requested by ESF-6, assist with staffing reception and care centers.
 3. Participate in exercises to test response plans.
-

17. Ohio Department of Transportation

- A. 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 ESF-10 and ODOT resources.
 3. Provide personnel, equipment, supplies, traffic control devices, and heavy equipment to support local traffic control efforts.
 4. Provide a liaison to the state and county EOCs.
 5. Develop and maintain survey plans that project traffic flow patterns and capacities on evacuation routes.
 6. Provide for aerial transportation for the state's personnel, as required.
 7. Coordinate the transport of radiological samples and dosimeters, in accordance with 10-BEHRP-M01 ODH Radiological Emergency Preparedness Manual, from sample screening point to designated laboratories or other designated destination.
 8. Participate in exercises to test response plans.
-

18. Public Utilities Commission of Ohio

- A. Responsibilities** As outlined in Section 4905 of the ORC, the jurisdiction, supervision, power, and duties of the PUCO extend to every public utility and railroad whose plant or property lies wholly within the state.
- 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 public utilities, including requiring competing companies to link telephone lines until permanent repairs can be affected, when communications are crucial to the disaster response activities.
 4. Provide manpower and vehicles from districts to supplement other resources during an emergency.
 5. Provide personnel to staff the SEOC.
 6. Act as a referral service to provide SEOC phone numbers (through the Consumer Services Department) in the event Ohio EMA rumor control resources become overwhelmed.
 7. Participate in exercises to test response plans.

19. Federal Agencies

A. General Responsibilities Refer to the National Response Framework (NRF) Nuclear/Radiological Incident Annex (NRIA) for roles and responsibilities.

B. USCG Upon request, the USCG will broadcast an emergency notice to mariners. In addition to broadcasting, the Ninth District USCG stations will provide available resources (e.g., vessels, aircraft, and personnel) to notify boaters on Lake Erie and to evacuate them, if necessary.

20. Non-Governmental Organizations

A. American Red Cross (ARC) The ARC will:

1. Provide personnel to staff the SEOC.
2. Participate in Long Term Recovery strategy meetings and cooperate with recovery activities by collaborating with other disaster recovery organizations, when appropriate.
3. Participate in exercises to test response plans.

B. ARES The Amateur Radio Emergency Service (ARES) will:

1. Provide communications support at the SEOC allowing for emergency communications between other states, EOCs, reception centers, and care centers, as needed.
2. Participate in exercises to test response plans.

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										
Attorney General's Office	S				S										
Ohio Dept. of Mental Health	S				S	S		S							
Ohio Dept. of Insurance	S				S										
Ohio Homeland Security	S	S	S	S											
COUNTIES (see county plans)															
County Commissioners/EMA	P	P												P	
Local Law Enforcement										P		P			S
Local Fire Departments		S						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													
PRIVATE															
American Red Cross	S				S	S		S		S					S
ARES/RACES/MARS	S			S	S										
American Nuclear Insurers					S										

Figure I-B: State Organization for Emergencies

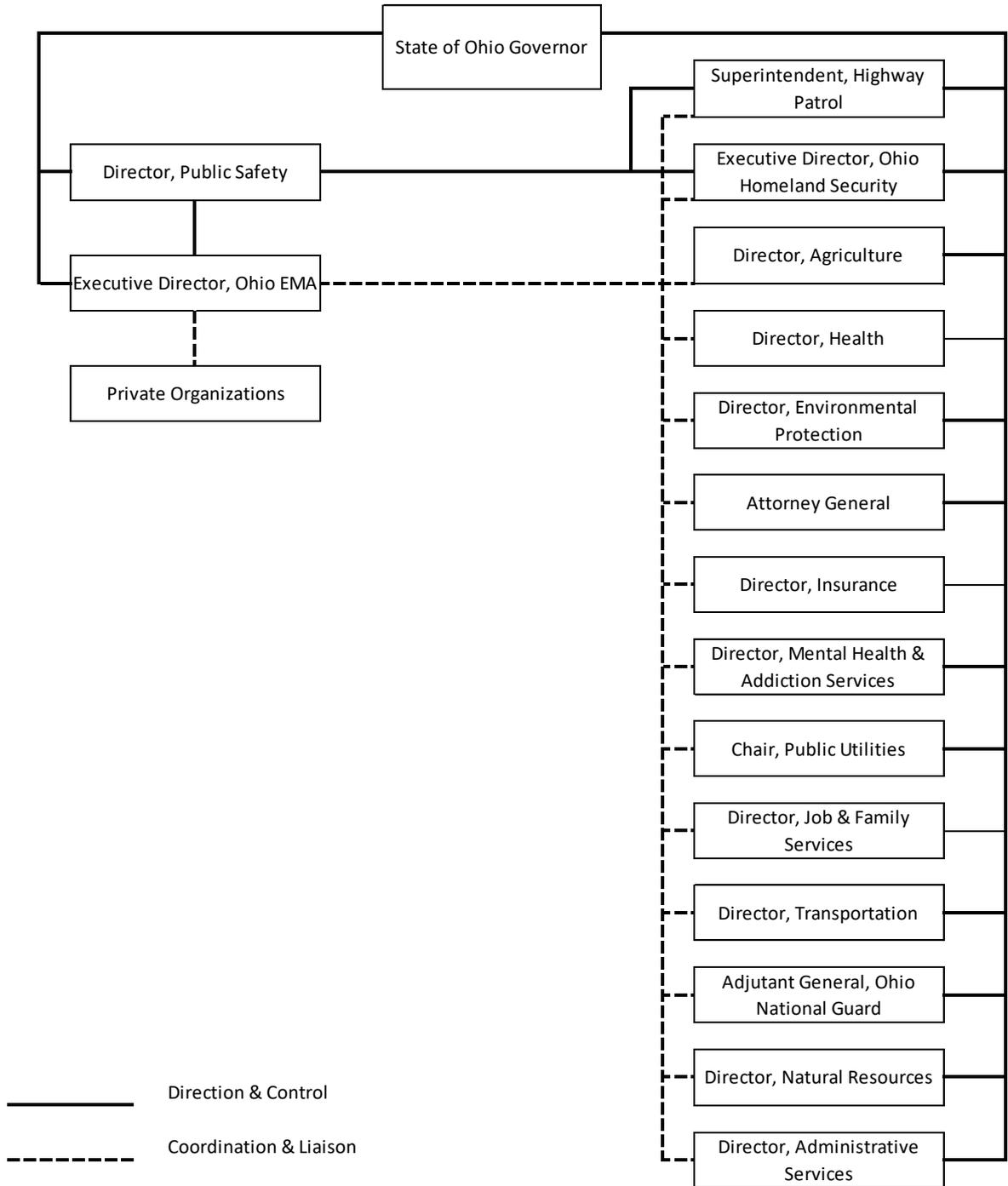
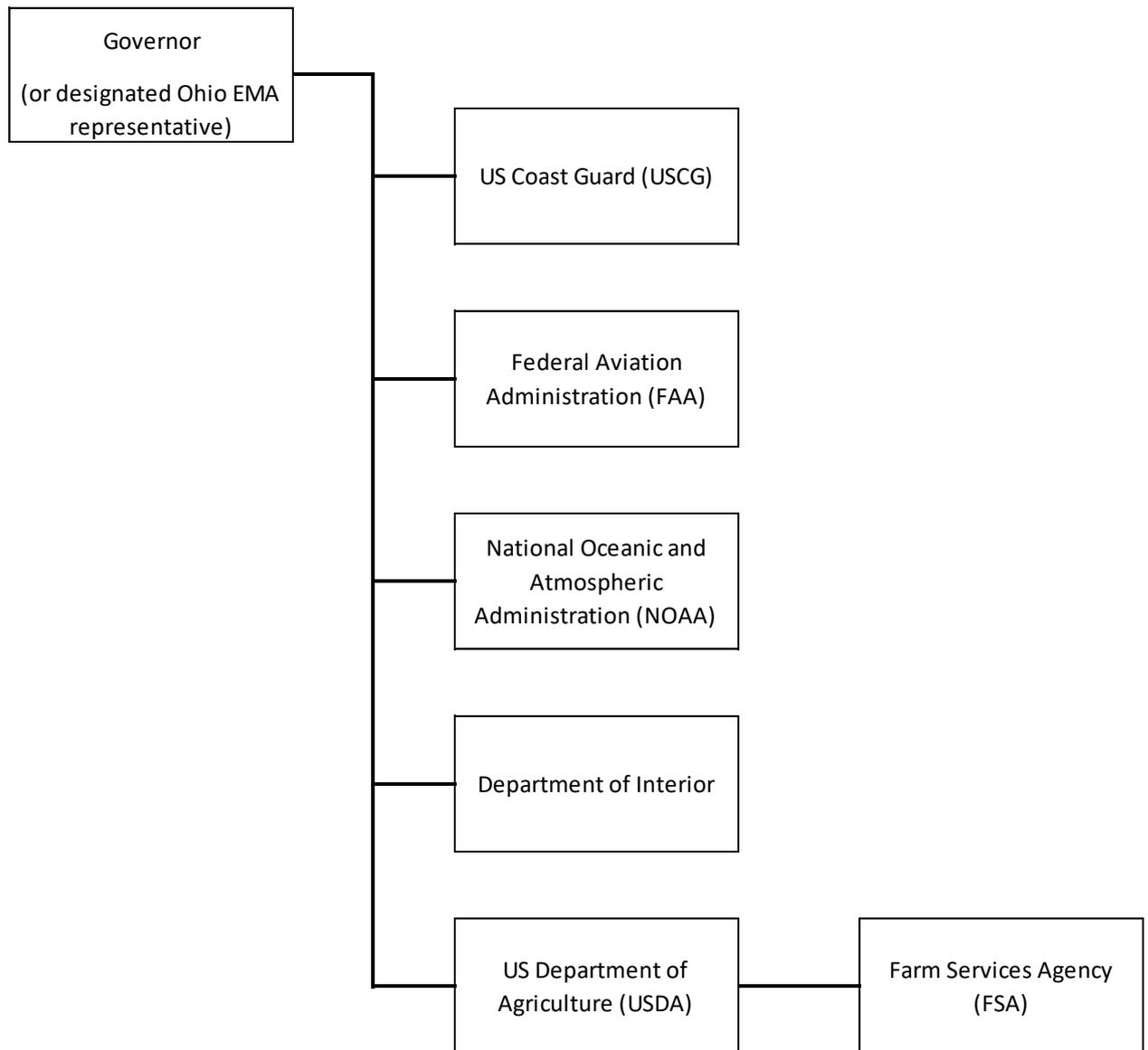


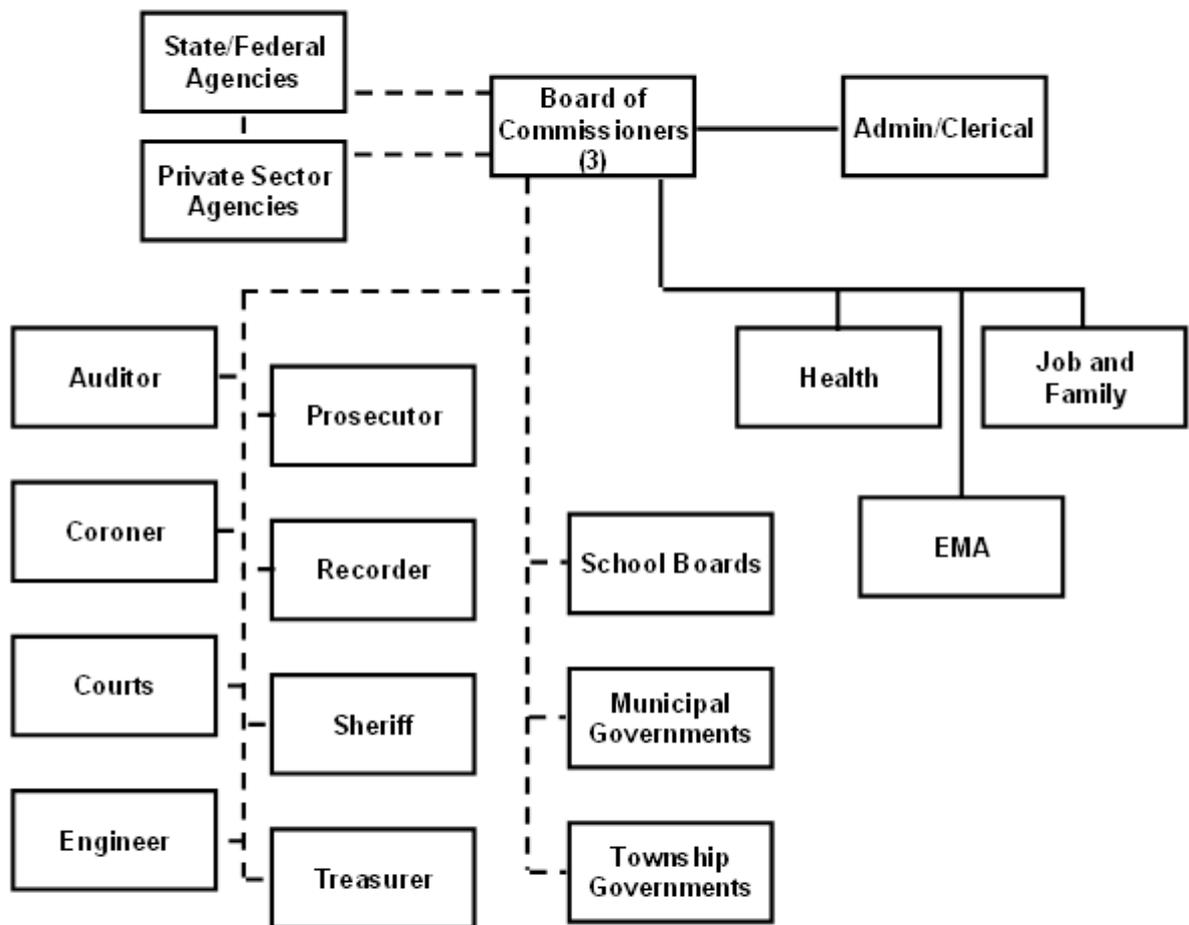
Figure I-C: Federal Organization Support¹



¹ Federal agencies that provide specific support to the state in areas outside of their National Response Framework (NRF) responsibilities.

Figure I-D: County Relationships

TYPICAL OHIO COUNTY-LEVEL GOVERNMENTAL STRUCTURE AND RELATIONSHIPS FOR EMERGENCIES



Key:

— Direct appointive or administrative authority

- - - - Coordination or fiscal relationship

II. NUREG-0654 Criteria C

Emergency Response Support & Resources

Overview Arrangements for requesting and effectively using assistance resources have been made, arrangements to accommodate State and local staff at the licensee's Emergency Operations Facility have been made, and other organizations capable of augmenting the planned response have been identified.

Contents	Topic	See Page
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1. Sample Laboratories

A. Introduction Samples will be transported to the appropriate laboratories for analysis. Transportation to laboratories may be performed by the OHNG, ODNR, or OSHP, in coordination with ESF-1.

B. State Laboratories

1. The primary laboratory available for the analysis of air, soil, milk, water, meat, fish, and vegetation field samples is the ODH-Lab, 8995 East Main Street Bldg. 22, Reynoldsburg, Ohio 43068.
 2. Estimated transportation time from Sample Screening is approximately three hours dependent upon where Sample Screening.
 3. Current capacity for environmental samples including log in and prep:
 - a. Air filters- 70-80 per day
 - b. Air cartridge and other media – 30 per day
 4. Upon receipt of samples, the ODH-Lab will retain each sample's Chain of Custody in accordance with ODH policy.
 5. The ODH-Lab is responsible for the maintenance of all radiological laboratory equipment. Laboratory equipment is calibrated annually or per manufacturer's recommendations. An equipment log is maintained by the ODH-Lab and is available upon request.
 6. The ODH-Lab does not process Sr-90. FRMAC will be asked to assist in sending samples to Sr-90 capable laboratories.
 7. The ODH-Lab will send the sample analysis results to the State Radiological Assessment Branch using RadResponder, if available. Backup methods include fax and telephone.
-

C. Federal Laboratories

1. Additional laboratory capabilities are available at Argonne National Lab, 9700 S. Cass Ave., Argonne, IL 60439.
 2. U.S. Environmental Protection Agency (USEPA)
 - a. USEPA has laboratories in Las Vegas that are capable of providing laboratory services and resources, including field monitoring teams.
 - b. The USEPA's National Air and Radiation Environmental Laboratory in Montgomery, Alabama has a fixed laboratory and a mobile counting facility. The fixed laboratory has the ability to do wet chemistry.
-

2. Price-Anderson Act

- A. Description** The **Price-Anderson Act** (42 USC § 2210 as amended by P.L. 100-408) provides for prompt handling, investigation, and settlement of claims for legal liability arising out of or resulting from a nuclear power plant 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, one insurance pool, American Nuclear Insurers (ANI), provide nuclear power reactor operators with nuclear energy liability coverage.
 - a. In the event of a properly declared evacuation or precautionary evacuation, ANI 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 staff member will be deployed to the Utility JIC to coordinate the release of information regarding claim office locations, appropriate documentation required, and procedures for obtaining assistance.
 2. Covered environmental cleanup costs under Price-Anderson include costs directly incurred for monitoring, testing, cleanup, 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 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.
-

3. Robert T. Stafford Disaster Relief & Emergency Assistance Act

- A. Description** The **Robert T. Stafford Disaster Relief and Emergency Assistance Act** (42 USC §§ 5121-5207) 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 incident 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. Under a Presidential emergency declaration, federal assistance under the Stafford Act is limited to health and safety issues. Therefore, in cases of significant impact/damage to infrastructure and privately and publically owned structures, a major disaster declaration will most likely be necessary. Requests for a major disaster declaration requires additional justification and completion of damage assessments.
4. The Stafford Act asserts there can be no duplication of benefits. For example, assistance that could be provided through insurance to impacted residents and local/state governments cannot be duplicated by assistance provided under the Stafford Act.

4. State Resources

A. Transportation SEOC ESFs may be tasked with finding transportation resources, including drivers, to evacuate the public and institutionalized persons. Dependent upon the method of transportation, ESF-4, ESF-6, ESF-7, and/or ESF-13 may be tasked with obtaining the resources.

Non-routine use of school buses is addressed in OAC 3301-83-16.

B. Shortfalls ESF-7 will perform an assessment of state resources. Any resource shortfalls will be requested through the federal government.

C. For Federal Response Upon request, ESF-7 will identify and procure any resources required to support the federal response (e.g., airfields, command posts, telephone lines, radio frequencies, and telecommunications centers).

5. Utility Geographical Features

A. BVPS BVPS is located 22 miles northwest of Pittsburgh, Pennsylvania. BVPS was constructed along the Ohio River at Shippingport, Pennsylvania.

The 10-mile EPZ incorporates the planning for all or part of the following counties: Columbiana County, Ohio; Beaver County, Pennsylvania; and Hancock County, West Virginia. The major topographic features are the Ohio River, the Beaver River, and numerous steep ridges and small valleys. The 2010 census approximates the total population to be 20,922. Large industries work three shifts per day and a majority of the employees live relatively close to their jobs. The Sub-Areas 1, 2, 3, and 4 are included within the 10-mile EPZ.

The 50-mile IPZ area includes the following states and their counties: Ohio (Belmont, Carroll, Columbiana, Harrison, Jefferson, Mahoning, Portage, Stark, and Trumbull); Pennsylvania (Allegheny, Armstrong, Beaver, Benango,

Butler, Clarion, Fayette, Green, Lawrence, Mucer, Washington, and Westmoreland); West Virginia (Brooke, Hancock, Marshall, and Ohio).

B. DBNPS

DBNPS is located in northwestern Ohio on the south shore of Lake Erie, within Ottawa County, near Oak Harbor, approximately 21 miles east southeast of Toledo. The facility is located on 954 acres flanking Lake Erie; 733 acres of the site have been designated as protected wetlands called the Navarre Marsh; 582 acres of the site, consisting of dike marsh areas are leased to the U.S. Bureau of Sport Fisheries and Wildlife and form the Navarre unit of the Ottawa National Wildlife Refuge.

The area encompassing the 10-mile EPZ includes townships in Ottawa and Lucas Counties. The 2010 permanent population of the 10-mile EPZ was approximately 20,403. The lakeshore within the EPZ, with the exception of the plant site, is primarily devoted to recreational activities. The area is home to many marinas serving Lake Erie boaters and has a significant amount of land reserved for public use in the form of parks and wildlife refuges. Areas away from the lakefront are primarily agricultural in nature. Commercial centers exist in Oak Harbor and Port Clinton. Industrial activity can be found at the Erie Industrial Park in Erie Township, the Lakewinds Industrial Park in Salem Township, the City of Port Clinton, as well as in some smaller facilities throughout the EPZ.

The 50-mile IPZ encompasses portions of twelve support counties, including the Counties of Crawford, Erie, Fulton, Hancock, Henry, Huron, Lorain, Richland, Sandusky, Seneca, Wood, and Wyandot. The 50-mile IPZ also includes portions of four counties in Michigan: Lenawee, Monroe, Washtenaw, and Wayne. The 50-mile IPZ also contains a portion of Canadian Lake Erie and Canada.

C. PNPP

PNPP is located approximately seven miles northeast of Painesville, Ohio, and 35 miles east of Cleveland, Ohio.

The plant site occupies approximately 1100 acres on a lake plain 50 feet above Lake Erie's low-water datum. The terrain surrounding the plant is essentially flat within five miles of the lakeshore. Rising generally to the south, the site is broken only by a latticework of shallow, north-south streambeds and low, almost unnoticeable east-west ridges; the latter are remnants of ancient lakeshores. About five miles inland, the shoreline plane is abruptly cut by a 100-foot ravine by the Grand River. The terrain south of the river is more rolling, interrupted by north-south ravines of the tributaries of Grand, Kellogg, Big, Paine, and Mill creeks and several smaller streams. A large portion of the site is forested; 250 acres are devoted to the plant structural complex, while the remainder is open grassland.

The 10-mile EPZ encompasses land areas within three counties: Lake, Ashtabula, and Geauga. The 2010 census, estimates the permanent population to be 97,273 within the 10-mile EPZ, which includes seven Sub-Areas. The estimated peak summer population is 151,407 persons.

There are a number of beaches, parks, and campgrounds within the 10-mile EPZ that attract a sizable transient population during the summer. These areas are located along the Lake Erie shore and in the stream valleys. In particular, Headlands State Park and Geneva State Park draw large crowds.

Major highways that traverse the 10-mile EPZ are Interstate 90, State Route 84, and State Route 20. Significant rail lines within the 10-mile EPZ are CSX, Norfolk and Western Railway, Baltimore and Ohio Railway, and Painesville Railway. There are two airports in the 10-mile EPZ: Casement Airport in Painesville Township and Concord Airport in Concord Township. Neither airport serves commercial air-passenger traffic.

The 50-mile IPZ encompasses portions of five counties, including the Counties of Cuyahoga, Lorain, Portage, Summit, and Trumbull. The 50-mile IPZ also includes portions of three counties in Pennsylvania: Erie, Crawford, and Mercer Counties. The 50-mile IPZ also contains a portion of Canadian Lake Erie and a small peninsular area along the north side of Lake Erie that includes Rondeau Provincial Park in Ontario, Canada.

D. Fermi II

Enrico Fermi Nuclear Generating Station, Unit 2, is located in Newport, Michigan, approximately halfway between Detroit, Michigan and Toledo, Ohio.

The 10-mile EPZ encompasses land areas within two counties: Monroe and Wayne Counties in Michigan. It also includes portions of Lake Erie under the jurisdictions of: Michigan; Lucas County, Ohio; and Ontario, Canada. The 2010 census, estimates the permanent population to be 92,377 within the 10-mile EPZ, which includes seven Sub-Areas. There are no residents in Sub-Area 7, the Ohio portion of the Lake.

The estimated 50-mile population was 4,799,526. The 50-mile IPZ includes Lucas, Ottawa, Wood, Fulton, Henry, Sandusky, Erie and Seneca Counties in Ohio as well as Oakland, Macomb, Livingston, Lenawee, Jackson, and Washtenaw in Michigan. The 50-mile IPZ also contains a portion of Canadian Lake Erie and Canada.

Figure II-A: National Response Framework Federal Organization Participation

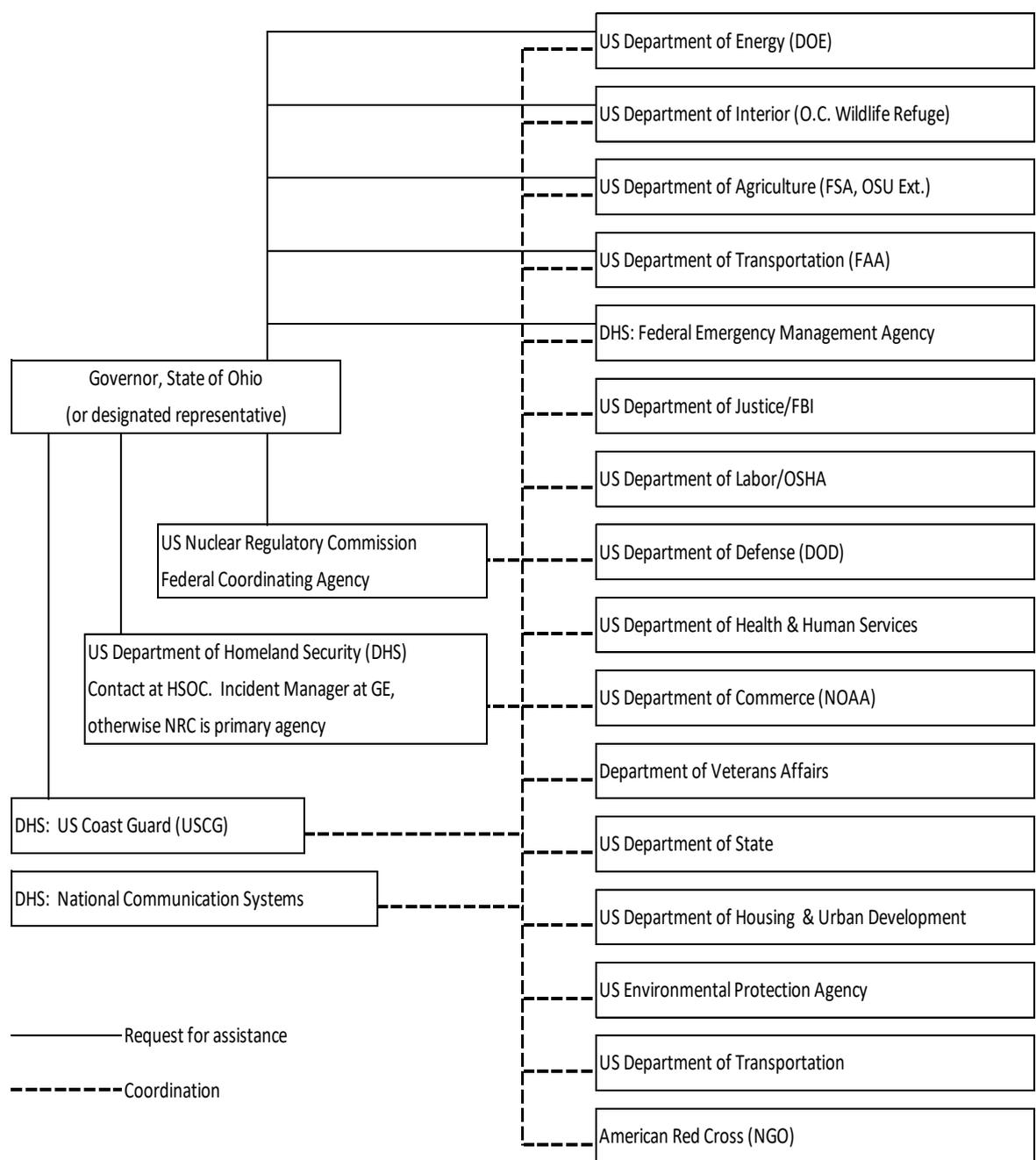


Table II-B: Federal Laboratory Response Times

Organization	Capabilities	Drive Times (Hours)		
		BVPS	DBNPS	PNPP
Argonne National Lab 9700 S. Cass Ave. Argonne, IL 60439	Alpha, beta, gamma, tritium & neutron monitoring	8	6	7.5
	Air, soil, water & vegetation sampling			
	Mobile laboratory with multi-channel analyzer, surface barrier (alpha) detector, NaI detector, liquid scintillation detector & gas proportional detector			

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.	<u>Asset Response Timeline</u> CMHT: 0-2 Hours CMAC: 6-12 Hours CMRT: 12-24 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
Region V Radiological Assistance Program (RAP) 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	Aerial Monitoring Support (AMS)
BVPS	Greater Pittsburgh Airport Pittsburgh, PA	Greater Pittsburgh Airport Pittsburgh, PA
DBNPS	Toledo Express Airport Swanton, OH Alt: Cleveland-Hopkins Airport Cleveland, OH	Toledo Express Airport Swanton, OH
PNPP	Cleveland-Hopkins Airport Cleveland, OH Alt: Youngstown-Warren Airport Vienna, OH	Lost Nation Airport Mentor, OH Alt: Cuyahoga County Airport Highland Heights, OH

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 High School 6733 Reynolds Road Mentor, OH
BVPS	Greater Pittsburgh Airport Air National Guard Facility Pittsburgh, PA

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III. NUREG-0654 Criteria D

Emergency Classification System

Overview

A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and state and local response plans call for reliance on information provided by the facility licensees for determinations of minimum initial offsite response measures.

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1. Unusual Event

A. 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.

B. Actions

<u>STEP</u>	<u>STATE ACTIONS</u>	<u>RESPONSE AGENCY</u>
1.	Notify key response agencies.	Ohio EMA
2.	Provide news releases, if required.	Ohio EMA
3.	Maintain UNUSUAL EVENT status until closeout or escalation of emergency classification.	All Concerned Agencies

2. Alert

A. 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.

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

Disclaimer Actions are unlikely to be performed in any one particular order. It will vary dependent upon personnel, event, and priorities. This list is not meant to be all-inclusive.

C. Actions

<u>STEP</u>	<u>STATE ACTIONS</u>	<u>RESPONSE AGENCY</u>
1.	Complete UNUSUAL EVENT actions.	All Concerned Agencies

2.	Consider activating the SEOC Dose Assessment Room.	Ohio EMA ODH-BEHRP OEPA
3.	Consider activation of the JIC.	Ohio EMA
4.	Consider activating the SEOC (i.e., assessment & monitoring, full, etc.).	Ohio EMA
5.	Consider activation of the Executive Room	Ohio EMA
6.	Notify key response agencies.	Ohio EMA OHS (if security event)
7.	Dose Assessment to monitor plant data.	Radiological Assessment Branch
8.	Notify of Alert ECL change:	Ohio EMA
a.	Contiguous governments	
b.	NRC Region III	
c.	FEMA Region V	
d.	For PNPP only:	
	i. NRC Region I	
	ii. FEMA Region III	
9.	Consider dispatching representatives to:	Ohio EMA ODH OEPA
a.	EOF	Ohio EMA ODH-BEHRP
b.	Utility JIC	Ohio EMA ODH-BEHRP
c.	County EOCs	Ohio EMA ODH-BEHRP OEPA
10.	Consider prepare and hold FMTs at the RIM/C and/or dispatch to the staging area.	Ohio EMA ODH-BEHRP
11.	Consider dispatching MARCs radios with FMTs.	Ohio EMA

12.	<p>For DBNPS/PNPP/Fermi II only:</p> <ul style="list-style-type: none"> • Consult with counties. • Consider clearing EPZ waterways taking into consideration: <ul style="list-style-type: none"> ○ Plant ECL ○ Current and projected meteorological conditions ○ Time of day ○ Season of the year ○ Special events 	Ohio EMA
a.	If the decision to clear the waterways is made, contact USCG Sector Buffalo for PNPP or Sector Detroit for DBNPS/Fermi II, and request they broadcast a message to mariners and provide resources for waterway notification.	Ohio EMA
b.	Dispatch state agency watercraft as necessary to clear waterways. Coordinate with USCG to assist clearing waterways.	ODNR
13.	Consider closing State and Federal parklands. Consult with counties prior to decision.	Ohio EMA
14.	<p>For DBNPS/PNPP/Fermi II only:</p> <ul style="list-style-type: none"> • Request FAA restrict air space 10 miles to 10,000 feet. 	Ohio EMA
15.	Provide news releases and information to the public.	Ohio EMA Governor's Office
FOR HOSTILE ACTION BASED EVENTS ONLY		
16.	Request railroads restrict rail traffic 25 miles.	PUCO
17.	Ensure ODNR closes State and Federal parklands.	Ohio EMA ODNR
18.	<p>For DBNPS/PNPP/Fermi II only:</p> <p>Ensure ODNR and USCG clear EPZ waterways.</p>	Ohio EMA ODNR USCG
19.	Contact DOE to request mobilization of resources.	Ohio EMA
20.	Consider requesting a Governor's declaration.	Ohio EMA
21.	Consider requesting a Governor's declaration.	Ohio EMA.
22.	Maintain ALERT status until closeout, reduction, or escalation of emergency classification.	All Concerned Agencies

3. Site Area Emergency

A. 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.

Disclaimer Actions are unlikely to be performed in any one particular order. It will vary dependent upon personnel, event, and priorities. This list is not meant to be all-inclusive.

B. Actions

<u>STEP</u>	<u>STATE ACTIONS</u>	<u>RESPONSE AGENCY</u>
1.	Complete actions under ALERT.	All Concerned Agencies
2.	If not activated, activate Dose Assessment.	Ohio EMA
3.	Record time Dose Assessment is: <ul style="list-style-type: none"> • Activated • Operational 	Ohio EMA
4.	If not activated, activate the SEOC.	Ohio EMA
5.	Record time SEOC is: <ul style="list-style-type: none"> • Activated • Operational 	Ohio EMA
6.	If not activated, activate the JIC.	Ohio EMA
7.	Record time JIC is: <ul style="list-style-type: none"> • Activated • Operational 	Ohio EMA
8.	If not activated, activate the Executive Room.	Ohio EMA
9.	Record time Executive Room is: <ul style="list-style-type: none"> • Activated • Operational 	Ohio EMA

10.	Request partner agencies provide representatives to the SEOC to coordinate response efforts.	Governor's Office Ohio EMA ODH-BEHRP ODH-OHP OEPA OHS OHNG ODNR PUCO ODJFS ODA OSHP ODOT ODI Ohio DMHAS DAS American Red Cross Ohio State University (OSU) Extension USDA-FSA FENOC
11.	Notify of SAE ECL change:	Ohio EMA
a.	Contiguous governments	
b.	NRC Region III	
c.	FEMA Region V	
d.	50-mile counties	
e.	For PNPP only:	
i.	NRC Region I	
ii.	FEMA Region III	
12.	Consider requesting a Governor's Declaration of a "State of Emergency," if not already requested.	Governor's Office Ohio EMA
13.	Request DOE mobilization of resources, if not already completed.	Ohio EMA
14.	If not already performed, close State and Federal parklands.	ODNR
15.	For DBNPS/PNPP/Fermi II only: If not already completed, clear the EPZ waterways.	ODNR USCG

a.	If the decision to clear the waterways is made, contact USCG Sector Buffalo for PNPP or Sector Detroit for DBNPS/Fermi II, and request they broadcast a message to mariners and provide resources for waterway notification.	Ohio EMA
b.	Dispatch state agency watercraft as necessary to clear waterways. Coordinate with USCG to assist clearing waterways.	ODNR
16.	Notify affected counties of Governor's Declaration.	Ohio EMA
17.	Consider requesting implementation of the National Response Framework and a Presidential Emergency Declaration and consideration of Price Anderson Act.	Ohio EMA Governor's Office
18.	Request railroads to restrict rail traffic 25 miles.	Ohio EMA
19.	Except in the event of a "fast breaking event," issue the Agricultural Advisory to the 10-mile EPZ.	Ohio EMA ODA
a.	"The Director of the Ohio Department of Agriculture recommends that as a precaution, livestock and poultry be brought inside and placed on stored feed and protected water in all townships and municipalities within 10 miles of the plant."	ODA
b.	Record effective time.	Ohio EMA
20.	If not already dispatched, send the FMTs to the staging area.	Ohio EMA
21.	Consider deploying FMTs to monitor and survey.	Ohio EMA
22.	Water supply issues: <ul style="list-style-type: none"> • ESF3/OEPA to complete water shutoff and identify areas to the Executive Group. • Establish coordination call with affected counties. • Ensure mission entered for ESF7/Logistics to request water for affected area. • Ensure ESF15/Ohio EMA provides news briefing and press release for water plan. 	State Executive Group
23.	Provide a PAR to the county(ies) for the public within the 10-mile EPZ to monitor EAS broadcasts.	Radiological Assessment Branch
24.	Provide press releases and information to the public, as needed. Any message issued as the result of a HAB incident will be vetted through the Incident Command (IC) or law enforcement for sensitive information before being released.	Governor's Office Ohio EMA

25.	Consider distributing radiological emergency information to farmers, food processors, and distributors in the 50-mile IPZ.	OSU Extension ODA
26.	Maintain SITE AREA EMERGENCY status until closeout, reduction, or escalation of emergency classification.	All Concerned Agencies

4. General Emergency

A. 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.

Disclaimer Actions are unlikely to be performed in any one particular order. It will vary dependent upon personnel, event, and priorities. This list is not meant to be all-inclusive.

**B.
Actions**

<u>STEP</u>	<u>STATE ACTIONS</u>	<u>RESPONSE AGENCY</u>
1.	Complete actions under SITE AREA EMERGENCY.	All Concerned Agencies
2.	If not already completed, request a Governor's Declaration.	Ohio EMA Governor's Office
3.	Consider protective actions that may include a precautionary evacuation of affected populations based on the utility's recommendation and state dose assessment.	Governor's Office Ohio EMA ODH-BEHRP County Executive Group

a.	<p>For actual or projected offsite release: consider recommending evacuation for the sub-areas within the 2-mile (360°) radius and 5-mile downwind sectors, unless:</p> <p>(1) very dangerous travel conditions exist, (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, (3) a security event has occurred and the actual impact is unknown or not immediately available, or (4) per the new EAL scheme (see NUREG-0654, Supp. 3, Fig. 1, note 3 & 5). In these four instances, sheltering may be the appropriate immediate protective action.</p> <p>Using dose assessment, determine the need to extend distances. PARs may also be affected by other factors, such as no plant data available or a rapidly progressing event.</p>	Governor's Office Ohio EMA Radiological Assessment Branch
b.	Consider recommending the administration of Potassium Iodide (KI).	ODH-BEHRP
c.	Advise the remainder of plume EPZ to listen to EAS.	Ohio EMA Radiological Assessment Branch
4.	Notify of GE ECL change:	Ohio EMA
a.	Contiguous governments	
b.	NRC Region III	
c.	FEMA Region V	
d.	50-mile counties	
e.	For PNPP only:	
i.	NRC Region I	
ii.	FEMA Region III	
5.	If not already completed, deploy FMTs to survey and sample.	Ohio EMA ODH-BEHRP
6.	Request revision of Governor's Declaration, if necessary to include downwind Ingestion Zone counties.	Ohio EMA Governor's Office
7.	When it is determined that the event is beyond the ability of state and local capabilities, consider requesting a Presidential Emergency Declaration and/or a Presidential Major Disaster Declaration with consideration of the Price Anderson Act.	Governor's Office Ohio EMA
8.	For BVPS, Pennsylvania will request FAA to restrict air space 10 miles and 10,000 feet.	PEMA

9.	Pennsylvania is responsible for securing water traffic on the Ohio River.	PEMA
10.	Provide offsite monitoring and sampling results to utility and DOE (federal teams) for joint accident assessment.	Radiological Assessment Branch
12.	If not already completed, distribute radiological emergency information to farmers, food processors, and distributors in the projected plume pathway within the 50-mile IPZ.	OSU Extension ODA
13.	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.	Radiological Assessment Branch State Executive Group
14.	Provide news releases and information to the public.	Governor's Office Ohio EMA
15.	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 IZRRAG
16.	If IZRRAG is convened, notify change in status: <ul style="list-style-type: none"> • SEOC • Contiguous governments • FEMA Region V • NRC Region III • 50-mile counties • For PNPP only: <ul style="list-style-type: none"> ○ NRC Region I ○ FEMA Region III 	Ohio EMA
17.	Maintain GENERAL EMERGENCY status until closeout or reduction of emergency classification.	All Concerned Agencies

5. Intermediate Phase

A. Definition After the conditions of an incident that escalated to a General Emergency have stabilized, the source of radioactive release has been brought under control, and environmental radiological measurements are available for use as a basis for decisions on additional protective actions, then off-site response agencies transition to the Intermediate Phase. The Intermediate Phase extends until additional actions are completed. It may overlap both the Emergency and the Recovery Phase to some extent.

The Intermediate Phase consists of four major response efforts:

1. Initiating preliminary advisories to limit or prevent exposure within the 50-mile ingestion pathway.
2. Ensuring that people remaining within defined restricted areas are relocated.
3. Assisting people who need re-entry into impacted areas.
4. Return of the public to areas that were initially evacuated, but are now deemed safe enough for occupancy or use.

Disclaimer Actions are unlikely to be performed in any one particular order. It will vary dependent upon personnel, event, and priorities. This list is not meant to be all-inclusive.

B. Actions

<u>STEP</u>	<u>ACTIONS</u>	<u>RESPONSE AGENCY</u>
1.	Maintain GENERAL EMERGENCY status until closeout or reduction of emergency classification.	IZRRAG All Concerned Agencies
2.	FMTs to run a grid survey of the affected area.	Ohio EMA ODH-BEHRP
3.	Determine a location for the Field Team Center (FTC). Consider co-locating with FRMAC upon arrival.	IZRRAG
4.	Conduct an Advanced Party Meeting with a FRMAC Liaison.	IZRRAG Executive Room JIC Radiological Assessment Branch
5.	OEPA to develop a 10-point sampling plan to obtain soil in the RZ.	OEPA

6.	OEPA Radiological Assessment Teams (RAT) to enter area for 10-point soil samples.	OEPA
7.	Initiate temporary bans and precautionary advisories based upon the deposition model.	IZRRAG
8.	Refine the initial Restricted Zone (the evacuated area) based on the DRL from the 10-point soil samples.	IZRRAG
9.	Provide a Relocation PAR to the county(ies).	IZRRAG Executive Room
10.	Receive revised Relocation PAD from county(ies).	Executive Room IZRRAG
11.	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.	IZRRAG
12.	IZRRAG Sample Teams to muster at the FTC.	ODA ODH ODNR OEPA Ohio EMA
13.	Continue to distribute radiological emergency information to farmers, food processors, and distributors in the ingestion pathway.	OSU Extension ODA
14.	After RZ is defined, deploy IZRRAG Sample Teams to sample.	IZRRAG
15.	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
16.	Consolidate data collected in the emergency phase pertaining to:	IZRRAG
a.	Potentially affected areas based on plume path (using deposition model),	IZRRAG
b.	Levels of radiation within and bordering the affected areas,	IZRRAG
c.	Size of population evacuated, and	IZRRAG GIS
d.	Facilities impacted.	IZRRAG GIS
17.	Direct continued monitoring and sample analysis to define areas and hot spots requiring protective actions.	IZRRAG

18.	As sample results continue, ground truth is mapped and advisories are modified.	IZRRAG GIS
19.	Review and assess radiation surveys and sample results from federal, state, and local monitoring teams to determine whether previously evacuated populations may return to areas that were not significantly impacted by contamination.	IZRRAG Executive Group County Executive Group
20.	Issue a Return PAR to the county(ies).	IZRRAG State Executive Group
21.	Receive a Return PAD from the county(ies).	IZRRAG State Executive Group
22.	Continue to redefine the RZ as sample results are returned.	IZRRAG
23.	Continue data collection to record state and local costs from losses and response actions resulting from the plant release.	Ohio EMA
24.	Commence recovery planning; formulate initial recovery plans in cooperation with local agencies and the Federal Advisory Team.	IZRRAG Executive Group
25.	Transition to the Recovery phase when:	IZRRAG Executive Group
a.	Emergency conditions on-site have stabilized.	IZRRAG
b.	Offsite radioactive release has ceased, and there is little or no potential for further unintentional offsite releases.	IZRRAG
c.	The offsite contamination is characterized, its extent determined, and the immediate consequences are assessed.	IZRRAG
d.	Protective actions for public health, safety, and property, have been implemented.	IZRRAG
e.	An initial long-range monitoring plan has been developed in conjunction with the affected state and local governments and appropriate federal agencies.	IZRRAG

6. Recovery Phase

A. Definition After emergency response operations have ceased and the intermediate actions have commenced, off-site response agencies will engage in recovery operations planning, including additional radiation surveys, sampling, and data collection. The Recovery Phase commences when recovery operations to reduce radiation levels in the environment to below acceptable levels are commenced, and ends when all recovery operations have been completed.

The Recovery Phase consists of actions taken to ensure a return of the environment to acceptable levels for return by the general public for occupancy or use in the affected areas. In transitioning to the Recovery Phase, the following must be completed:

1. On-site emergency conditions are stabilized.
2. Off-site release of radioactive material has ceased and there is little-or-no potential for further unintentional offsite releases.
3. Off-site contamination has been characterized, its extent has been determined, and immediate consequences have been assessed.
4. Immediate protective actions to ensure public health and safety have been accomplished.
5. An initial long-range monitoring plan has been developed in conjunction with impacted state- and local-level jurisdictions and appropriate Federal agencies.

Disclaimer Actions are unlikely to be performed in any one particular order. It will vary dependent upon personnel, event, and priorities. This list is not meant to be all-inclusive.

B. Actions

<u>STEP</u>	<u>ACTIONS</u>	<u>RESPONSE AGENCY</u>
1.	If needed, establish a Joint Field Office (JFO)	Ohio EMA FEMA
2.	Establish a Debris Management working group	ESF-9/ODNR
3.	Establish temporary then permanent boundaries to restricted areas that cannot be re-inhabited.	County EMA
4..	Establish criteria for security of restricted areas.	County EMA
5.	Establish controls for access and egress to restricted areas	County EMA
6.	Develop decontamination and restoration plans, including establishing decision levels that preclude decontamination due to excessive cost.	IZRRAG ESF-9/ODNR County EMA

7.	Continue implementing re-entry for essential workers and others, as needed, using the guidelines in State and Local plans. Local officials will carry out re-entry using locally developed procedures in coordination with the state.	County EMA
8.	Develop a prioritized list of restoration activities for affected areas, identifying state and federal agencies available for assistance. Assist local officials with restoration projects.	IZRRAG
9.	Provide return and/or relocation technical assistance for local and county governments aiding evacuated / relocated residents, businesses, and industries.	IZRRAG
10.	Determine needs for decontamination of possessions, vehicles, property, and people. Assist local officials with decontamination.	IZRRAG
11.	Determine temporary actions for contaminated property.	IZRRAG
12.	Develop plans and guidelines for disposal of contaminated property, food, and soils.	IZRRAG ESF-9/ODNR
13.	Establish requirements for temporary re-entry and permanent return into restricted areas.	IZRRAG
14.	Determine limitations on hunting and fishing; issue orders or protective action advisories as appropriate.	IZRRAG ESF-9/ODNR
15.	Develop a radiological dose assessment, total dose commitment, and integrated dose computation; assess the health effects to the public resulting from the accident.	IZRRAG
16.	Continue to monitor radioactive contamination of both humans and animals; make recommendations and issue advisories needed to control contamination.	IZRRAG
17.	Continue to provide a liaison to monitor Federal agency actions. Coordinate state and local actions in order to limit duplication of efforts and to prevent conflicts.	Ohio EMA
18.	Coordinate state agencies in assistance to the FRMAC; coordinate long-term operational needs and transition from DOE to US USEPA lead.	IZRRAG
19.	Implement a system to track costs incurred in state, county, and local activities.	Ohio EMA
20.	Provide information for state and Federal assistance to affected public and government entities.	ESF-15/Ohio EMA

21.	Develop and maintain an ongoing public information outreach effort. Provide continuing information about the recovery actions, activities, and timetables to the public.	ESF-15/Ohio EMA
22.	Assist local officials in providing for needs of those contaminated individuals (residents and emergency workers) remaining at care centers, medical facilities, and FRMAC locations.	Ohio EMA
23.	Assist local officials in determining the relocation and housing needs of the evacuated population.	ESF-6/Ohio EMA
24.	Coordinate ANI insurance and Federal disaster assistance.	ESF-14/Ohio EMA
25.	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.	ESF-14/Ohio EMA

IV. NUREG-0654 Criteria E

Alert & Notification

Overview

Procedures have been established for notification by the licensee of state and local response organizations and for notification of emergency personnel by all response organization; the content of initial and follow-up messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established.

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1. General Notification

A. Overview

1. In the event of a declaration of a radiological emergency at a 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, if necessary.
 5. At this time, the State of Ohio is notified by the State of Michigan in the event of an emergency classification being declared at Fermi II.
-

B. Initial Notification Process

1. In the event of a radiological incident involving a nuclear power plant, the nuclear power plant has 15 minutes from the time of an emergency declaration to notify offsite officials.
 - a. The nuclear power plant will provide state and county response agencies with initial dose assessment projection, release rates and PAR 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 Dispatch located at the SEOC, which are manned 24 hours a day. OSHP Hub Dispatch will receive the initial notification of emergencies involving DBNPS, PNPP, BVPS, and Fermi 2 and will immediately contact Ohio EMA.
 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.
-

C. 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.
 2. Secondary systems will consist of cell phones, satellite phones, and two-way radio over amateur or governmental band radios. A "net" is to be established between the licensee and the local governmental warning point.
-

2. State and County Agency Notification

A. State Responders

1. The Radiological Branch Chief is responsible for notification of the Ohio EMA Executive Staff and State Dose Assessment agencies. The responsibility will be delegated when staffing allows. Contact will be made directly or via commercial telephone or cell phone.
 2. The Ohio EMA Executive Staff will notify the Division Administrators and Branch Chiefs. Branch Chiefs would then notify their personnel needed to respond.
 3. The Ohio EMA Watch Office will contact the lead and support agencies for the Emergency Support Functions (ESFs) for situational awareness or to staff the SEOC. The Ohio EMA Watch Office Chief is responsible for the activities of the Watch Office. Refer to SEOC Activation procedure.
 4. See Table IV-A and Figure IV-B for detailed information flow.
-

B. 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 incident, if appropriate. Consistent with the notification requirements of the NRF, the NRC will notify the National Operation Center (NOC).
3. When the State of Ohio learns of an 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 by available communication capabilities such as telephone, satellite phone, or MARCS radio.
 - b. Notify the Coordinating Agency (NRC or DHS), and the NOC, in accordance with the notification requirements of the NRF Nuclear/Radiological Incident Annex (NRIA).

C. Contiguous States

Upon notification of a radiological emergency, the Ohio EMA will inform contiguous states. The National Warning System (NAWAS) will be used as a secondary means of contacting these states. The FEMA National Radio System (FNARS) shall serve as a back up to NAWAS for contacting contiguous states.

D. Canada

Ohio EMA notification of radiological 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.

E. IPZ Counties

1. For those counties located within the IPZ of a nuclear power facility, the primary means of notification is by email and commercial telephone.
 2. Alternate methods can be used as necessary, to include but be not limited to fax, e-mail, MARCS, amateur radio, or cell phone.
 3. Based upon wind direction, the counties will be identified and informed of the incident.
 4. The counties will be provided a status update of the incident and advised of any protective action recommendations.
-

3. Public Notification

A. Notification

1. Press releases will be reviewed and approved by the Ohio EMA Executive Director or their designee.
 2. Any 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.
-

B. 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.

C. 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.
-

4. Mariner Notification

A. 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, from ODNR and the USCG, 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. The USCG shall broadcast a "Notice to Mariners" utilizing standard USCG broadcast procedures.
-

5. Ingestion Pathway Public Notification

A. 50-mile IPZ 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 through 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. 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 Flow²

A. Unusual Event

The nuclear power plant notifies Ohio EMA (through OSHP Hub Dispatch, who receives the initial notification and immediately notifies Ohio EMA).³ Ohio EMA informs:

1. Appropriate Ohio EMA staff
 2. Office of the Governor
 3. OSHP
 4. ODH-BEHRP
 5. OEPA
 6. OHS (for security, terrorism, or sabotage related event)
-

B. Alert

The nuclear power plant notifies Ohio EMA (through OSHP Hub Dispatch, who receives the initial notification and immediately notifies Ohio EMA). Ohio EMA updates information to those previously contacted and further informs:

1. Ministry of Community Safety and Correctional Services, Emergency Management Ontario (for PNPP and DBNPS emergencies)
 2. State and Federal Land Managers (for DBNPS emergencies)
 3. Commonwealth of Pennsylvania (for PNPP emergencies)
 4. State of Michigan (for DBNPS emergencies)
 5. USCG Operations Center, Sector Buffalo or Detroit (for broadcasting emergency notice to mariners if clearing of the waterway EPZ is necessary)
 6. ODNR
 7. ODOT (ODOT also notifies the FAA)
 8. FEMA, Region V
 9. FEMA, Region III (for PNPP events only)
 10. US NRC, Region III
 11. US NRC, Region I (for PNPP events only)
-

² Personnel names and phone numbers are saved within WebEOC.

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.

**C. Site Area
Emergency/
General
Emergency**

The nuclear power plant notifies Ohio EMA (if the Dose Assessment Room is not activated, the OSHP HUB Dispatch will receive the initial notification and immediately notify Ohio EMA).⁴ Ohio EMA updates information to those previously contacted and further informs:

1. ODA
2. ODJFS
3. ODH, Office of Health Preparedness
4. ODI
5. OhioMHAS
6. Ohio DAS
7. U.S. DOE
8. OSU Extension
9. USDA FSA
10. PUCO (also notifies Norfolk & Southern and CSX)
11. ARC, Buckeye Chapter
12. OHNG
13. ARES
14. USCG Operations Center, Sector Buffalo or Detroit, if not notified at Alert (for broadcasting emergency notice to mariners if clearing of the waterway EPZ is necessary)

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.

Table I-E: State Emergency Operations Center Activation

**STATE EMERGENCY OPERATIONS CENTER
ACTIVATION CHART**

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

Note 1: Ohio EMA may activate the Executive Room, JIC, and/or Dose Assessment Room.

Note 2: OEPA will provide personnel for the Dose Assessment Room.

Note 3: ODH-BEHRP will provide personnel for the Dose Assessment Room and Executive Room.

Note 4: OHS 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.

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V. NUREG-0654 Criteria F

Emergency Communications

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

Contents

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1. Primary/Backup Communications	74
2. Functions of the SEOC Communications Facility	76
3. Communications Equipment	77
Figure V-A: Primary & Secondary Communication Links	79

1. Primary/Backup Communications

A. 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. Commercial telephone, MARCS radio, fax, email, cell phones and satellite phones are available as alternate means of communications.

B. Contiguous/Local/State/Federal Communications to contiguous, federal, state, and local governments are accomplished through commercial telephone, cell phone, satellite phones, or MARCS radio.

C. Responder Notification Notification of responders and state agencies will be made using telephone, cell phone, or satellite phone.

D. Field Monitoring & Sampling Teams Communication to FMTs and Sampling Teams is accomplished through MARCS radio, satellite phone, or cell phone.

E. Emergency Operations Facility Communication to the utility Emergency Operations Facility (EOF) is accomplished through commercial telephone, cell phone, or MARCS radio. Representatives at the EOF will communicate to the state and county Emergency Operation Centers (EOCs) and offices through commercial telephones with cell phone and MARCS radio as backup.

F. Mobile Communications Assets Upon declaration of an Alert at a nuclear power plant, mobile communication assets may be dispatched to the affected area, providing redundancy to the existing MARCS radio links between the SEOC, county EOCs and utility EOF. 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 link with FMTs.

Assets may include:

1. Radio cache (800 MHz and VHF)
 2. Satellite phones
 3. Satellite trailer (data/wireless)
 4. Satellite trailer (data/voice)
 5. Portable radio tower
-

G. EOC/PIO

Communications between the PIO and the county EOC or the SEOC may be by telephone, cell phone, facsimile, email, or other available method.

**H. ODNR/
USCG**

1. In the event waterway clearing operations are in progress, each responding agency shall utilize departmental radio networks to establish and maintain communications between their headquarters and on-scene coordinators. At times, it may be necessary for an agency to use another's radio net in order to coordinate actions and response. This action is intended to be kept at minimum usage.
 2. The Search-and-Rescue (SAR) Mission Commander utilizes U.S. Coast Guard (USCG) frequencies to communicate with:
 - a. Headquarters, Ninth District (USCG)
 - b. Sector Detroit (USCG)
 - c. Sector Buffalo (USCG)
 - d. USCG helicopter air crew
 - e. USCG responding vessels and crew
 3. The Ohio Department of Natural Resources (ODNR) Division of Parks and Watercraft Supervisor utilizes departmental radio frequencies to communicate with:
 - a. Division of Parks and Watercraft responders
 - b. Division of Wildlife responders
 4. Upon a change in the emergency classification level at the nuclear power facility, responders shall be notified of this change through MARCS, telephone, or back-up communications and advised of actions to be taken, if any:
 - a. Representatives at the SEOC shall notify the ODNR offices nearest the plant of the situation and coordinate with the Division of Watercraft Law Administrator or Northern Regional Manager.
 - b. Agency regional offices shall notify their on-scene coordinator, who shall relay the message by radio to all responders.
-

**I. Periodic
Testing**

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

2. Functions of the SEOC Communications Facility

A. SEOC Responsibilities

The SEOC will:

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. ODNR Net
 - vi. ODOT Net
 - vii. EMA County Government Net
 - viii. EMA Direction and Control
 - ix. Emergency Alert System
 - x. Military Support (OHNG) Net
 - xi. OSHP Net
 - xii. Fax Machine
 - xiii. Law Enforcement Automated Data System (LEADS)
 - b. Federal Government
 - i. NOAA Weather Satellite Data System
 - ii. 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 and breakout rooms
-

3. Communications Equipment

A. 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)

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

NUCBV Talk Group (Beaver Valley)

BVPS Facility
BVPS JPIC
Columbiana County EOC
COMM Support
ODH
Ohio EMA Deployable
Ohio EMA Vehicles
Ohio EMA Watch Office
OSHP Hub Dispatch

NUCDB Talk Group (Davis Besse)

DBNPS Facility
DBNPS JIC
Erie County EOC
Lucas County EOC
Ottawa County EOC
Sandusky County EOC
COMM Support
ODH
Ohio EMA Deployable
Ohio EMA Vehicles
Ohio EMA Watch Office
OSHP Hub Dispatch

Continued on next page

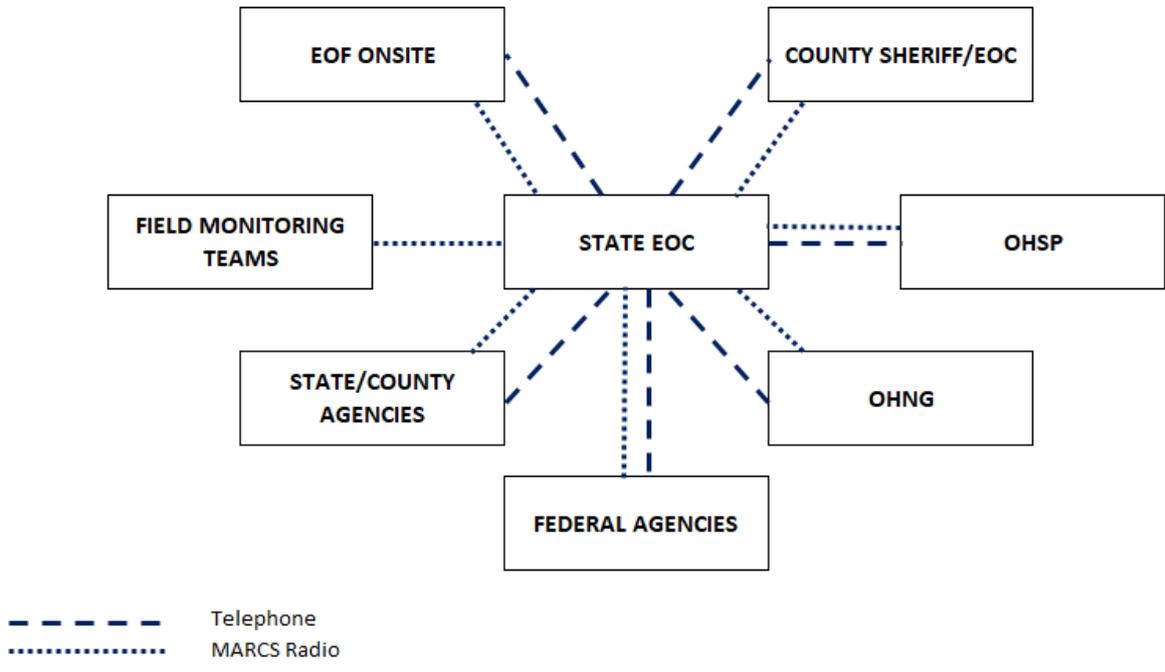
3. Communications Equipment, Continued

A. MARCS
Radio,
continued

NUCPERRY Talk Group (Perry)

PNPP Facility
PNPP JIC
Ashtabula County EOC
Geauga County EOC
Lake County EOC
COMM Support
ODH
Ohio EMA Deployable
Ohio EMA Vehicles
Ohio EMA Watch Office
OSHP Hub Dispatch

Figure V-A: Primary & Secondary Communication Links



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VI. NUREG-0654 Criteria G

Public Information

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.

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1. Emergency Public Information (EPI)

A. Emergency Public Information (EPI) Guide

Each organization (county, state, and licensee) shall coordinate the annual review, production, and distribution of a public information packet on suggested actions to take in the event of an emergency involving nuclear power plants. 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 to the 10-mile EPZs through the mail.

This Emergency Public Information (EPI) Guide may contain:

1. Educational information on radiation, nuclear power plants, and Emergency Classification Levels.
2. Points of contact for additional information.
3. Protective measures (e.g., sheltering, evacuation, and radioprotective drugs).
4. Warning and notification procedures.
5. Emergency planning information for persons with disabilities and access/functional needs.
6. Emergency information for the agricultural community.
7. Public information phone numbers.
8. Information regarding service animals.
9. Reception and care centers.
10. Information on school relocation (by name and address).
11. EAS radio stations.
12. Transportation pickup points, if applicable.
13. Maps (e.g., evacuation routes and protective action areas)

B. Beaver Valley Power Station

BVPS publishes information that is mailed annually in an brochure format to residents within the 10-mile EPZ. Distribution of emergency preparedness information is accomplished on a direct basis from the licensee to Columbiana County addresses in the EPZ. In addition, the county EMA assists in assuring that ample supplies of emergency information are available at public safety and administration centers, recreation and camping facilities, chambers of commerce, and other sites within the county.

C. Davis-Besse Nuclear Power Station

DBNPS publishes information mailed annually in brochure format to residents within the 10-mile EPZ. Besides direct mail, the brochures 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. Emergency information is also included in local telephone directories.

D. Perry Nuclear Power Plant

PNPP publishes information in a brochure format that is distributed to residents within the 10-mile EPZ on an annual basis. In addition, the county EMA distributes the information through governmental offices and other public-contact areas. Emergency information is included in local telephone directories.

E. 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. 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

2. Ingestion Pathway Zone (IPZ) Information

A. Annual Public Information

1. The Ohio Department of Agriculture shall coordinate the annual production and distribution of the Radiological Emergency Information for Food Producers, Processors, and Distributors brochure. This brochure will be mailed 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 plant. The brochure can be found at the following web address: <http://www.agri.ohio.gov> in the Resources section.

This information shall include, but is not limited to:

- a. Radiation effects on the human food supply.
 - b. Emergency and preventive action guidelines definitions.
 - c. Preventive protective actions for food, soil, and livestock.
 - d. Notification methods for the agricultural industry.
 - e. Sources for obtaining further information. Preparations shall be made to disseminate information for implementing protective actions within the entire affected IPZ. Distribution of this information shall be initiated at SAE or higher ECL. Information shall include:
 - a. Educational information on the impact of radiation contamination on food.
 - b. Points of contact for additional information.
 - c. Information on protective measures.
3. Each county OSU Extension office shall distribute the brochure by the most effective means to agriculture producers, processors, and distributors within their county.
 4. The USDA 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>.
 5. The PNPP IPZ extends into Pennsylvania. Agriculture radiological emergency information shall be disseminated by the Pennsylvania Emergency Management Agency (PEMA) to PA's affected counties. Ohio EMA shall notify PEMA at the Site Area Emergency or higher ECL and will advise they consider distribution of their agriculture information to the affected counties.
 6. The DBNPS IPZ extends into Michigan. Agriculture radiological emergency information shall be disseminated by the Michigan State Police, Emergency Management and Homeland Security Division (EM&HS), to MI's affected counties. Ohio EMA shall notify Michigan EM&HS at the SAE or higher ECL and advise they consider distribution of their agriculture information to the affected counties.
 7. The DBNPS and PNPP IPZs extend into southwestern Ontario, Canada. Agriculture radiological information shall be disseminated by the Ontario

Office of the Fire Marshal and Emergency Management to the Ontario's affected areas. Ohio EMA shall notify Ontario at the SAE or higher ECL and advise distribution of the agriculture information to these areas.

3. Joint Information Center

A. State & Utility JICs

1. The Ohio EMA Executive Director will authorize the State PIO to activate the State JIC at the SEOC. Utility officials will activate the Utility JIC as deemed appropriate, based upon their procedures or news media interest.
 2. Development of press releases:
 - a. Press releases will be developed at the State JIC by the state public information staff using information from Dose Assessment, the Executive Room, the Assessment Room, and any pertinent ESF partner.
 - b. Press releases will be transmitted to the Ohio EMA spokesperson at the Utility JIC for use during media briefings.
 - c. Press releases can be transmitted via e-mail and/or fax. They may also be posted on the Ohio EMA website.
 3. All media releases will be coordinated with the state PIO.
 4. Content of releases/advisories
 - a. All news releases relating to any incident 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 is an update of previously issued information, the item should contain any changes in conditions resulting from the incident 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.
 - i. If a PIO/spokesperson is unfamiliar with the technical content of a briefing, they should consult with a subject matter expert prior to the briefing.
-

B. Deactivation of JIC The JIC will be deactivated as the situation warrants, or when operational activities begin to decline. All participating agencies must jointly agree on the deactivation.

C. State JIC Facility The State JIC is located in Room 109 of the SEOC. Room 109 is separated from Room 106B by a moveable glass wall. If necessary, the JIC can be expanded by opening the wall into Room 106B.

Room 109 is approximately 20 ft x 18.5 ft. The room has a single screen with a projector. There are four televisions. Room 109 has six individual stations that are connected, each equipped with a computer and a monitor. There is also a separated station with a computer and dual monitors. There are also white boards available for use. A network printer/copier/scanner is just outside Room 106B in the SEOC.

Room 106B is approximately 20 ft x 23 ft. The room is equipped with four televisions. There are two projectors and two screens. Room 106B has a single computer. The table is setup in a rectangle with comfortable seating for about twelve. There is a whiteboard available for use.

4. JIC Responsibilities

A. Office of the Governor The Office of the Governor shall:

1. Communicate directly with the Governor and the Ohio DPS Communication Office on JIC 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.

B. Ohio EMA Ohio EMA shall:

1. Dispatch a State PIO to the Utility JIC to represent the state, assist county public information efforts, and participate in media briefings.
2. Authorize the State PIO to activate the State JIC and Public Inquiry. The State JIC is established to address media inquiries relating to state activities.
3. Authorize the distribution of press releases at the State JIC.
4. Receive and disseminate information
 - a. The PIO will obtain access to information about the emergency and the organizations' response efforts from the Utility JIC, Dose Assessment, ESF-5, and the Executive Room. Any information received from one of these should be verified through at least one more source.
 - b. The PIO will coordinate/communicate with the Assistant EOC Director, or their designee, for approval of media releases prior to seeking

approval from the EOC Director. Approval of the EOC Director, or their designee, is required prior to dissemination of the information.

5. Coordinate
 - a. Ensure coordination among all participating state (and federal) agencies for the release of information.
 - b. The Ohio EMA Executive Director shall coordinate information with the Governor's office.
 - c. If the Utility JIC has been established and a State PIO is onsite, the PIO at the SEOC will coordinate all information through the State PIO.
 - d. Media briefings
 - i. Maintain a designated media briefing area at the SEOC.
 - ii. Briefings and interviews are coordinated by the State PIO/JIC.
 - iii. Conduct periodic media briefings at the SEOC, as needed.
 - iv. Major changes in status will be announced immediately to the media, even if further information is not readily available.
 - v. Media briefings will also be conducted at the Utility JIC.
6. Maintain a space with equipment for the SEOC JIC.
 - a. The JIC has a stand up station for the State PIO or JIC Coordinator with dual monitors and a telephone. The room includes six stations, four of which have stand up capability. Each station includes a desktop, monitor, telephone, and rolling file cabinet.
 - b. There is one smart board, a screen with projector, and five televisions.
 - c. The JIC's printer/copier/fax machine is located in the SEOC on the Operations Floor.
 - d. The JIC has two white boards and four storage cabinets.

C. Ohio DPS

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

**D. ODH-
BEHRP**

ODH-BEHRP shall dispatch a health physicist to the Utility JIC to act as a subject matter expert for state and local PIOs.

E. 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. Coordinate information with Ohio EMA and combine it into a joint release, if appropriate.
 4. Appoint pre-designated representatives to be present during media briefings upon request, or to answer questions beyond the expertise of the Ohio EMA Executive Director.
-

F. Utilities

The Utility shall:

1. Maintain and operate the Utility JIC.
 2. Activate the Utility JIC when 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.
-

G. 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 for incidents that are below the classification of General Emergency.

- c. 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.
7. FEMA will assist the federal coordinating agency in coordinating non-technical information among federal agencies.
 8. 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.

H. Media Inquiries

A call center with a phone line for media inquiries will be set up. The PIO will return media calls.

I. Rumor Control

1. Public inquiry (rumor control) may be implemented by publicizing a telephone number for the SEOC through news releases, Twitter, and an SEOC website.
2. Should the Ohio EMA public inquiry hotline operators or resources become overwhelmed, PUCO consumer services may be used as a referral service to provide EOC phone numbers.
3. Public Inquiry personnel are trained to utilize supplied documentation to answer questions. Questions that cannot be answered are forwarded to the PIO or a related ESF agency.
4. The PIO is responsible for identifying trends, which are forwarded to the PIO to address through media briefings, news releases, and internet outlets.
5. Television, Twitter, and other internet outlets will be followed to determine if incomplete, inaccurate, or ambiguous information has been released to the public. The PIO will address this information by releasing complete and accurate information through media briefings, news releases, and internet outlets (e.g., Facebook, Twitter).

J. Hostile Action Based Events

1. During hostile action based (HAB) incidents, 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.

5. Media Information

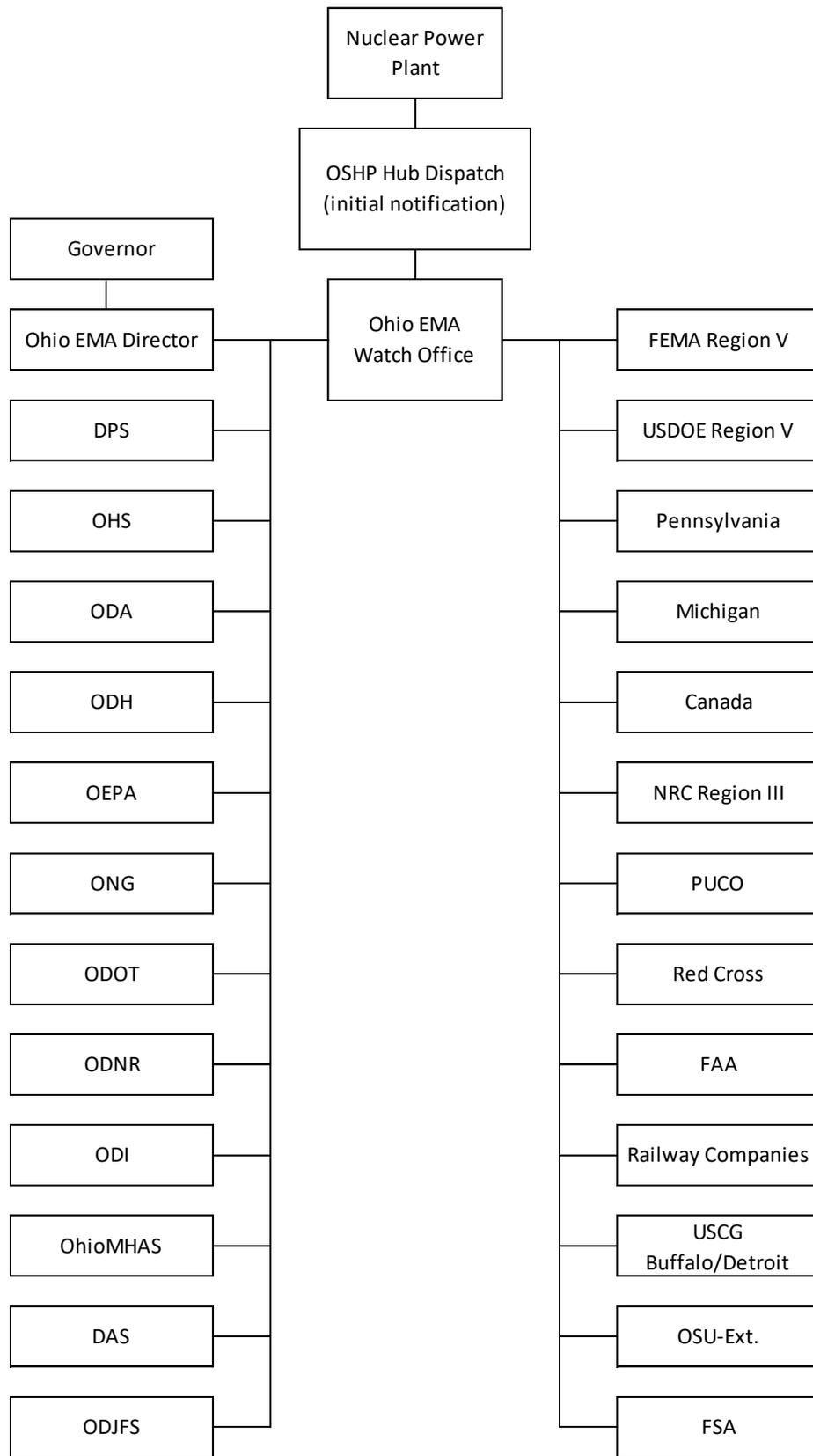
A. Training

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.
-

Table VI-A Utility Joint Information Centers

Utility	JIC Location
BVPS	Pittsburgh Industrial Park, Bldg. #3 Spring Run Road Extension Coraopolis, Pennsylvania 15108
DBNPS	Edison Plaza 300 Madison Avenue Toledo, Ohio 43604
PNPP	Auburn Career Center 8140 Auburn Road Concord Twp., Ohio 44077

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



VII. NUREG-0654 Criteria H

Emergency Facilities & Equipment

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

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1. State Emergency Operation Center (SEOC)

A. General Information

The SEOC is located in the lower level of the SEOC 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. An alternate SEOC is available at the Ohio State Highway Patrol Academy, 740 E 17th Avenue, Columbus, Ohio.

1. Functions

- a. Coordinate the actions and resources of state agencies in support of local response.
- b. Formulate PARs for consideration by county officials.
- c. Post and display information and operational data to enhance coordination between response organizations.
- d. Establish a central location for coordination of response efforts.
- e. Coordinate communications between federal, state, and county governments.
- f. Provide 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.
- b. The Dose Assessment Room will be staffed by representatives from various state agencies that will be appropriate for the situation.
- c. The principal executives of state 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 SEOC as outlined in this plan.
- d. Internal SEOC procedures will be maintained by Ohio EMA.
- e. Staffing should begin within the time frames indicated below:

ACTIVATION / NOTIFICATION TIMES	STAFFING TO COMMENCE WITHIN
7:00 a.m. - 4:30 p.m.	30 minutes
4:30 p.m. – 7:00 a.m.	75 minutes

- f. At the Site Area Emergency (SAE) and General Emergency (GE) ECLs, the SEOC will be fully staffed with the appropriate personnel in accordance with the NIMS standards.
- g. SEOC readiness is maintained by the EOC Manager.
- h. 24-hour operations

- i. Each organization is responsible for assuring its continuity of operations for a protracted period and the continuity of resources.
- ii. Ohio EMA
 - 1. The Operations Administrator has overall responsibility for the SEOC. Shifts will be determined at the time of the emergency by the Operations Administrator.
 - 2. The Logistics Branch Chief is responsible for resources and logistics.
 - 3. The Communications Branch Chief is responsible for audio-visual and communications.
 - 4. The Information Technology Supervisor is responsible for Information Technology.
 - 5. The Personnel Branch Director is responsible for maintaining the staff roster and staffing the SEOC. For 24-hour operations, a minimum of two shifts will be filled by the EOC staffing database, as needed.⁵ Roster information will be maintained on the computer database at Ohio EMA.
- i. The Dose Assessment Room may be activated at Alert or earlier. It will be considered operational when these key staff are present:
 - i. State Dose Assessment Systems Operator
 - ii. Radiological Assessment Branch Director
- j. 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 Director
 - ii. SEOC Manager
 - iii. Information and Planning Section Chief
 - iv. JIC Coordinator
 - v. Dose Assessment

**B. SEOC
Equipment**

Equipment available includes:

- 1. Tables
- 2. Chairs
- 3. Fax/copier/scanner/printer machines
- 4. Commercial and satellite telephones
- 5. Dedicated telephones

⁵ Individual SEOC position procedures should detail both shift duties and shift change requirements, including briefing incoming staff.

6. MARCS radios
 7. Televisions
 8. Maps
 9. Projectors
 10. Computers
 11. Headsets
 12. Administrative supplies (e.g., pens, paper)
 13. 1000 kW Onan-Cummins backup generator with 2 weeks supply of fuel
-

C. SEOC Security

Access to the Ohio EMA building is through locked doors and persons making entry must receive a visitor's badge. OSHP, along with Ohio EMA, is responsible for staffing the front door. SEOC staff have photo IDs which are keyed to the secured interior doors. Personnel with such an ID will be issued temporary keyed badges upon arrival in the SEOC.

2. Equipment – Maintenance

A. Ohio EMA Responsibilities

1. The Ohio EMA Radiological Instrument Maintenance and Calibration Lab (RIM&C) maintains and calibrates radiological instruments.
2. Radiological equipment will be calibrated annually or in accordance with the manufacturer recommendation.
3. Ohio EMA RIM&C will inspect, inventory, and operationally check the radiological equipment to be used by the FMTs quarterly and after each use.
4. The Resident Radiological Analysts distribute the instruments in their areas of the state.
5. The radiological sets that are issued to county emergency services units will be returned to Ohio EMA RIM&C 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.

6. ESF-7, Logistics, can 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.
 7. Ohio EMA maintains sufficient reserves of equipment to replace any that must be removed from operation.
 8. For more information, including equipment lists, refer to Procedure 658 Field Monitoring Team (Attachments 4, 5).
-

B. Other Agency Responsibilities

Each sampling agency will be responsible for the maintenance of their own sampling kits.

Note: For more information, including equipment lists, refer to procedures: SOP-07 ODA SOP for a Contamination Incident Involving Nuclear Materials - Milk Sampling (Attachment 1); SOP-02 ODA SOP for a Contamination Incident Involving Nuclear Materials – Leafy Vegetation Sampling (Attachment 1); ODNR Radioactive Sampling Guidelines for Fish and Wildlife (Fish Sample Guidelines, Game Sample Guidelines); Drinking Water Sampling (Deposition) Guidelines During a Nuclear Power Plant Incident (Ohio USEPA) (3.3); OEPA Radioactive Sampling Guidelines for Hard Surfaces (Ohio EPA Wipe Sample Guidelines); OEPA Radioactive Sampling Guidelines for Snow (Ohio EPA Snow Sampling Guidelines); OEPA Radioactive Sampling Guidelines for Surface Water (Ohio EPA Surface Water Radiological Sample Guidelines); OEPA Radioactive Sampling Guidelines for Vegetation (Ohio EPA Vegetation Sample Guidelines); Soil Sampling Guidelines (Ground Deposition) Guidelines During a Nuclear Power Plant Incident (Ohio USEPA) (3.3); ODH-SOP-PWS-0001 Private Water Systems Program SOP (Appendix A)

3. Central Point for Data Processing

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

- B. Data Receipt & Analysis**
1. The State Radiological Assessment Branch 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 Radiological Assessment Branch via commercial phone line, cell phone, or MARCS radio.
 3. A Sample Courier is responsible for transporting samples to the Sample Screening Point. In the absence of a Courier, the Field Monitoring Teams will be responsible. Once the samples have been processed, OSHP, ODNR, or OHNG are responsible, in coordination with ESF-1, for transportation of samples to the laboratory for analysis.
 4. The laboratory will send the sample analysis results to the State Radiological Assessment Branch.

Note: For more information, refer to the ODH manual 10-BEHRP-M01.

Figure VII-A: State Emergency Operations Center Layout

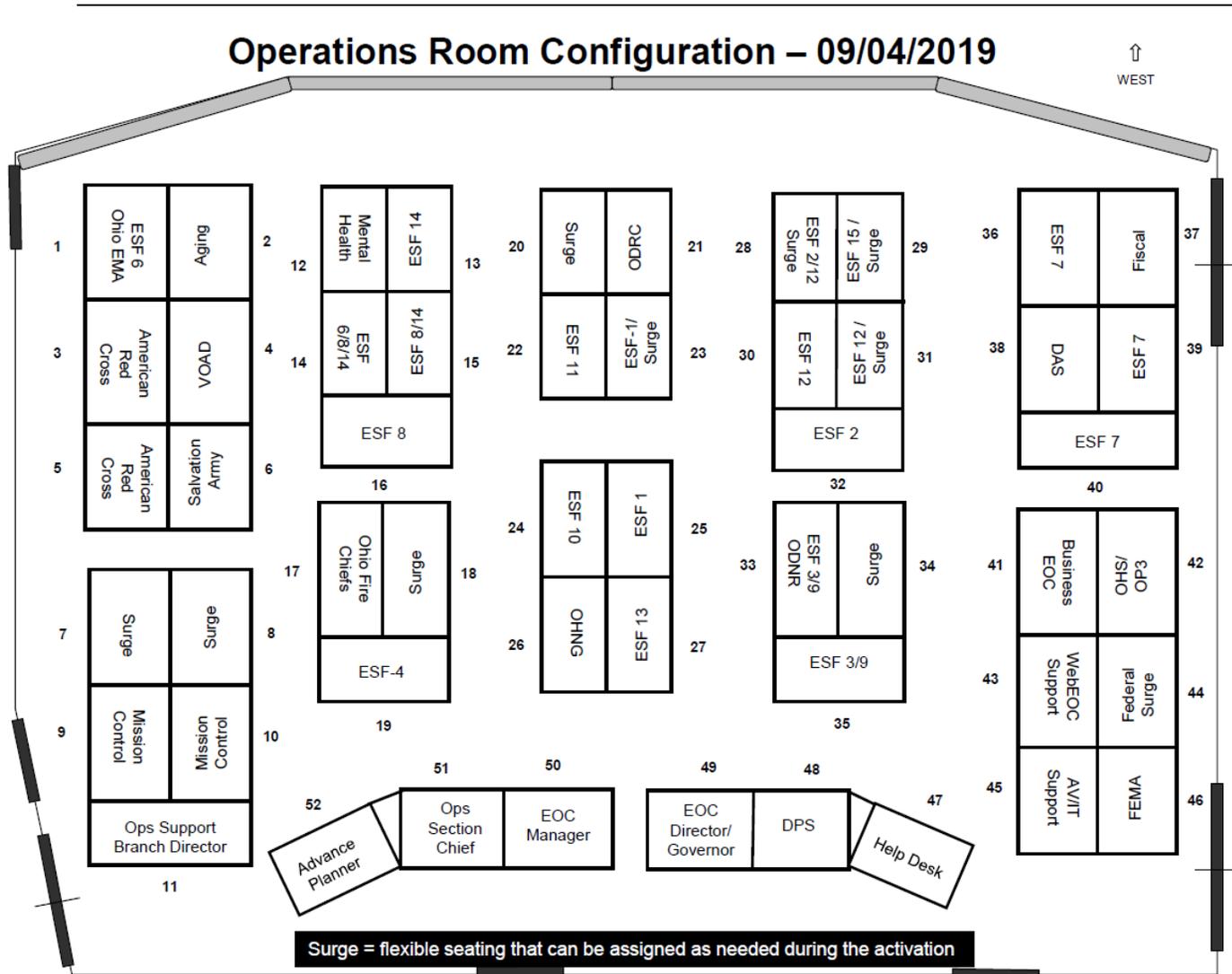


Table VII-B: Vessels Available to Respond to Davis-Besse Nuclear Power Station Emergencies

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

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

[2] Response times for Ohio Department of Natural Resources are estimated to be 2 to 3 hours.

Table VII-C: Vessels Available to Respond to Perry Nuclear Power Plant Emergencies

Resource	Personnel	QTY	Vessel Type
<u>U.S. COAST GUARD[1]</u>			
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
<u>OHIO DEPARTMENT OF NATURAL RESOURCES[2]</u>			
Division of Parks and Watercraft, Cleveland Field Office			
Cleveland	8	2	27 ft. Boston Whaler
		1	35 ft. Boston Whaler
Division of Parks and Watercraft, Geneva Field Office			
Geneva	5	1	27 ft. Boston Whaler
		1	35 ft. Boston Whaler
Division of Wildlife			
Lorain	1	1	18 ft. Boston Whaler
Fairport	2	2	26 ft. Boston Whaler

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

[2] Response times for Ohio Department of Natural Resources are estimated to be 2 to 3 hours.

Table VII-D: Ohio EMA Emergency Phase Kits

Kit Type	Kit Contents	Qty	Location
Communications	Case – (1) 800 MHz Radio	1	2855 W Dublin-Granville Road Columbus, OH 43235
	Case – (12) 800 MHz Radios	1	
	Case – (24) 800 MHz Radios	1	
	Case – (12) VHF Radios	1	
	Case – (24) VHF Radios	1	
	Case – (1) Satellite Phone	1	
	Cell Phones	5	
Radiological Monitoring Equipment	See Footnote ⁶	4	1296 Kinnear Road Columbus, OH 43212
Protective Equipment	See Footnote ¹²	4	

⁶ For contents and quantities, see 658 Field Monitoring Team procedure (Attachments 4, 5).

Table VII-E: Intermediate Phase Sampling Kits

Agency	Qty ⁷	Address
Ohio Department of Natural Resources	1	Division of Wildlife, District 1 1500 Dublin Road Columbus, OH
Ohio Environmental Protection Agency	6	“Field Support Kits” Groveport Field Office 4675 Homer Ohio Lane Groveport, OH
	17	“Sample Kits” Groveport Field Office 4675 Homer Ohio Lane Groveport, OH
Ohio Department of Agriculture	21 ⁸	ODA Division of Enforcement 8995 E. Main St., Bromfield Bldg. Reynoldsburg, OH

⁷ For contents and quantities, see SOP-07 ODA SOP for a Contamination Incident Involving Nuclear Materials - Milk Sampling (Attachment 1); SOP-02 ODA SOP for a Contamination Incident Involving Nuclear Materials – Leafy Vegetation Sampling (Attachment 1); ODNR Radioactive Sampling Guidelines for Fish and Wildlife (Fish Sample Guidelines, Game Sample Guidelines); Drinking Water Sampling (Deposition) Guidelines During a Nuclear Power Plant Incident (Ohio USEPA) (3.3); OEPA Radioactive Sampling Guidelines for Hard Surfaces (Ohio EPA Wipe Sample Guidelines); OEPA Radioactive Sampling Guidelines for Snow (Ohio EPA Snow Sampling Guidelines); OEPA Radioactive Sampling Guidelines for Surface Water (Ohio EPA Surface Water Radiological Sample Guidelines); OEPA Radioactive Sampling Guidelines for Vegetation (Ohio EPA Vegetation Sample Guidelines); Soil Sampling Guidelines (Ground Deposition) Guidelines During a Nuclear Power Plant Incident (Ohio USEPA) (3.3)

⁸ Pre-issued to members of ODA sampling teams.

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VIII. NUREG-0654 Criteria I

Accident Assessment

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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2. Sampling Teams	107
3. Dose Assessment	108
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1. Field Monitoring Teams (FMT)

A. Responsibilities Ohio EMA and ODH will be responsible for field monitoring during an incident.

B. Activation & Notification

1. The Executive Group will determine at which ECL the Field Monitoring Teams should be activated.
2. Team members will be contacted by commercial phone, cell phone, or MARCS radio.

C. Composition FMTs are composed of two trained emergency workers.

D. Shift Schedule FMTs will work up to 12-hour shifts. Additional FMTs would be requested from ODH and then through the EMAC system.

E. Transportation The FMTs initially deployed will utilize available Ohio EMA vans for their monitoring and sampling duties.

F. 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

G. Deployment Times

Utility	Minimum Time from SEOC to FMT Assembly Points
BVPS	3.5 hours
DBNPS	2.5 hours
PNPP	3 hours

H. Direction	The Ohio EMA FMT Coordinator will direct FMTs to selected locations for monitoring and air sampling.
I. Centerline Readings	The FMTs will traverse the plume or the Restricted Zone to locate centerline measurements. Note: If turn back values would be exceeded, State FMTs will not perform this function, federal or utility resources will be requested.
J. Radioiodine Concentration Readings	The FMTs 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.
K. Equipment	For FMT equipment, refer to procedures.
L. Number of Teams	The number of FMTs deployed during a shift will be dependent upon the number of additional personnel provided by agencies and other states. Initially, up to three FMT would be activated.
M. Chain of Custody	If RadResponder is operable, the ODH Sample Chain of Custody form will be utilized with each person signing when receiving a sample or relinquishing a sample. If RadResponder is not available, ODH Lab Sample Submission Form will be used with its Chain of Custody section.

2. Sampling Teams

A. Ingestion Sampling	<ol style="list-style-type: none"> 1. After the emergency phase of the incident, an FTC will be established near the ingestion zone (if possible in conjunction with FRMAC) to facilitate the dispatching of state sampling teams into the ingestion zone. 2. State sampling teams will report directly to the FTC to receive coordinated instructions and sampling assignments from their respective agencies.
B. Responsibilities	<ol style="list-style-type: none"> 1. ODA will sample various foods including, but not limited to, meat and meat products, vegetables, fruit, poultry, animal feed, grain, milk and milk products, and honey products. 2. ODH will sample private water. 3. ODNR will sample fish and wildlife. 4. OEPA will sample soil, public water, surface water, snow, and vegetation.

-
- C. Activation & Notification**
1. The IZRRAG will determine at what time Sampling Teams should be activated.
 2. Team members will be contacted by commercial phone, cell phone, or MARCS radio.
-

D. Composition Sampling Teams are composed of two trained individuals.

E. Shift Schedule Sampling Teams will work during daylight hours.

F. Transportation Each agency will utilize their available vehicles.

G. Direction The Ohio EMA FMT Coordinator will coordinate the operation of the FTC.

H. Equipment For sampling team equipment, refer to procedures.

- I. Escorts** Ohio EMA will provide personnel for Escort Teams, if necessary.
1. These teams will escort state sampling teams and other personnel into the RZ, as necessary.
 2. While in the RZ, the Escort Teams shall check gross gamma readings and take air samples, as requested.
-

J. Chain of Custody If RadResponder is operable, the ODH Sample Chain of Custody form will be utilized with each person signing when receiving a sample or relinquishing a sample. If RadResponder is not available, ODH Lab Sample Submission Form will be used with its Chain of Custody section.

3. Dose Assessment

- A. Plume Phase**
1. ODH is responsible, with support from Ohio EMA, for performing dose assessment calculations using one or more of the following: Unified Radiological Assessment System for Consequence Analysis (RASCAL) Interface (URI), RASCAL, Ohio EMA-developed spreadsheets, ODH-developed spreadsheets, or hand calculations.

- a. URI and RASCAL have the capability to project offsite dose from accidental releases from BVPS, DBNPS, and PNPP.
 - b. The FENOC e-Data system provides real time in-plant data, release data, and meteorological data for 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 Dose Assessment personnel may log into ERDS as a backup.
 - d. Meteorological Data
 - i. In addition to ERDS and e-Data, meteorological data will be furnished by the nuclear power plant from onsite meteorological stations.
 - ii. National Weather Service (NWS) information is available in the SEOC. Additional information is available through the Watch Office.
2. Initial dose projection runs will be based on available information. FENOC will provide the State Radiological Assessment Branch 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 each dose projection calculation.
 5. Dose projections will be validated and PARs revised, as needed, based on FMT results.
-

B. Intermediate Phase

1. Sample results will be reported by the laboratory to the State Radiological Assessment Branch.
 - a. Results may be provided through RadResponder.
 2. Dose assessment staff will evaluate the results utilizing appropriate software and make recommendations based on Protective Action Guidelines (PAG).
 - a. Environmental data will be used to develop the Restricted Zone boundaries to determine if relocation of the populace is necessary.
 - b. Water, milk, meat, and vegetation results will be used to determine contamination levels to drive protective actions for the ingestion pathway.
 3. ODH will coordinate the total population exposure estimate periodically.
-

Table VIII-A: Sample Screening Points

Introduction ODH-BEHRP shall establish and operate a Sample Screening Point to ensure sample container integrity and that no external contamination is present prior to transfer to the laboratory. The locations listed are suitable for both the emergency and intermediate phases.

BVPS

	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

DBNPS

	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	1825 Oak Harbor Rd. Fremont, OH	16 miles	S

Continued on next page

Table VIII-A: Sample Screening Points, Continued

DBNPS,
continued

	Location	Distance from Site	Direction
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 Bardshar Rd.) Sandusky, OH	20 miles	ESE

PNPP

	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. NUREG-0654 Criteria J

Protective Response

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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1. State Responsibilities

- A. Ohio EMA** The Executive Director of Ohio EMA, acting for the Governor, is responsible for:
1. Requesting assistance by means of the NRF through the NRC or the DHS, and other assistance through FEMA or the DOE. (Under the NRF, DHS is the overall incident manager for deliberate attacks involving nuclear/radiological facilities.)
 2. 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.
 3. Employing and training a Resident Radiological Analyst (RRA) who is required to reside in the county where a nuclear power station is sited within 30 minutes of the county EOC. For the BVPS in Pennsylvania, the RRA shall reside within 30 minutes of the Columbiana County EOC. The RRA, 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 emergency radiological techniques (e.g., monitoring and decontamination) and use of Potassium Iodide (KI).
 - c. Assist county governments in the maintenance of local plans and procedures.
 - d. Pre-distribute dosimetry packets with KI for emergency workers whose duties are within the 10-mile EPZ and at each offsite response organization's main office or staging area.
 4. Ensuring plans and implementing actions are coordinated with agencies listed in this plan.
 5. Coordinate state services, other public agencies and private relief organizations in the operations of reception and care centers.
-

-
- B. ODH-BEHRP**
1. The ODH-BEHRP is responsible for supplying KI from the NRC and distributing it for use by emergency workers, institutionalized individuals, and the general public through Ohio EMA, county EMAs, and local health agencies.
 2. The ODH-BEHRP is responsible for maintaining the ODH KI Directive, 10-BEHRP-01 Distribution and Use of Potassium Iodide (KI) for the 10-mile Emergency Planning Zone Population.
 3. ODH-BEHRP, with support from Ohio EMA, will provide personnel for the State Radiological Assessment Branch.
 4. The ODH-BEHRP will establish the criteria for the administration of protective actions in accordance with appropriate federal guidance and adopted state policies.
 - a. The ODH-BEHRP will assess available information from the affected nuclear power plant, including (1) plant conditions or (2) potential or actual release data.
 - b. ODH-BEHRP 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, and taking KI, any combination of these actions, that the public take no actions at all, or other actions deemed appropriate by the ODH Director.
 - c. The ODH-BEHRP shall provide PARs to the Executive Group for the general public, emergency workers and institutionalized personnel.
 - d. 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.

-
- C. OSHP**
1. The Ohio DPS will provide, through the 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.
 2. 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.
 - e. Reroute traffic, as needed, around impediments on evacuation routes.
 3. OSHP, along with OHNG, ESF-13 Law Enforcement, and local law enforcement, will protect state properties and equipment.

D. ODOT

The ODOT, is 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. ODOT shall also assist in:

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

E. ODA

ODA shall recommend as a precaution, livestock and poultry be brought inside and placed on stored feed and protected water in all townships and municipalities within 10 or 50 miles of the plant, when necessary.

2. Methods of Accomplishment

A. 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 (USEPA) 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.

B. State Requirements

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

1. The development of specific planning guidance for the 50-mile IPZ surrounding each facility.
2. The development of specific planning guidance for the recovery and reentry of contaminated offsite areas.
3. The means for the notification and evacuation of recreational boaters and mariners on Lake Erie waterways within the EPZ of DBNPS, Fermi II, 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.

4. 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.
-

3. Protective Action Decision-Making

A. Immediate Protective Actions

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.

In some incidents, sheltering may be the preferred protective action. Weather conditions, the direction of the plume, an HAB incident, or other circumstances may pose an undue risk to evacuation.

B. Subsequent Protective Actions

1. If additional information becomes available regarding potential or actual releases after the initial PADs have been made, the State Radiological Assessment Branch will provide additional PARs based on dose projections or plant conditions.
 2. When field data becomes available, it is used to evaluate and, if needed, revise PARs based on ground truth.
 3. In general, protective actions that have been implemented (e.g., evacuation) **SHOULD NOT BE REVERSED** based on revised dose assessments or early field measurements.
-

C. Notification

The Executive Group will notify applicable jurisdictions of any advisories or PARs.

4. Additional Support Measures

A. Traffic Control

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.

B. Hostile Impediments to Evacuation

1. In a HAB 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.
-

C. 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 Parks and Watercraft Supervisor shall be in charge of the ODNR Watercraft Notification response.
3. 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 to assist in clearing the affected area and establishing a perimeter.
 - d. ODNR will conduct traffic control to and at marinas outside the 10-mile EPZ.
 - e. 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 Parks and Watercraft Supervisor/ODNR Communications Center.
4. Responding agencies shall utilize on-board electronic systems to communicate:
 - a. MARCS radio (primary).
 - b. VHF-FM two-way radios.
5. The following methods are conducted for waterway notification:
 - a. Broadcast communications
 - i. Marine band channel 16 (156.8 MHz).
 - ii. NOAA weather radio.
 - b. Public address systems.
6. Guidelines for waterway notification efforts:

- a. Surface responders will directly notify boaters by public address system and issue waterway clearing instructions (e.g., 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)
 7. Each responding watercraft shall have an operable CDV 777-1 radiation detection kit or equivalent rate meters.
 8. Waterway notification efforts will be conducted until it is reasonable to assume that all boaters have been notified. Responders may disengage from waterway clearing efforts as directed.
-

5. Map Responsibilities

- A. Ohio EMA**
1. Ohio EMA is responsible for the maintenance of maps showing:
 - a. FMT radiological sampling and monitoring points
 2. County plans include the following maps⁹:
 - a. Evacuation routes
 - b. Protective action sub-areas
 - c. Reception centers
 - d. Care centers
 - e. Traffic and access control points
 3. Maps will be updated when requests are received by the Ohio EMA GIS Operator, time permitting. Maps will be updated with the most current and accurate data.
 4. Maps showing population distribution about the nuclear power plants can be located in the utility's Evacuation Time Estimate reports, listed in Appendix C.
 5. The Homeland Security Information Network (HISN) is a secured network that may be utilized for BVPS, DBNPS, Fermi II, and PNPP maps and layers.
 6. For ingestion phase mapping, in addition to ability to manipulate ArcGIS maps, maps are also available to select a multitude of layers on the Ohio Geographically Referenced Information Program (OGRIP) web portal.

⁹ Ohio EMA is responsible for the maintenance of the maps listed for Columbiana, Lucas, and Ottawa Counties. However, the maps are in the county plans.

Layers include agricultural concerns (e.g., dairies), water treatment plants, water wells, and more.

7. The RadResponder website allows for mapping of grid surveys and samples taken.
 8. Water supply maps may be available upon request.
-

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 / Planning Guide
Early	Sheltering-in-place or evacuation of the public ¹⁰	1 to 5 rem TEDE projected dose/4 days ¹¹
	Administration of prophylactic drugs KI ¹²	5 rem CDE projected child thyroid dose ¹³ from radioactive iodine
	Limit emergency worker exposure	5 rem/year (or greater under exceptional circumstances) ¹⁴
Intermediate	Relocation of the public	2 rem projected dose first year. Subsequent years, 0.5 rem/year projected dose
	Food interdiction ¹⁵	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 ¹⁶ (Stay times and concentrations) for specific activities
Late	Cleanup	Brief description of planning process
	Waste disposal	Brief description of planning process

¹⁰ 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.

¹¹ 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.

¹² Provides thyroid protection from internal exposure to radioactive iodines only.

¹³ Committed dose equivalent.

¹⁴ 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.

¹⁵ For more information on food and animal feeds guidance, see “Accidental Radioactive Contamination of Human Food and Animal Feeds: Recommendations for State and Local Agencies.”

¹⁶ For extensive technical and practical implementation information, see “Preliminary Report on Operational Guidelines Developed for Use in Emergency Preparedness and Response to a Radiological Dispersal Device Incident” (DOE 2009).

**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 – Davis-Besse Nuclear Power Station

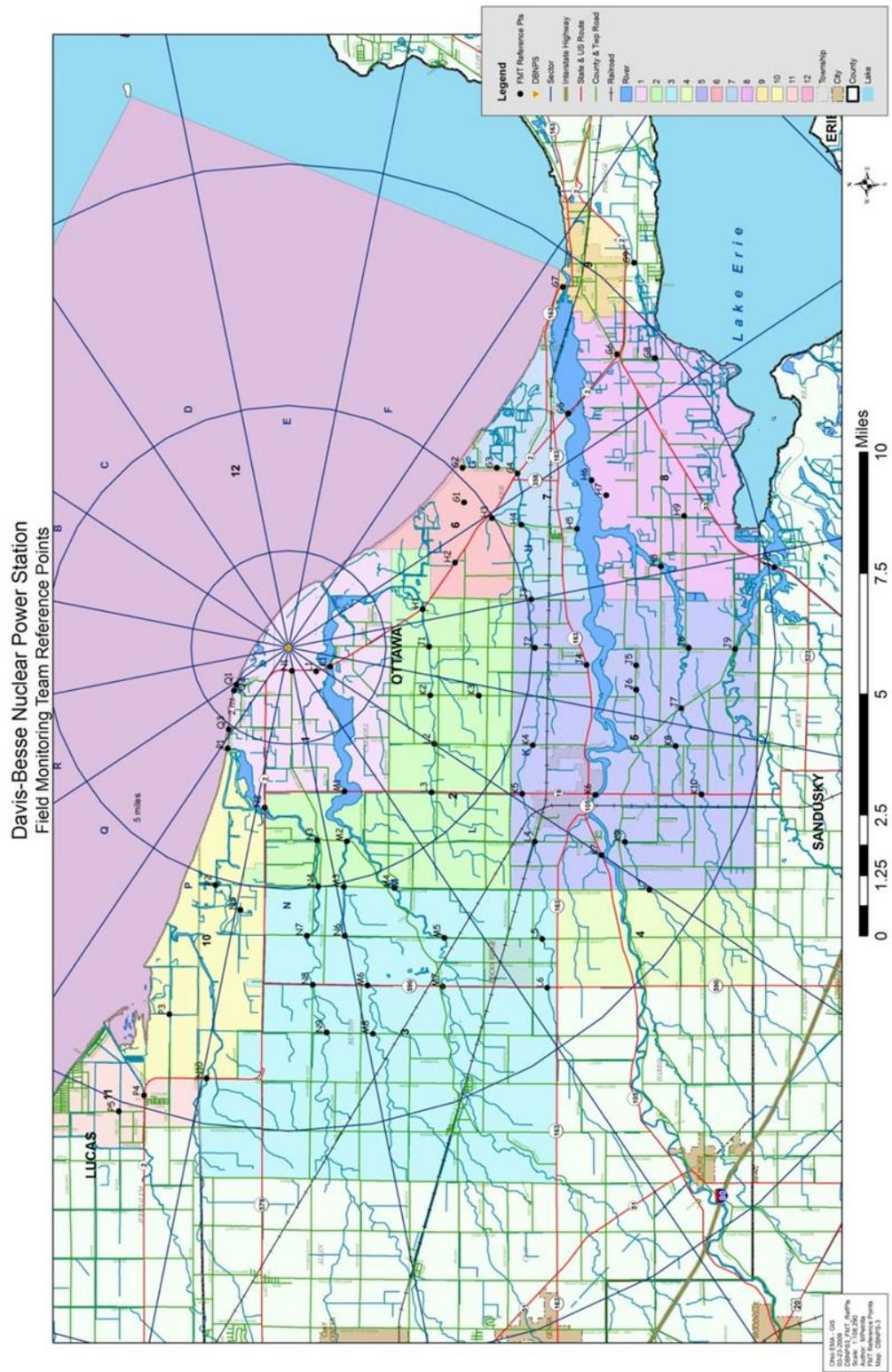


Table IX-E: Ohio Radiological Field Monitoring Reference List – Davis-Besse Nuclear Power Station

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

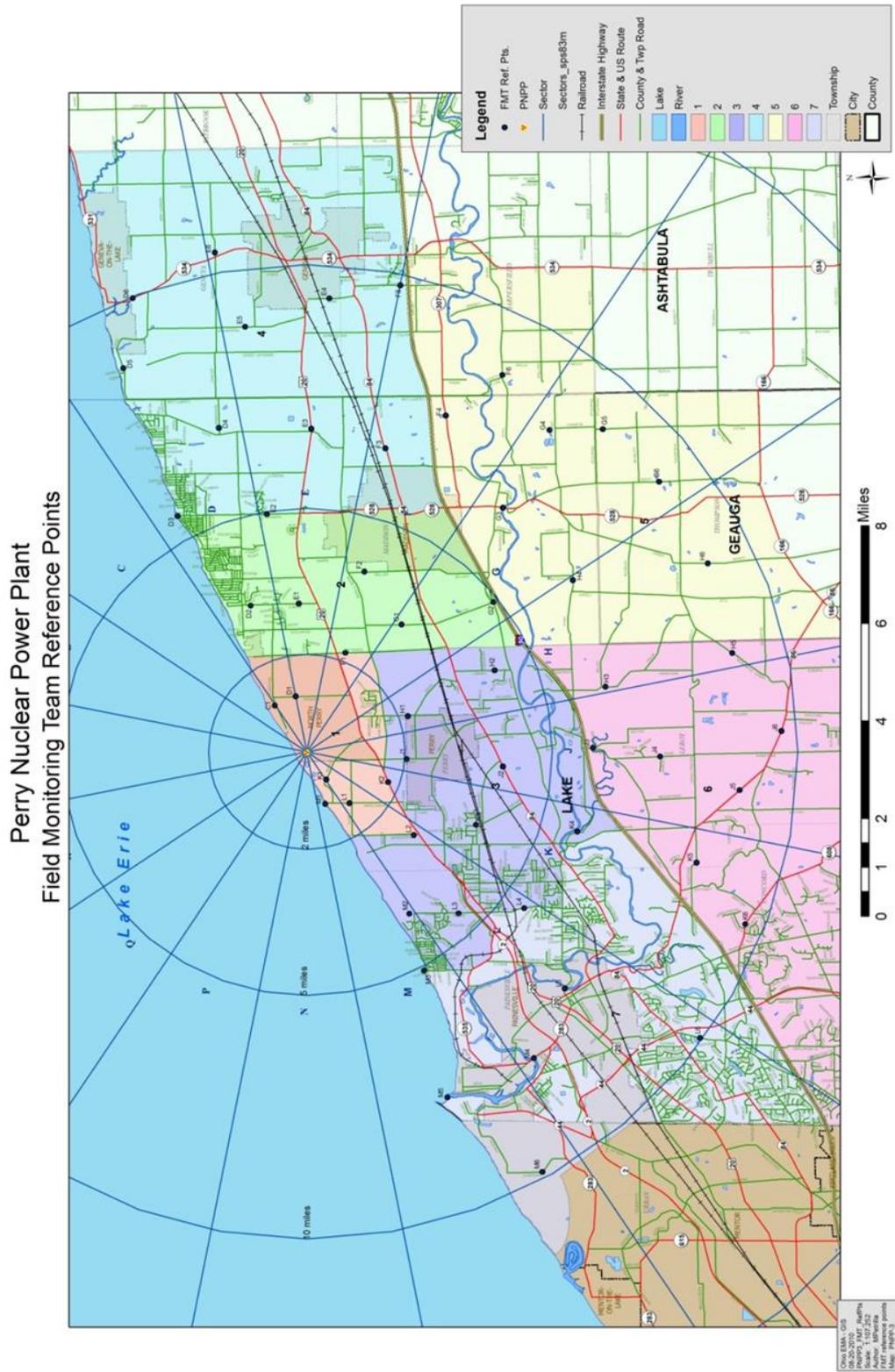
SECTOR	NUMBER	SITE DESCRIPTION
M	6	Benton Township, Section 15 - S.R. 590 and Packer Creek
M	7	Benton Township, Section 22 - S.R. 590 and Toussaint Creek; 0.1 miles S of CR 62 (Toussaint North Road)
M	8	Benton Township, Section 16 - T-21 (Stange Road) Packer Creek
N	1	Carroll Township, Section 2-S.R. 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; 0.1 miles E of CR 128 (Russell Road)
Q	2	Carroll Township, Sect.35 - CR 128 (Russell Road) & Lake 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 – Perry Nuclear Power Plant



**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)

Continued on next page

**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

Continued on next page

**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 Bowhall 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

Continued on next page

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

SECTOR	NUMBER	SITE DESCRIPTION
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: Recommended Marinas and Harbors Outside the Davis-Besse Nuclear Power Station Emergency Planning Zone

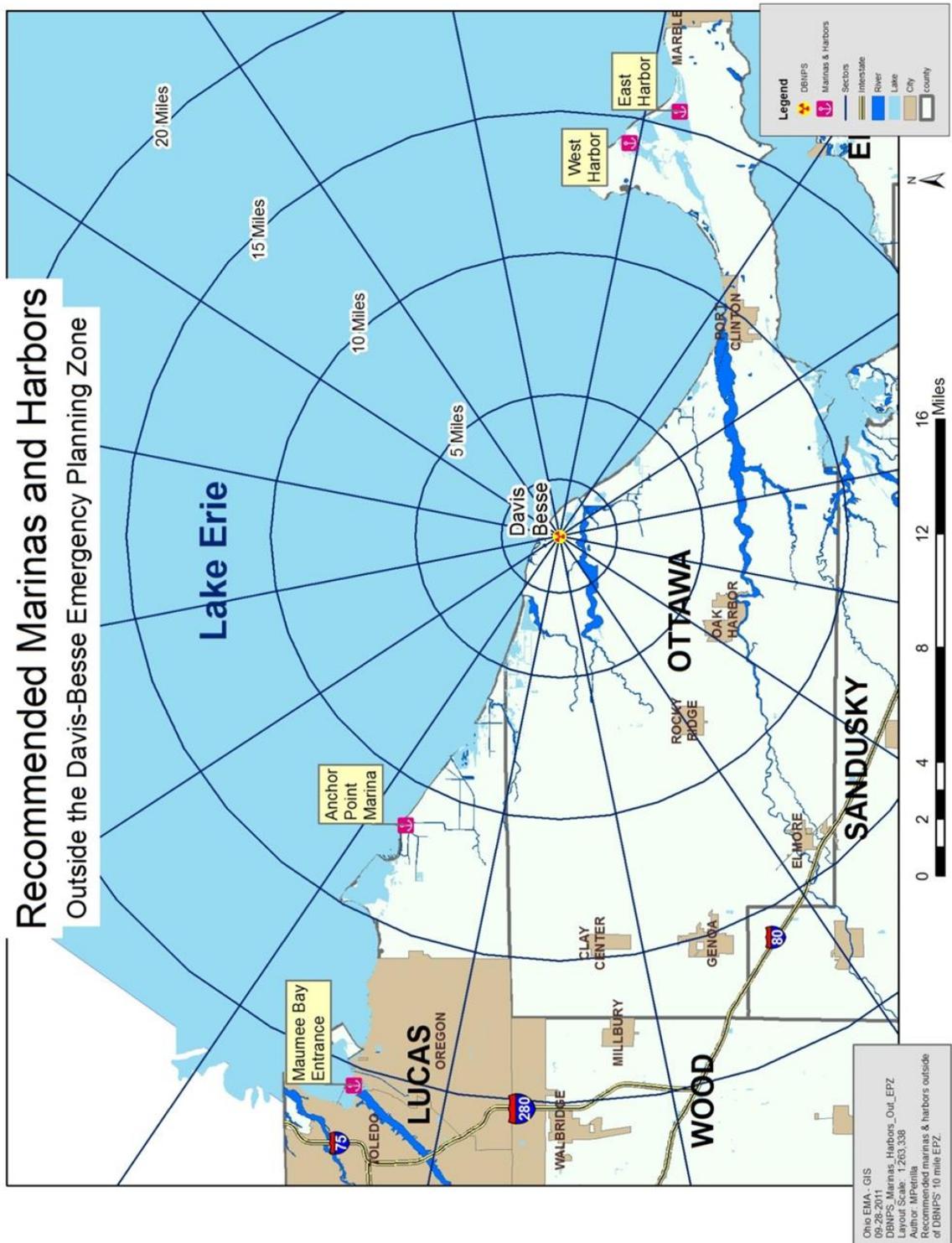
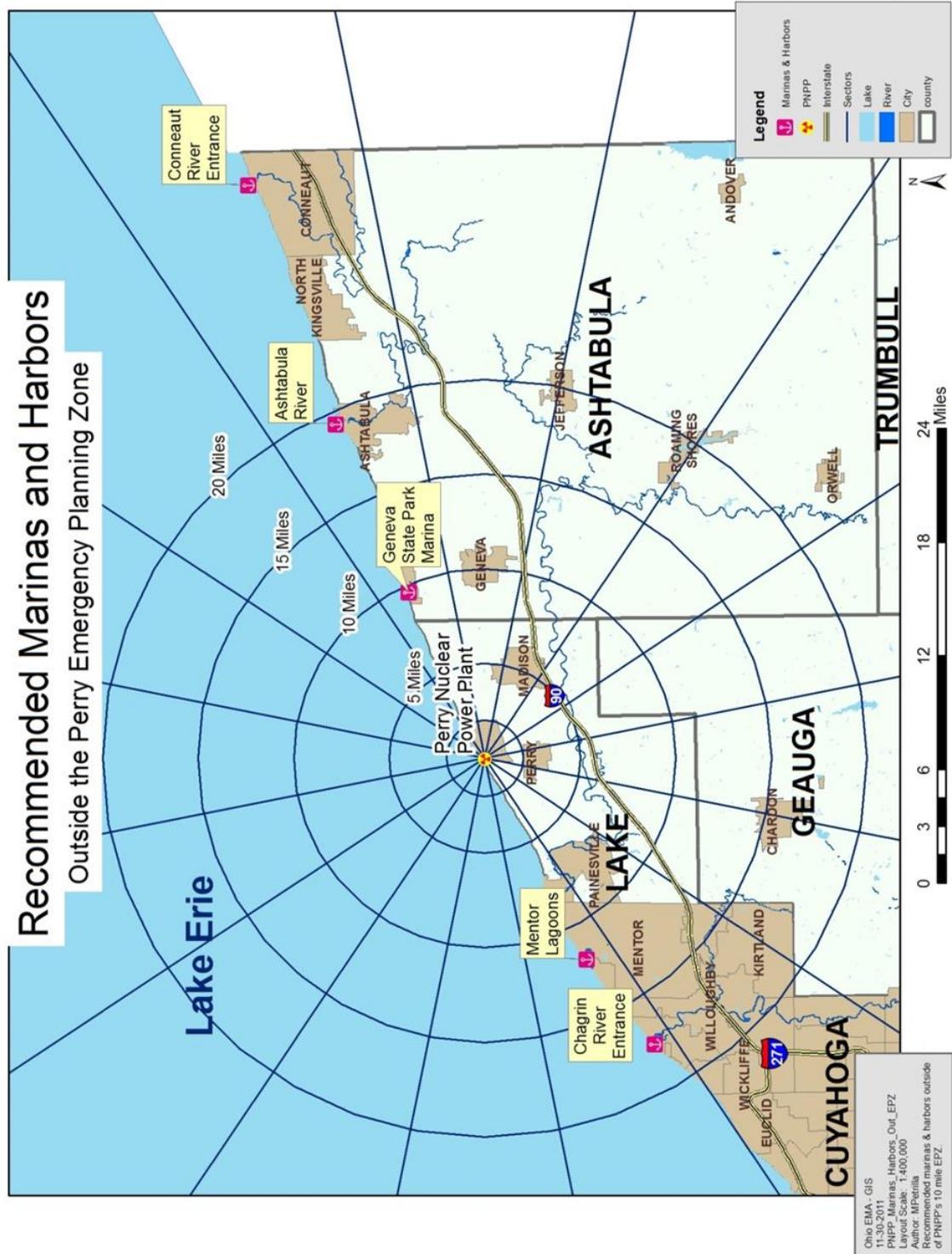


Figure IX-I: Recommended Marinas and Harbors Outside the Perry Nuclear Power Plant Emergency Planning Zone



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X. NUREG-0654 Criteria K

Radiological Exposure Control

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 USEPA Emergency Worker and Lifesaving Activity Protective Action Guides.

Contents

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1. Responsibilities

A. Purpose To describe major state agency functions in the area of radiological monitoring and exposure control, contamination monitoring and radioactive contamination control.

B. 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 (RRA) assigned to each nuclear power facility area shall supervise the distribution of dosimetry packets. Packets should include:
 - i. Direct-reading dosimeters (DRD) and a permanent record dosimeter (PRD), either a thermo-luminescent dosimeter (TLD) or an optically stimulated luminescent dosimeters (OSLD).
 - ii. KI tablets.
 2. Provide training on the use of dosimeters and radiological survey meters to state agencies and USCG personnel.
 3. Inform FMTs about the health risks from receiving radiation doses, and the increased risk from doses up to and in excess of the USEPA PAG Manual guidelines.
 4. Provide the necessary record-keeping forms to state and county governments with instructions for use.
 5. Provide training and equipment, with the exception of portal monitors, to facilitate the monitoring of evacuees at reception and care centers.
 6. Instruct state agencies and USCG personnel to report to a decontamination facility for survey and wash down of their service equipment.
 7. Ensure emergency workers submit their TLD or OSLD and Dosimetry Report Form for processing upon termination of their emergency duties.
-

C. ODH-BEHRP ODH-BEHRP shall:

1. Issue recommendations to protect the general public, emergency workers, and institutionalized individuals.
2. Issue recommendations for the administration of KI to the general public, emergency workers, and institutionalized individuals.
3. 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.
 - e. Radiological contamination levels identified in environmental samples.
4. Provide guidance for appropriate follow-up and treatment of affected citizens to county governments.
 5. In coordination with the OEPA and the utility, in order to reduce exposure to the public, determine a means for disposal of waste generated by the offsite radioactive decontamination process of the public, emergency workers, equipment, structures, and environment.
 6. Request KI supplies from NRC for the general public and emergency workers.
-

D. OEPA

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. In coordination with the ODH-BEHRP and the utility, determine a means for the disposal of waste generated by the offsite radioactive decontamination process of the public, emergency workers, equipment, structures, and environment.
 3. Provide a FMT Communicator and assist in tracking of the plume deposition.
-

2. Dosimetry

A. Issue of Dosimetry

1. Emergency workers shall be issued dosimetry before departing for the affected area. This may include state emergency workers, such as FMT members, Sample Screeners, communications support personnel, EOF Liaisons, and other personnel as deemed necessary by the state.
2. OHNG
 - a. OHNG 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.
 - b. The KI and dosimetry packets for the OHNG will be issued by county officials at a designated staging or assembly area.

- c. Additionally, OHNG personnel will receive a dosimetry briefing covering the mission, emergency worker exposure limits, and on the use of personal dosimeters.
 - d. The exception to these requirements may be OHNG members who are already trained and equipped to respond to radiological emergencies, such as the CST.
3. USCG
 - a. USCG responders are considered emergency workers.
 - b. USCG is responsible for the dosimetry of its personnel.
 4. Each responder shall have a dosimetry packet made available to them which includes a permanent reading dosimeter, appropriate DRD(s) and KI.
 5. It is not recommended that persons under the age of 18 act as emergency workers.
 6. Locations with types and quantities of dosimeters available per location is maintained in the Annual Letter of Certification (ALC).
-

B. Record Keeping, Reading & Reporting

1. 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. At a minimum, a new Dosimetry Report Form will be issued daily to each emergency worker.
 2. All emergency workers must be in communication with their designated Dosimetry Coordinator by MARCS radio, cell phone, or commercial telephone.
 3. 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.
 4. Emergency workers will keep their assigned PRD throughout the emergency phase, unless their lead organization requests them earlier to verify an anomalous reading on a DRD or the Dosimetry Coordinator reissues all PRDs. PRDs will be returned to the Dosimetry Coordinator.
 5. All DRDs will be returned to the Dosimetry Coordinator at the end of their shift.
 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 each agency for an indefinite period.
 - a. The emergency worker will retain a copy of their dose records.
 - b. ODH will distribute a copy of each emergency worker's dose records to the Center for Disease Control.
-

3. Dose Limit Determination

- A. Overview**
1. While the emergency worker dose limit is 5 Rem TEDE¹⁷, the initial dosimeter limit is 1R to account for inhalation dose which cannot be measured using a DRD. By selecting an appropriate value for the dosimeter 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.
 - a. This limit is based on an initial ratio which may change based upon the radionuclide mixture released.
 2. For the 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.
 3. The TEDE calculation for emergency workers includes the contribution from thyroid dose due to inhalation of radioiodine. The ingestion of KI is not taken into account.
-

4. Exposure Limits

- A. Exposure Control & Limits**
1. In accordance with the U.S. USEPA's 2013 PAG Manual 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 suggested limits given in the USEPA PAG Manual only apply during the emergency phase of an event. See Table X-A.
 - 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. The limit of 5 rem TEDE is in addition to and separate from the guidance given in the USEPA PAG Manual for emergency response.
 2. All doses shall be maintained per ALARA.
 3. The limits suggested in the 2013 USEPA PAG Manual are a summation of the external Effective Dose Equivalent and the Committed Effective Dose Equivalent from intake during an emergency response.

¹⁷ Counties may choose to utilize the 25 rem TEDE limit for their first responders inside the 10-mile EPZ until evacuation is complete, if the county considers their actions to be lifesaving activities.

- a. These limits are not equivalent to the reading on a DRD. The DRD only measures the external exposure, not the total dose (internal plus external) an emergency worker may receive.
 - b. By selecting an appropriate value for the 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. For this reason, dosimeter limits have been established.
4. The ODH-BEHRP may raise or lower the dosimeter limit based on the content of the release and the associated intake hazard.
- a. Many factors affect the TEDE that an emergency worker may receive. 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.
 - b. Doses to all workers during an emergency, to the extent practical, should be limited to 5 rem.
 - c. The initial dosimeter limit for state emergency workers is 1R.
 - i. This dosimeter limit for emergency workers entering the plume is determined in advance.
 - ii. The limit is stated in terms of the external exposure measured by a DRD.
 - d. To account for the inhalation dose, the dosimeter limit is set equal to the suggested dose limit for each class of activity recommended by the USEPA.
 - e. Any exceedance will be reviewed, approved/rejected and documented by ODH-BEHRP at the SEOC. It will then be documented by the Dosimetry Coordinator.
 - i. Persons undertaking any operation in which the dose may exceed the 25 rem guidance in the USEPA PAG Manual must do so only on a voluntary basis with full awareness of the associated risks.
 - ii. Information of the risk and threshold doses for health effects are to be provided to emergency workers who volunteer for higher dose exposure.
 - f. The actual TEDE dose received by emergency workers who have ingested KI will not include a large contribution from thyroid dose due to inhalation of radioiodine, because that contribution will be minimal if KI is administered prior to exposure.
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. Refer to Figure X-B.
6. Dosimetry Coordinators are responsible for monitoring emergency worker exposure levels, updating emergency workers with changes in their

- dosimeter limit, and taking the necessary actions to ensure emergency worker exposure is ALARA.
- a. 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.
 - b. If an emergency worker has reached the dose limit, the Dosimetry Coordinator should remove them from the area of exposure.
 - c. If an emergency worker cannot be relieved, the Dosimetry Coordinator shall contact the ODH-BEHRP representative at the SEOC and request approval for the individual to exceed the dosimeter limit.
 - d. Any exceedance will be documented by the Dosimetry Coordinator.
7. 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.
 8. Records shall be kept of the contamination monitoring and decontamination results for each worker who is monitored and/or decontaminated.
-

5. Potassium Iodide (KI)

- A. Introduction** When taken as directed, KI is an effective supplemental means for minimizing radioiodine exposure to the thyroid; it does not provide protection from any other radionuclide. Evacuation is 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 incident.
- The State Radiological Assessment Branch recommends the use of KI to the Executive Group who then may recommend the use to the counties.
-
- B. KI Directive** Further KI information may be obtained through the Ohio Department of Health Potassium Iodide (KI) Directive, 10-BEHRP-01 Distribution and Use of Potassium Iodide (KI) for the 10-mile Emergency Planning Zone Population.
-
- C. Maintenance** KI will be maintained per manufacturer instructions.
-

D. Extensions In the event the State’s KI supply expires before being exchanged, a letter for shelf life extension will be pursued. However, timely replacement of the KI is always the preferred method. Refer to the current ODH Memorandum, “Notice of Potassium Iodide (KI) Shelf Life Extension,” dated November 4, 2019.

E. KI Supply Quantities and storage locations provided by ODH and Ohio EMA are maintained in the ALC. The local health department distribute KI to the general public while Ohio EMA distributes KI to emergency workers.

F. Communication The recommendation to take KI will be provided to the counties through the SEOC Executive Group. When the county approves the recommendation, the decision will be communicated to emergency workers through telephone, cell, radio, or other means of communication. The public will be notified through press releases and news briefings. State emergency workers will be notified from the SEOC by telephone, cell phone, radio, or other means of communication.

Table X-A: 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
<p>¹ Emergency Workers are limited to adults performing emergency services.</p> <p>² The Emergency Phase ends when the release has terminated, the public is evacuated, and valuable property has been protected.</p> <p>³ Total Effective Dose Equivalent (TEDE) is the sum of external whole body dose and internal doses. The dose limit is the TEDE 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 (3) times and skin/extremities dose limited to ten (10) times the listed values.</p> <p>⁴ Dosimeters record only the external exposure component of TEDE. To reasonably ensure that the TEDE dose limits are not exceeded due to internal doses from inhalation, ingestion, injection, and absorption, a conversion factor may be applied. These values may be revised as more information, particularly the isotopes involved, becomes available during the incident.</p> <p>Administrative Instructions during the Emergency Phase</p> <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 1R increments, are to be reported by the worker to the State Field Team Coordinator or Dosimeter Coordinator. 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	
<p>¹ Workers are limited to adults performing essential services.</p> <p>² The Intermediate Phase ends when reliable environmental measurements have become available and additional protective actions are no longer needed.</p> <p>³ Total Effective Dose Equivalent (TEDE) is the sum of external whole body dose and internal organ and tissue doses. The dose limit is the TEDE allowed in 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.</p> <p>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.</p> <p>Administrative Instructions during the Intermediate Phase</p> <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. 			

Figure X-B: Dosimetry Report Form Example



DOSIMETRY REPORT FORM
(Must be completed by anyone receiving dosimetry)

PERSONAL IDENTIFICATION (Please Print)

Name (Last, First, MI)			Emergency Response Organization		
Employee ID or SSN	DOB (mm/dd/yyyy)	Sex	Job Title		
Home Mailing Address			Work Mailing Address		
Home City/State/Zip			Work City/State/Zip		
Home/Cell Phone Number ()	Home E-Mail Address		Work Phone Number ()	Work E-Mail Address	

MISSION ASSIGNMENT

DATE	TIME	ACTIVITY/LOCATION	TEDE Dose Limit (rem)	Initial/Revised Dosimeter Limit (R)

DOSIMETER RECORD

Permanent Record Dosimeter (TLD/OSLO)		Date Issued	Time Issued	Initial Reading	Date Returned	Time Returned	Date of Reading	Final Reading
Serial								
Direct Reading Dosimeter		Date Issued	Time Issued	Initial Reading	Date Returned	Time Returned	Return Reading	Mission Total
Range	0-200R							
Serial								
Range	0-20R							
Serial								
Range	0-200mR*							
Serial								
Range	Electronic Dosimeter							
Serial								

*Few individuals will be issued these low range dosimeters.

RUNNING TOTAL OF EXPOSURE for current radiological incident

Previous Running Total of Exposure	+	Current Mission Total	=	Running Total of Exposure
	+		=	

RECORD OF POTASSIUM IODIDE ADMINISTRATION

DOSE	1	2	3	4	5
Date:					
Time:					

I have read the warning and instructions for administering KI and understand the rationale for its use as well as potential side effects that may occur from its administration.

This record is correct and complete to the best of my knowledge.

_____ Signature _____ Date _____

NOTE: WHEN COMPLETED THIS FORM CONTAINS PRIVACY ACT INFORMATION

HEA5537
12/10/2015

Continued on next page

Figure X-B: Dosimetry Report Form Example, Continued

DOSIMETRY REPORT FORM INSTRUCTIONS

CAUTION: Emergency workers shall be volunteers that have received information concerning the risks of radiation exposure, be at least 18 years of age, healthy and not allergic to iodine.

PRE-WORK INSTRUCTION:

1. Enter all your information in the Personal Identification section.
2. Enter the following information in the Dosimeter Record section: serial number, date issued for all dosimeters.
3. Record the applicable information in the Mission Assignment section.

Administrative Early-Phase Emergency Worker Dose and Dosimeter Limits		
Inside Emergency Planning Zone	TEDE Dose Limit	Initial / Default Dosimeter Limit
*County Response-Verify your Limits per your SOG		
Standard response functions	5 rem	1 R*
Protecting valuable property	10 rem	2 R*
Lifesaving or protection of large populations	25 rem	5 R*
Outside Emergency Planning Zone		
All activities	5 rem	5 R
Intermediate-Phase Occupational Dose and Dosimeter Limits (per year)		
Inside & Outside of the Restricted Zone		
All activities	5 rem	5 R

4. Read the Potassium Iodide (KI) information sheet accompanying the tablets and check the box indicating this has been completed.
5. Ensure your dosimeters have been zeroed.
6. Record any exposures from previous pages, if applicable, in the Running Total of Exposure section.
7. Place dosimeters and TLD/OSLD in your chest area outside of clothing. Place KI and Dosimetry Report Form inside the packet and carry it with you.

DURING MISSION OR SHIFT INSTRUCTION:

1. Listen for instructions concerning the following: dosimeter reading time intervals, changes to the dosimeter limit value and directions to take KI.
2. Read your dosimeters at the time interval directed or at least every 30 minutes.
3. Record any revisions to your Dosimeter Limit Value in the appropriate block of the Mission Assignment section
4. If applicable, record the date and time directed to take KI on your Record of Potassium Iodide Administration.
5. Report readings or discrepancies between dosimeters to your organization's dosimetry coordinator.
6. Do not exceed your Dosimeter Limit Value unless authorized by your organization's dosimetry coordinator.

COMPLETION OF MISSION, SHIFT, or TERMINATION OF INCIDENT INSTRUCTION:

1. Report to an Emergency Worker Monitoring and Decontamination Station.
2. Read your dosimeters and record information in the Dosimeter Record section:
 - a. Date and time returned and ending reading.
 - b. Calculate mission total (ending reading minus initial reading).
3. Record information in the Running Total of Exposure (previous running total of exposure plus this mission total).
4. Sign and date bottom of form and return all contents to your dosimetry coordinator.
5. Obtain the same packet for your next shift/mission & start a new Dosimetry Report Form.
6. If assigned a different coordinator, you are to take your running total dose with you.

Table X-C: Guidelines for Contamination Screening

DESCRIPTION	ACTION LEVEL	IF THRESHOLD IS EXCEEDED:
Maximum background reading for monitoring areas	per manufacturer	Move monitoring area to a location with acceptable background levels.
	300 cpm	Move monitoring area to a location with acceptable background levels.
Personnel/possession monitoring	1 μ Ci	The portal monitor will alarm. Send person to decontamination.
	3000 cpm	In head, neck, face, and chest area, decontaminate and refer to hospital for analysis.
	300 cpm	Send person to decontamination.
		After one decontamination attempt, try a second decontamination method.
		After two decontamination attempts, refer to hospital.
After a decontamination attempt, impound contaminated possessions.		
Public vehicle monitoring	1 μ Ci	The portal monitor will alarm. Impound vehicle.
	300 cpm	Impound vehicle. If time permits, attempt to decontaminate.
Emergency vehicle/equipment monitoring	300 cpm	Cover contaminated area with plastic, mark, and release for service.
	30,000 cpm	Impound if contaminated surface is in contact with personnel.
Decontamination areas	30,000 cpm	Decontaminate to reduce count rate. Secure area, post warning, and relocate to another area.

XI. NUREG-0654 Criteria L

Medical & Public Health Support

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

Contents

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Table XI-A Whole Body Counters Available	153

1. Medical Information

A. Hospitals

1. Ohio Department of Health – Office of Health Preparedness will maintain a listing of all hospitals to include:
 - a. Primary hospitals
 - b. Backup hospitals
 - c. Hospitals within the state capable of providing medical support for any contaminated individual
 2. The list of hospitals will provide the following details for each hospital:
 - a. Name
 - b. Location
 - c. Type
 - d. Capacity for ambulatory and non-ambulatory patients
 - e. Any special radiological capabilities
 - f. Monitoring equipment available
 - g. Capability for analyzing samples
-

B. Bioassays

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 recommended that all emergency workers immersed in the plume undergo a bioassay and are monitored for internal contamination following their final mission.
-

Table XI-A Whole Body Counters Available

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. NUREG-0654 Criteria M

Recovery & Reentry Planning & Post-Accident Operations

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

Contents

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1. Ingestion Zone Recovery & Reentry Advisory Group (IZRRAG)

A. Overview

1. The Ingestion Zone Recovery and Reentry Advisory Group (IZRRAG) will form at the SEOC at a point after the initial plant event and the late stages of the emergency phase.
 2. The IZRRAG 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. USDA FSA
 4. A nuclear power plant utility liaison can be requested to advise the IZRRAG.
 5. During the intermediate phase, the IZRRAG will consolidate data pertaining to:
 - a. The potentially 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.
 6. The IZRRAG will advise the Executive Group and provide PARs.
 7. ODA will take actions delegated to the agency as found in ORC 3715 and ORC 941.
-

2. Protective Actions

A. Precautionary Actions Precautionary actions taken prior to confirmation of contamination include, but are not limited to covering exposed products, moving animals to shelter, providing protected feed and water, and/or temporary embargoes.

B. Food Potential protective actions for foodstuffs exceeding the Derived Intervention Levels (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 decayed to acceptable levels.
3. Condemnation of foodstuff.

C. Animal Feed and Water Protective actions when animal feeds are contaminated include, but are not limited to:

1. Providing uncontaminated feed and water .
2. Removing lactating dairy animals and meat animals from contaminated pastures.

D. Advisories The agricultural community will be notified of advisories through media briefings, news releases, the OSU Extension, and the USDA FSA.

3. Methods of Accomplishment

A. General

1. The primary function of the IZRRAG will be to advise the Executive Group in regards to 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 areas opened for essential workers
 - c. Livestock/Poultry
 - d. Water
 - e. Produce/Fruit
 - f. Cultivation/Harvesting
 - g. Grain/Feeds

- h. 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, USEPA 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; and Recommendations for State and Local Agencies (Aug 1998).
- 3. Based on information from the State 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 IZRRAG will:
 - a. Make recommendations to the Executive Group.
 - b. 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.

B. Public Information

Information will be released to the public when it becomes available. Important topics include:

- 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 contaminated food (especially garden produce).
 - c. The locations of emergency food and water distribution points and times for distribution of emergency supplies.
- 2. Information on the priorities for imposing curtailments and restrictions on the use of water (e.g., hospitals).
- 3. Information with regard to shortages, contamination, legal water usage, purification, and any other restrictions.

C. Milk & Dairy Products

- 1. In the event of a radiological incident resulting in an offsite release:
 - 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 ODA will coordinate with 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 release advisories based on projections. They may establish temporary bans, before confirming the Derived Intervention Levels (DILs) have been exceeded.
- 2. In the event of offsite contamination above the PAGs for ingestion, the ODA, with input from the IZRRAG, will:
 - 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 foods, milk, and milk products.
 - d. Recommend and coordinate the destruction of contaminated foods.
 - e. Coordinate with the agencies responsible for the importation of milk and dairy products from processors outside the IPZ.

D. Honey

The ODA, in consultation with the IZRRAG, will recommend the need for any restrictions or curtailments on the honey-producing industry.

E. Meat & Poultry Products

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. 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. 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.

F. 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 ODA will recommend controls in the distribution and use of animal feed in the natural and processed states.
3. The ODA, in consultation with the IZRRAG, will also recommend that uncovered stocks stored in bins or in the open have the outer or top layer of feed removed before use.

G. 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. The ODA, in consultation with the IZRRAG, will recommend actions for the protection of foods and produce to ensure public safety. This includes maintaining a program of sampling and analyzing crops and food processors and supervising the disposal of contaminated items.
 3. The IZRRAG will provide recommendations on whether packaging protected foods within the affected area is still safe to eat.
-

H. Identification of Milk, Meat & Other Foods

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

I. Water Supplies

The OEPA, in consultation with IZRRAG, will recommend actions to minimize radionuclides in water supplies for both public drinking water and agricultural/industrial users. IZRRAG may recommend:

1. Closing intakes 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. Drawing 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. Allowing for the reduction of activity 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.

J. 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 will be the central dispatch point for all state sampling teams and will coordinate the dispatching of teams with the FRMAC.
 3. Based on data received from the State Radiological Assessment Branch, the identification of sampling locations will be determined. IZRRAG will then forward these locations to the FTC Coordinator.
 4. The 10 point sampling plan will be utilized to determine soil sample locations within the proposed Restricted Zone.
 5. Sampling will be carried out by each agency per their procedures.
 - a. ODA, OSU Extension, and the FSA will maintain contact information and addresses of farms in order to obtain permission to collect samples.
 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) may be utilized to identify other federal assistance programs and resources.
-

4. Agency Responsibilities

A. 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, federal and private agencies as listed below.

B. Ohio EMA

The Ohio EMA shall:

1. Assist with dose assessment operations and provide a location in the SEOC equipped for these activities.
2. Maintain the SEOC for the use of agencies involved in the intermediate and late phases of the emergency.
3. Identify an off-site Field Team Center (FTC) which will include each agency's representative to direct their sample teams.
4. Coordinate transportation (via ESF-1) for samples to be delivered to a designated laboratory.
5. Ensure the plan incorporates FRMAC.
6. 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. See Figure XII.A.
 - 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.
 - c. Updates will be provided periodically and as conditions warrant.
7. Provide GIS personnel to create maps showing various data.
 8. Keep all involved response organizations informed of recovery phase plans being developed, how long they will take, and what final outcome is expected through conference calls, Situation Reports (SitReps), and briefings.
 9. 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 the nuclear power plants.

C. ODA

The Ohio Department of Agriculture (ODA) shall:

1. Coordinate the annual production and distribution of information to agricultural producers, processors and distributors within a 10-mile radius of a nuclear power facility. This ag brochure will be available to producers, processors and distributors within a 50-mile radius at the time of an emergency. Both hard copies and online versions will be available.
2. Provide up-to-date key land use data (e.g., farming), dairies, food processing plants, nurseries, farm stands, and farmer markets to allow maps to be produced.
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 IPZ.
4. The Division of Food Safety will embargo food products as deemed necessary.
5. The Division of Animal Health will sample feeds and impose embargoes pertaining to the sale, transfer, and transport of livestock and poultry. They will provide information to practicing veterinarians and livestock owners on the effects of radiation on animals.
6. Division of Plant Health
 - a. The Apiary Section will maintain a list of beekeepers and impose restrictions and/or cessation of the handling, processing, and sales of honey products.
 - b. The Feeds and Fertilizer Section will maintain a list of feed mills and will sample at feed mills to test for radioactive contamination.
 - c. The Plant Pest Control Section will sample nursery stock to test for radioactive contamination.

- d. The Seed Section will maintain seed crop control and inventory and inspect and sample seed to test for radioactive contamination. They will also determine, through coordination with the county cooperative extension service agents, types, sizes, and locations of commercial crops being grown.
7. The Division of Dairy will:
- a. Impose restrictions and/or cessation of the handling, processing, and sale of milk and manufactured milk products.
 - b. Specify appropriate protective actions for dairy farms, processing plants, and other dairy related activities in the IPZ that are confirmed to have any detectable radiation levels greater than response levels set forth in FDA guidance.
 - c. Disseminate action levels for the decontamination of dairy farms, processing plants and facilities.
-

D. ODH

1. The Bureau of Environmental Health and Radiation Protection will:
 - a. Chair the IZRRAG.
 - b. Utilize soil sample data to calculate Derived Response Levels (DRL). DRLs will assist IZRRAG in determining the Restricted Zone.
 - c. Utilize water, milk, and vegetation sample data to calculate Derived Intervention Levels (DILs). DILs will determine which foodstuffs are consumable by the public. See Table XII-B.
 - d. Coordinate with the local health departments any activities regarding the safety of private water supplies within the 50-mile IPZ.
 - e. Perform long-range dose assessment activities to estimate total population exposure.
 - f. Coordinate with OEPA to approve the disposition of radioactively contaminated materials.
 2. The ODH Laboratory will perform sample analysis and relay the information to the State Radiological Assessment Branch.
-

E. OEPA

1. The Division of Drinking and Ground Water will:
 - a. Provide technical coordination and assistance for the determination of contamination limits for established public drinking water supplies.
 - b. Provide sampling of public drinking water supplies with FRMAC methodology for determination of radiological contamination by designated laboratories.
 - c. Use dose estimates provided by Dose Assessment that were determined from radiological samples of public drinking water supplies and compare to the USEPA Maximum Contaminant Levels (MCLs) (4 mrem for beta/gamma emitters) for radionuclides. In the event that the dose estimates exceed the MCLs, IZRRAG will consider and determine

- an alternate PAG and/or coordinate to provide alternate drinking water sources.
- d. Maintain a listing of existing cross connection capabilities in the 10-mile EPZ.
 - e. Provide information on available water treatment facilities, locations, capacities for treatment, and community usage data.
 - f. Maintain a listing of public drinking water intake locations.
2. Equip and maintain the OEPA RAT to be capable of sampling of soil, forage (ground cover), snow, drinking water, and surface water.
 3. The Division of Surface Water will:
 - a. Advise local wastewater treatment plants in continued operations.
 - b. Sample industrial and municipal wastewater discharge.
 - c. Provide personnel and equipment in support of sampling stream waters.
 4. The Division of Materials and Waste Management will provide a selection of appropriate sites and methods for storage and/or disposal of waste material, condemned food stuff, and other waste as determined with ODH-BEHRP to approve for radioactive contaminated material disposition.
 5. The Division of Air Pollution Control will provide, in conjunction with FRMAC, the ability to determine resuspension of contaminated dust by long-term sampling.

F. ODNR

The Ohio Department of Natural Resources (ODNR) shall:

1. The Division of Soil and Water Resources will maintain a listing of locations of water intake points, including semi-public water sources, and maintain maps showing watersheds, water supply intake and water treatment plants.
2. The Division of Wildlife will sample indigenous fish and wildlife to test for radioactive contamination before entering the human food supply and will consider the impact of the migration of fish, aquaculture, game, and fowl. It will also suspend fishing, hunting, and trapping, as needed.
3. The Division of Forestry will sample to test for radioactive contamination of wood product harvesting and suspend timber harvesting and the burning of woody debris, as needed.

G. OSU Extension

The OSU Extension will serve as a support agency for ODA. It will inform all county extension agents of specific protective actions that the agricultural industry should be taking and will provide emergency information to farmers, food processors, and distributors.

-
- H. USDA FSA** The FSA will provide a list of food, feed, fertilizer, and grain facilities, including the availability of grain. It will also provide:
1. A list of farmers in the affected area including local information on crop production, acreage, status of harvest, and farm capability.
 2. A means of informing farmers about protective actions through its county newsletter system.
 3. Office space and clerical help for a local crisis center.
-

I. Utilities The Utilities shall provide the analysis results of area samples and may station a liaison at the SEOC during the recovery phase.

5. IZRRAG Responsibilities

- A. IZRRAG** The IZRRAG will:
1. Establish a restricted zone and refine the zone as sample results are returned.
 2. Establish recovery guidance in coordination with state and local officials to maximize restoration of affected areas as close as possible to their pre-incident conditions.
 3. Advise the Executive Group on establishing priorities, plans, and procedures.
 4. Work in cooperation and liaise with the Federal Advisory Team established per the NRF, Nuclear/Radiological Incident Annex (NUC-1).
 5. 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.
-

- B. Broad Recovery Issues** Broad recovery 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:
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 the Executive Group.
 - b. Establish criteria for security of restricted areas. Local officials, based on IZRRAG/Executive Group recommendations, will establish physical

boundaries and security for restricted areas to restrict access for exposure control.

2. 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 the decontamination of select areas.
 - b. To develop a prioritized list of restoration activities for affected areas.
 - c. Identifying state and federal agencies available for providing assistance.
 - d. To limit duplication of efforts and prevent conflicts in federal, state, county, and local recovery.
 3. Assist the Executive Group in evaluating decontamination and restoration plans, including establishing decision levels that preclude decontamination due to cost and recoverability. Plans should include the types of decontamination methods and establish priorities in these efforts.
 4. Provide return and/or relocation guidance for local and county governments aiding evacuated residents, businesses, and industries.
-

C. Decontamination The IZRRAG will:

1. Assess the needs for decontamination of possessions, vehicles, property, and people. The IZRRAG will consider all existing guidance, the actual conditions, and the circumstances of an incident.
 2. Coordinate all state and federal resources available to carry out these decontamination actions.
 3. Establish decontamination priorities, plans, and procedures.
 4. Advise the Executive Group on decontamination and restoration projects including, but not limited to:
 - a. Decontaminating and restoring buildings and equipment used by government, fire, law enforcement, postal services, water treatment facilities, utility services, sewage treatment facilities, and trash disposal.
 - b. Decontaminating and restoring buildings and equipment for hospitals, nursing homes, prisons, businesses, and industrial sites.
 - c. Removing and disposing of materials, equipment, soils, livestock, food products, farm or garden produce, and other items which cannot be decontaminated or which have spoiled or perished while the area has been restricted.
 - d. Decontaminating or otherwise restoring agricultural lands to productive use.
-

D. Debris Management

The IZRRAG, will:

1. Coordinate with local officials the appropriate actions relative to contaminated foods, land, and property.
 2. 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 acceptable 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 livestock.
 3. Develop plans and guidelines for:
 - a. Conditions by which foods, food products, and soils may require disposal.
 - b. Disposal of contaminated soils, other property, and possessions.
 - c. Conditions by which restrictions on food consumption, marketing, and other economic/commercial activities may be relaxed.
 4. Based on environmental measurements, determine limitations on hunting and fishing and recommend protective action advisories, as necessary.
 5. Provide guidance on:
 - a. The types of property that can be economically decontaminated based on the property value and the levels of contamination.
 - b. Resources from organizations or contractors to assist in the decontamination effort.
-

E. Dose Assessment

Dose Assessment will:

1. Perform assessments of both the short term and long term health effects to the public resulting from the incident.
 2. Consider requesting assistance of other agencies or outside vendors to assist in these assessment functions.
 3. Seek assistance from the affected nuclear power plant and federal agencies in this assessment.
-

6. Reentry

A. Reentry Responsibilities

1. IZRRAG will, in coordination with local officials, establish:
 - a. Conditions for temporary reentry into restricted areas.

- b. Reentry requirements.
 2. Dose Assessment will determine dose and entry authorization guidelines for any emergency worker or member of the public who needs to enter affected areas.
-

B. Emergency Workers & Public

1. Reentry to evacuated areas shall, generally, be restricted to emergency workers, farmers, industrial workers, institutional workers, public service/utility workers, and others who apply and qualify for worker entry authorization.
 2. County officials will prepare and implement procedures using IZRRAG dose guidance for reentry and monitor stay times of personnel who enter restricted areas.
 3. People will be notified through the media by officials stating when reentry may begin. People will be requested to report to the Reentry Verification and Orientation Center (REVOC) or other specified location.
 4. The general public that was evacuated will be required to request reentry at a REVOC. Reentry will be at the counties' discretion. Escorts may be required.
 5. Dosimetry
 - a. Persons allowed reentry will be issued a DRD before entering the RZ.
 - b. When issued dosimetry, the person will receive just in time (JIT) training on the use and reading of the DRD.
 - c. The person will record a final reading before surrendering the DRD to the monitoring/decontamination station emergency workers upon exit.
 6. 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 by the county monitoring and decontamination station.
-

7. Relocation

A. Ohio EMA

1. 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 relocated population.
2. Impact on the community
 - a. Ohio EMA, with other state 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. Federal assistance will be requested for relocated communities. The amount of financial assistance will be based on availability and federal declaration level.
3. Assistance
- a. Ohio EMA, with local official assistance, will determine the:
 - i. Short-term needs that can be met by state and local governments not already addressed by ANI.
 - ii. Long-term needs that may be required, and what level of assistance may be available.
 - b. Ohio EMA, with federal assistance, will develop information centers to provide affected populations with the required information for assistance not already addressed by ANI.

B. IZRRAG

IZRRAG will:

1. Determine the area to be considered the Restricted Zone (RZ).
 - a. The initial RZ will be the area evacuated during the Emergency Phase.
 - b. Once soil sample results and the DRL are obtained, the RZ will be redefined as needed.
2. Communicate the RZ to the counties. Counties are then responsible for determining an RZ based on geo-political boundaries.
3. Continue to monitor and revise the RZ as necessary. The RZ may change many times during the course of the incident dependent upon time and decay. Recommendations for changing the boundary of the RZ over time are due to the decay of radioactivity, weathering, and/or recovery efforts.

8. Return

A. IZRRAG

IZRRAG will provide guidance:

1. For determining the area to be considered for public return.
 - a. Recommendations will be based on environmental measurements of radiological conditions that are projected to result in 2 rem TEDE for the first year or 0.5 rem TEDE for the second and subsequent years.
2. On developing instructions to the public on how to reduce contamination that may remain (e.g., hose down the driveway, etc.).

B. Executive State Actions

If the state and county executives determine to return the population to previously evacuated areas, then areas of importance/concern include:

1. The notification of county officials to facilitate the re-establishment of essential public services, if necessary, before the return of evacuees (e.g. water, power, police, fire, etc.).
 2. The public will be informed of those areas suitable for return and any advisories in place through media releases provided by the JIC.
 3. If the ingestion PAG is exceeded in an area and return is implemented, then return should be preceded by public announcement of instructions, restrictions, and precautionary information (e.g., the washing of garden produce, etc.).
-

9. Recovery

A. Initiating Events

The Recovery Phase of the incident 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 implemented.
 5. An initial long-range monitoring plan has been developed in conjunction with the affected state and local governments and appropriate federal agencies.
-

B. Ohio EMA

1. Ohio EMA will notify workers that recovery operations are to be initiated, how long they will take, and what final outcome is expected by general announcement in the SEOC, cell phone, telephone, or MARCS radio. Information will also be available in WebEOC and Situation Reports (SitReps). If changes will take place in the organizational structure, they will be announced at that time.
 2. Ohio EMA will assist the federal agencies with long term operational needs.
 3. As necessitated by the event, ESF-14, under the State Emergency Operations Plan, would coordinate Recovery Teams and strategies to assist local government in their recovery efforts.
 4. 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, and timetables to both the public and the media.
-

C. Federal Assistance

Under the NRF, state and local governments are primarily responsible for planning the recovery of the affected area.

1. 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.
 2. Upon request, the federal government will assist state and local governments in developing and executing recovery plans.
 3. 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 implemented.
-

10. Assistance & Restitution

A. General

Ohio EMA will:

1. With federal assistance, coordinate support to persons, business owners, and government entities in the affected areas with respect to financial restitution for losses and costs.
 - a. Assistance and restitution may be available from the American Nuclear Insurers (ANI), from the federal government under the Stafford Act, or other state programs.
 - b. Refer to the State of Ohio Emergency Operations Plan (Ohio EOP) and NUREG-1457 for additional information.
 2. Provide information for state and federal assistance to affected public and government entities.
 3. Establish and implement a system to track and recover costs incurred in state and local activities.
-

B. American Nuclear Insurers

American Nuclear Insurers:

1. 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.
 2. May establish one main field office and satellite offices located outside the evacuation area. If more than one office is established, ANI shall designate a main office to coordinate with the state, counties, and the utility.
-

C. Damage Assessment

Ohio EMA, with federal assistance, will consider alternate assessment methods and criteria for determining the extent of damage or contamination, 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 the community impact analysis.

D. 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).

E. 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.

Figure XII-A: 10- and 50-mile Emergency Planning Zones

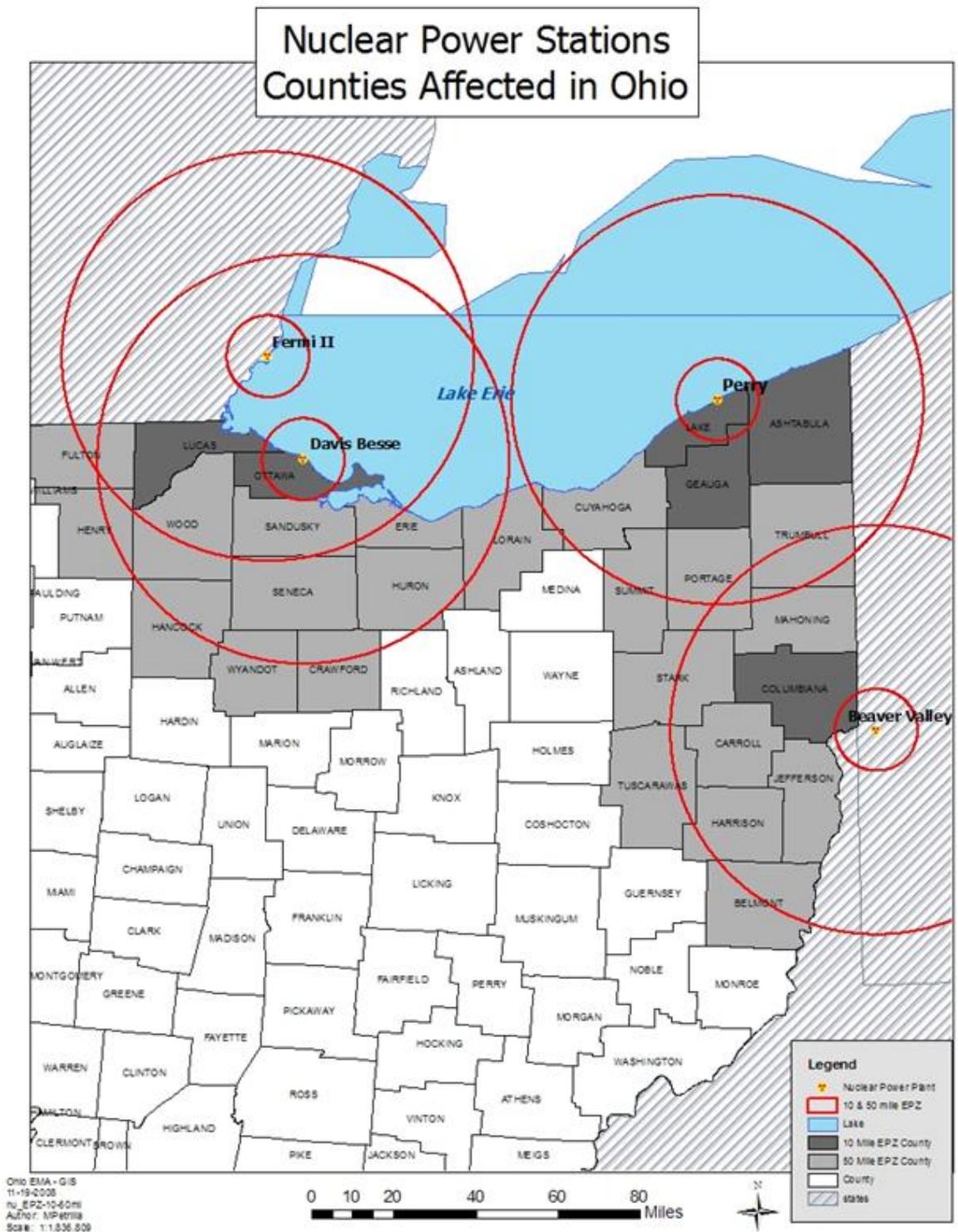


Table XII-B: Recommended Derived Intervention Levels (DIL)¹⁸

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)	$C_3/6800 + C_6/450 < 1$	$C_3/180000 + C_6/12000 < 1$

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.

¹⁸ FDA, Accidental Radioactive Contamination of Human Food and Animal Feeds: Recommendations for State and Local Agencies, 1998, Table 2

Table XII-C: 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) ¹⁹	Comments
Relocate the general population ²⁰	≥ 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 ²¹	< 2 rem	These protective actions should be taken to reduce doses to as low as practicable levels

¹⁹ 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.

²⁰ 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.

²¹ 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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XIII. NUREG-0654 Criteria N

Exercise & Drills

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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1. Overview

A. 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.

- B. Overview**
1. It is the responsibility of the Ohio EMA to ensure that county plans are tested and personnel are trained.
 2. 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.
 3. Exercises will be conducted in accordance with FEMA and NRC rules and policy.
 4. REP exercises will use the Homeland Security Exercise and Evaluation Program (HSEEP) methodology and guidance.
 - a. Scheduling through the use of an annual FEMA Training and Exercise Planning Workshop (TEPW) and FEMA Multi-year Training and Exercise Plan (TEP).
 - b. Planning and implementation in accordance with HSEEP guidelines.
 - c. A properly formatted After-Action Report/Improvement Plan (AAR/IP).
 - d. Tracking and implementation of corrective actions identified in the AAR/IP.
-

2. Eight Year Cycle

- A. 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.

Note: While partial participation is acceptable, the state must fully participate in at least one of each type of scenario in the 8-year cycle.

**B. Ingestion
Phase
Requirements**

- 1. At least one exercise every eight years must include a post-plume phase ingestion pathway and relocation/reentry/return exercise.
- 2. The State of Ohio will rotate ingestion exercises between DBNPS and PNPP. The state has the option to partially participate at BVPS.
- 3. OROs who do not participate during the state's Ingestion Pathway exercise will be required to demonstrate the criteria at least once an exercise cycle, via table top or other activity.
- 4. Protective actions will be consistent with USEPA Protective Action Guide recommendations. Participants will demonstrate decision-making, implementation, and coordination with all appropriate jurisdictions.
- 5. A sufficient number of personnel will participate in the exercise in order to carry out measures required by the event scenario.

**C. 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., incident 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).
-

3. Exercise Requirements

A. 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. 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.
 - i. 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:
 1. Direction and control
 2. Communications
 3. Accident assessment
 4. Protective action decision making
- 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:

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

2. 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.
-

4. Scenario Requirements

- A. 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 use of protective clothing, deployment of radiological monitoring teams, and public information activities; and
 6. A description of the arrangements for advance materials to be provided to official observers.
-

5. Exercise Evaluations & Critiques

- A. Exercises** ORO performance will be evaluated according to FEMA REP methodology.
-
- B. Federal** The FEMA review team will evaluate the state and county government plans. This should occur prior to the exercise. The scenario will be provided to FEMA representatives in advance to prepare the necessary reviews and evaluation procedures.
-
- C. Local Governments** State agency personnel will assist as requested in the event that the county chooses to conduct separate exercise. Local governments will critique their exercise as provided for in each county plan.
-
- D. 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 FEMA 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.
-

E. 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.

- F. 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.
 - a. It is the responsibility of the Executive Director of Ohio EMA to ensure a timely response to such correspondence.
-

6. Drills

A. 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. See Table XIII-A.

- B. 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. These will be initiated by the utility.
 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. A message content check will be performed, if applicable.
-

C. 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.

**D. 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.

7. Tests

**A. Phone
Tests**

Phone numbers contained within emergency procedures will be checked and updated quarterly.

**B. e-Notify
Tests**

The 50-mile counties e-Notify phone call and accompanying email will be tested:

1. At a minimum annually.
2. During the biennial dry run and exercise, using the distribution list of the plant being exercised.

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 Drills	
State/Federal Government	Quarterly
State/Local EOCs, EOF, Field Teams	Annually
State/Local/Utility Government	Monthly
State/Adjacent States/Nations (Canada)	Quarterly
Radiological Monitoring Drills	Annually
Health Physics Drills	Semiannually

Table XIII-B: State of Ohio Exercise Schedule

	BVPS	DBNPS	PNPP	Fermi II
2020	6/9		9/15	12/15-16
	PP*		FP**	PP
2021		5/4		
		PP		
2022	6/7		9/27	5/17
	PP		FP	PP
2023		5/2		
		FP		
2024	6/11		9/24	8/27
	PP		FP	PP
2025		5/13		
		PP		
2026	6/9		9/22-23	5/12-13
	PP		IPX†	PP/IPX
2027		5/11		
		FP		

* PP - Partial Participation Plume Phase Exercise

** FP - Full Participation Plume Phase Exercise

† IPX - Ingestion Phase Exercise

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XIV. NUREG-0654 Criteria O

Radiological Emergency Response Training

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

Contents

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1. Responsibilities

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

B. Ohio EMA The Ohio EMA shall:

1. Ensure training programs are conducted for Ohio EMA personnel as required by the REP Program.
2. Provide training programs for local government and private organizations. Training may be 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.
4. Coordinate dose assessment training by the utility.
5. Coordinate with ODH to provide Field Monitoring Team training.
6. Provide an on-going review of the curriculum content and lesson plans for the training program.
7. Coordinate training for health care facilities in radiological emergency response and contamination control.
8. Be responsible for the initial and annual refresher training for its personnel. The agency is responsible for tracking the training of its employees.
9. Provide online training modules on the core concepts for basic radiation and nuclear power plant response.
10. Provide training videos on equipment typically used during a nuclear power plant response (e.g., Ludlum 3 survey meter).
11. Coordinate documentation in support of county Radiological Emergency Response plans and the Ohio REP Manual.

C. ODH The Ohio Department of Health (ODH) shall:

1. Coordinate with Ohio EMA to complete Field Monitoring Team training.
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 concerning the use of KI.

4. ODH is responsible for the initial and annual refresher training of its personnel. The agency is responsible for tracking the training of its employees.
-

D. OEPA

1. The Ohio Environmental Protection Agency (OEPA) shall 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 of its personnel. The agency is responsible for tracking the training of its employees.
-

E. ODA

1. ODA shall provide Field Sampling Teams with annual training covering sampling procedures, contamination control, exposure limits, monitoring, and decontamination.
 2. ODA is responsible for the initial and annual refresher training of its personnel. The agency is responsible for tracking the training of its employees.
-

F. ODNR

1. ODNR shall provide Field Sampling Teams with annual training covering sampling procedures, contamination control, exposure limits, monitoring, and decontamination.
 2. ODNR is responsible for the initial and annual refresher training of its personnel. The agency is responsible for tracking the training of its employees.
-

G. Other State Agencies

Each state agency is responsible for ensuring their personnel receive initial and annual refresher training. Each agency is responsible for tracking the training of its employees.

2. Training Requirements

A. 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.

B. State Personnel

Training will be made available to:

1. Radiological Analysts
2. Personnel assigned to positions in the SEOC Executive Room during a radiological event
3. Early phase radiological Field Monitoring Team members, couriers, and sample screening personnel
4. Personnel responsible for accident assessment
5. Intermediate phase Field Sampling Team members, couriers, and sample screening personnel
 - a. Ohio Department of Agriculture
 - b. Ohio Environmental Protection Agency
 - c. Ohio Department of Natural Resources
 - d. Ohio Department of Health
6. Personnel responsible for clearing waterways
7. Any personnel performing duties as a Dosimetry Coordinator
8. Personnel dispatched to the area, including personnel assigned to the Ohio EMA Communications support activities (e.g., Public Information Officer)
9. Any state personnel requiring dosimetry
10. Personnel responsible for the transmission of emergency information and instructions.

C. Initial & Refresher Training

All state personnel with emergency response duties during a nuclear power plant emergency shall receive initial training for their applicable position(s). All response positions require refresher training performed on an annual basis. Each individual agency is responsible for the training of their personnel and determining which courses are required as initial training and which are additionally required as annual refreshers.

D. Required Training

1. Each Offsite Response Organization shall participate in and receive training.
 2. Training may be provided by the Radiological Branch staff, FEMA, Center for Domestic Preparedness (CDP), or other acceptable source.
 3. Equivalent training is acceptable. For example, Counter Terrorism Operations Support (CTOS) classes would be an acceptable equivalent for certain training modules.
 4. Positions and their required training is provided in Table XIV-E.
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E. Just-in-Time (JIT) Training State just-in-time training will be provided by Radiological Branch staff and individual state agencies.

3. Training Sources

- A. State**
1. 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.
 2. 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.
 3. Refer to Table XIV-A for a listing of state training modules offered in support of nuclear power plant response. Availability of online modules is noted and can be located at <https://trainingcampus.dps.ohio.gov/cm/cm710/pstc/>.
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- B. Federal**
1. State and local agencies requesting federal courses are required to complete the proper application and submit the request to the Ohio EMA Preparedness Branch.
 2. A listing and description of course offerings may be found at the FEMA, U.S. Department of Energy National Nuclear Security Administration (DOE/NNSA), and U.S. Department of Homeland Security's Center for Domestic Preparedness (CDP) websites.
 3. Refer to Table XIV-B and XIV-C for a listing of federal courses offered in support of nuclear power plant emergency response.
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C. 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.

D. Commercial A number of courses exist, offered by such providers as universities, national labs, and utilities, which may be used to supplement state and local 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.

Online Availability: This course is available online at the DPS Training Campus as WBT800.

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.

Online Availability: This course is available online at the DPS Training Campus as WBT801.

Module 2B

Biological Effects – Medical Personnel

- 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 hospital workers who could potentially be exposed to elevated levels of ionizing radiation.
- Location:** Courses are offered at medical facilities.
-

Module 3

Contamination Pathways

- Scope:** To provide information on the common pathways of radiological contamination and to define related terminology.
- Target Audience:** All emergency workers who are expected to be exposed to radioactive contamination.
- Online Availability:** This course is available online at the DPS Training Campus as WBT802.
-

Module 4

Exposure Control

- Scope:** To explain the basic principles in limiting a person's exposure to radiation and what the regulatory limits for exposure are.
- Target Audience:** All emergency workers who could potentially be exposed to elevated levels of ionizing radiation.
- Online Availability:** This course is available online at the DPS Training Campus as WBT803.
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Module 5

Basics: Radiological Emergency Response

- Scope:** To provide information on the basics of the radiological emergency response plan, including the Emergency Planning Zone (EPZ), Emergency Classification System (ECS), notifications, protective actions, and recommendations versus decisions.
- Target Audience:** All emergency workers.
- Online Availability:** This course is available online at the DPS Training Campus as WBT804.
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Module 6A

Instrumentation: Dosimetry

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.

Online Availability: This course is available online at the DPS Training Campus as WBT805.

Module 6B

Instrumentation: Survey Instruments

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.

Module 6C

Instrumentation: Portal Monitors

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.

Online Availability: This course is available online at the DPS Training Campus as WBT808.

Module 6D

Instrumentation: Survey Instruments - General

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.

Online Availability: This course is available online at the DPS Training Campus as WBT814.

Module 6E

Instrumentation: Dosimetry - UltraRadiac

- Scope:** To provide information on the UltraRadiac, including operational checks and operations.
- Target Audience:** All emergency workers expected to use UltraRadiacs in their duties.
- Online Availability:** This course is available online at the DPS Training Campus as WBT809.
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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 work in areas 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.
- Online Availability:** This course is available online at the DPS Training Campus as WBT815.
-

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 work in areas with radioactive contamination.
-

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.

Target Audience: All monitoring and decontamination personnel who are likely to work in areas with radioactive contamination.

Online Availability: This course is available online at the DPS Training Campus as WBT811.

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.

Module 8B

Sampling Techniques - Intermediate Phase: USEPA

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.

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.

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.

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.

Online Availability: This course is available online at the DPS Training Campus as WBT812.

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.

Module 9C

Radiological Monitoring & Decontamination: Vehicles/Equipment (Monitoring)

Scope: 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.

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

Online Availability: This course is available online at the DPS Training Campus as WBT813.

Module 9D

Radiological Monitoring & Decontamination: Public Vehicles (Decontamination)

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

Target Audience: All emergency workers whose duties include the decontamination of vehicles owned by the public.

Module 9E	<p><u>Radiological Monitoring & Decontamination: Emergency Vehicles and Equipment (Decontamination)</u></p> <p><i>Scope:</i> To provide information on the method to decontaminate emergency vehicles and equipment, and the documentation of the method of decontamination.</p> <p><i>Target Audience:</i> All emergency workers whose duties include the decontamination of emergency vehicles and equipment.</p> <hr/>
Module 10	<p><u>Medical Transport</u></p> <p><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.</p> <p><i>Target Audience:</i> Emergency Medical Services (EMS) personnel who are expected to transport contaminated and injured patients.</p> <hr/>
Module 11	<p><u>Hospital Radiation Exclusion Area (REA)</u></p> <p><i>Scope:</i> To provide information to hospital personnel on how to identify and treat contaminated, injured patients.</p> <p><i>Target Audience:</i> Hospital personnel who are expected to treat contaminated, injured patients.</p> <p><i>Location:</i> Courses are offered at hospitals.</p> <hr/>
Module 12	<p><u>Potassium Iodide (KI)</u></p> <p><i>Scope:</i> To provide information to emergency workers on the purpose for taking KI, what agency will recommend the distribution of KI, and when to take KI.</p> <p><i>Target Audience:</i> All emergency workers expected to take KI, as a protective measure, during the course of their duties.</p> <p><i>Online Availability:</i> This course is available online at the DPS Training Campus as WBT806.</p> <hr/>
Module 13A	<p><u>Protective Actions: Early Phase</u></p> <p><i>Scope:</i> To provide information on the purpose of protective actions during the early phase of a nuclear power plant incident, the conditions that initial protective action recommendations are based, the criteria used for making protective action recommendations and the protective action decision-making process in the early phase.</p> <p><i>Target Audience:</i> Directors/Coordinators, Assessment Personnel, IZRRAG members, Field Monitoring and Sampling Teams, and Public Information Personnel.</p>

Module 13B

Protective Actions: Intermediate Phase

Scope: To provide information on reentry, relocation, return, and the purpose of protective actions during the intermediate phase of a nuclear power plant incident, the conditions that protective actions are based, and the protective actions in the intermediate phase.

Target Audience: Directors/Coordinators, Assessment Personnel, IZRRAG Members, Field Monitoring and Sampling Teams, and Public Information Personnel.

Module 14A

Early Phase Dose Assessment Overview: Non-Technical Personnel

Scope: 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.

Target Audience: Directors, Coordinators, Public Information Personnel and EOC Personnel.

Module 14B

Early Phase Dose Assessment Overview: Technical 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 early 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.

Module 15A

Intermediate Phase (I-Phase) Dose Assessment Overview: Non-Technical Personnel

Scope: 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 intermediate phase, including the basic steps in performing a dose assessment and the definitions of terms used in dose assessment.

Target Audience: Directors, Coordinators, Public Information Personnel and EOC Personnel.

Module 15B

Intermediate Phase (I-Phase) Dose Assessment Overview: Technical 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.

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 incident, 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

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.

Table XIV-B: FEMA Courses Available – Independent Study

IS-3

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 incidents, and other radiological hazards.

IS-100.b

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

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

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.

IS-302

Modular Emergency Radiological Response Transportation Training (MERRTT)

Description:

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

Radiological Accident Assessment Concepts

Description:

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

National Incident Management System (NIMS) An Introduction

Description:

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

National Response Framework, An Introduction

Description:

The course introduces participants to the concepts and principles of the National Response Framework.

IS-836

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-C: FEMA/CDP Courses Available– Resident

AWR-317

Radiological Emergency Preparedness (REP) Core Concepts Course (RCCC)

<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.
<i>Selection Criteria:</i>	Personnel involved in off-site nuclear power plant emergency planning. This course is recommended for new planners and managers.
<i>Prerequisite:</i>	IS-3 Radiological Emergency Management.
<i>Length:</i>	1 ½ days
<i>Location:</i>	Noble Training Facility, Ft. McClellan/Anniston, Alabama

AWR-327

Radiological Emergency Preparedness (REP) Exercise Controller

<i>Description:</i>	This course provides responders the regulatory guidelines required to evaluate REP exercises, how to prepare for evaluations and observations during and after exercise activities plus techniques for exercise evaluations. Students will have the opportunity to observe video vignettes of REP exercises and the development of exercise narratives submitted to the REP Exercise Evaluation Tool (EET), for review. In conjunction with the required prerequisites, this course fulfills the credentialing training requirements for becoming a Type III REP Exercise Evaluator.
<i>Selection Criteria:</i>	Emergency Management, Governmental Administrative, Public Health
<i>Prerequisite:</i>	AWR-317 Radiological Core Concepts Course IS-331 Introduction to Radiological Emergency Preparedness (REP) Exercise Evaluation.
<i>Length:</i>	3 ½ days
<i>Location:</i>	Noble Training Facility, Ft. McClellan/Anniston, Alabama

E341

Radiological Accident Assessment Concepts (RAAC)

Description: 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.

Selection Criteria: Enrollment is limited to federal, state, and local 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.

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

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

E-400

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

MGT-445

REP Plan Review

Description: This course focuses on the review of REP emergency plans, specifically the NUREG 0654 planning standards that address the public's health and safety. This revised REP Plan Review Course will include training based on the Comprehensive Preparedness Guide (CPG) -101, familiarization of Hostile Action Based (HAB) plan review, annual plan review, and the Annual Letter of Certification Review process.

Selection Criteria: Any member of an organized federal, state, local, or tribal radiological/hazardous materials response element who have responsibility for responding to or managing a radiological incident.

Prerequisite: 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),
An Introduction.

IS-800.b National Response Framework (NRF), An
Introduction.

AWR-160 Standardized Awareness Training

IS-3 Radiological Emergency Management

Length: 2 days

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

PER-314

Radiological Emergency Preparedness (REP) Exercise Evaluator

Description: Course topics include regulations and guidelines for
evaluating exercises and techniques for exercise
evaluation.

Selection Criteria: State, local, tribal, and utility personnel who are involved
in the development of offsite REP plans and exercises.

Prerequisite: IS-331 Introduction to Radiological Emergency
Preparedness (REP) Exercise Evaluation.

Length: 3 ½ days

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

PER-904

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 (USEPA). 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.

<i>Prerequisite:</i>	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.
<i>Length:</i>	5 days
<i>Location:</i>	Noble Training Facility, Ft. McClellan/Anniston, Alabama

PER-905

Advanced Radiation Incident Operations (ARIO)

<i>Description:</i>	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: <ul style="list-style-type: none"> • 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.
<i>Selection Criteria:</i>	Those individuals who are assigned to or are responsible for responding to and possibly managing a radiation incident.

These individuals may be members of local, federal, state, 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

For Additional Courses See <https://cdp.dhs.gov/find-training>.

Table XIV-D: CTOS Classes Available

AWR-140

Introduction to Radiological/Nuclear Weapons of Mass Destruction (WMD) Operations

- Description:** This instructor-led course presents a radiological/nuclear WMD overview consisting of ionizing radiation fundamentals, terminology, health effects, and recognition factors. This information is requisite knowledge for responders performing the interdiction/prevention mission as well as first responders and other personnel who are likely to be the first to arrive on the scene of a radiological/nuclear incident. This fundamental knowledge of ionizing radiation and its effects is vital to responder safety, allowing performance of their mission while keeping the risk to themselves and the public as low as reasonably achievable.
- Selection Criteria:** Agricultural Safety, Emergency Management, Environmental Protection, Governmental Administrative, Public Health
- Prerequisite:** None
- Length:** ½ day
- Location:** To be determined when course is scheduled.
- Online Availability:** This course is available online at the CTOS Web Campus (<https://www.nts-ctos.com>) as AWR-140-W.
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PER-332

Population Monitoring at Community Reception Centers

- Description:** This course trains emergency responders and non-uniformed support personnel to operate monitoring stations within the Community Reception Center (CRC) or similar reception centers in order to perform population monitoring and contamination reduction measures after a radiological or nuclear incident. Examples of incidents that would initiate the establishment of a CRC include a nuclear detonation such as an Improvised Nuclear Device (IND), Radiological Dispersal Device (RDD), an attack on a Nuclear Power Plant (NPP) or other incidents that expose the general population to radioactive contamination. Responders learn the basic operation of radiation detectors, dosimeters, portal monitors, personal protective equipment (PPE) selection, and decontamination procedures. Attendees are taught to conduct radiological surveys of personnel and vehicles.

<i>Selection Criteria:</i>	Emergency Management, Emergency Medical Services, Fire Service, Governmental Administrative, Healthcare, Hazardous Materials, Law Enforcement, Public Health, Citizen/Community Volunteer, and other personnel who may be assigned radiological detection operations.
<i>Prerequisite:</i>	None
<i>Length:</i>	8 hours
<i>Location:</i>	To be determined when course is scheduled.

PER-345

Radiation Instruments Operations

Description: This course trains emergency responders and non-uniformed support personnel in the individual skills needed to use radiation detection equipment and dosimetry during operating in the prevent or response radiological/nuclear mission fields. Responders will be trained to select the appropriate instrument for a specific mission and use the instrument in performance of that mission.

Responders learn the basic operation of radiation detectors, dosimeters, and portal monitors. Attendees are taught radiation detection activities using a variety of detection instruments. Attendees are encouraged to bring their own department's instruments if possible. This course uses radioactive material to provide realism.

Upon completion of this course, participants will distinguish between various radiation detection and measuring devices. The participant will:

- Identify basic radiation concepts
- Describe the characteristics of a Dosimeter
- Describe the characteristic of a Personal Radiation Detector (PRD)
- Describe the characteristics of a survey meter
- Describe the characteristics of a Radioisotope Identification Device (RIID)
- Describe the general characteristic and operation of a Portal Monitor

<i>Selection Criteria:</i>	Emergency Management, Governmental Administrative, Public Health, and other personnel who may be assigned radiological detection operations.
<i>Prerequisite:</i>	AWR-140 Introduction to Radiological/Nuclear Weapons of Mass Destruction (WMD) Operations
<i>Length:</i>	½ day
<i>Location:</i>	To be determined when course is scheduled.

PER-348

Operations Level Response to Radiological/Nuclear WMD

- Description:** The course provides an introduction to operations in a radiological/nuclear environment during incidents involving radiological Weapons of Mass Destruction (WMD). The curriculum includes detailed information on the radiological and nuclear threats facing our Nation, fundamentals of radiation, an introduction to radiological detection and survey instruments, protective measures that may be employed by first responders, personal protective equipment and decontamination. As part of the training, Participants will engage in drills designed to enhance their ability to perform the basic tasks required to safely and effectively execute their duties in a radiological WMD response mission.
- Selection Criteria:** Public safety personnel and first responders who, in the course of their duties may participate in radiological/nuclear emergency response.
- Prerequisite:** None
- Length:** 8 hours
- Location:** To be determined when course is scheduled.
-

**For
Additional
Courses**

See <http://www.ctosnnsa.org/pages/schedule.htm>.

Table XIV-E: Training Requirement Matrix

Traditional	1	2A	2B	3	4	5	6A	6B	6C	6D	6E	7A	7B	7C	7D	8A	8B	8C	8D	9A	9B	9C	9D	9E	10	11	12	13A	13B	14A	14B	15A	15B	16	17	Applicable SOPs	
Web-Based	800	801		802	803	804	805		808	814	809		815		811												806										
Executive Directors, Coordinators, PIO (O.4.a)(O.4.j)						I																					I/A	I/A	I/A	I/A		I/A			I/A	I/A	
Assessment (Dose) (O.4.b)						I																						I/A	I/A		I/A		I		I/A	I/A	
IZZRAG (O.4.b) and Intermediate Phase (O.4.c)						I																						I	I/A		I/A		I	I	I	I/A	
FMT/Sampling (O.4.c)	I*	I		I	I/A†	I	I/A	I/A	I/A		I/A		I/A		I/A#	I/A#	I/A#	I/A#	I/A#	I	I/A	I/A					I/A				I/A		I	I	I	I/A	
Dispatchers (O.4.j)	I					I																												I	I/A		

* I - Initial Training

† I/A - Initial and Annual Refresher Training required

When applicable

Available for local OROs only.

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XV. NUREG-0654 Criteria P

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

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

Contents

Topic	See Page
1. Overview	216
Table XV-A: Plan Distribution List	218

1. Overview

- A. 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.
-
- B. Authority** Ohio Revised Code, Chapter 5502
-
- C. 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:
 - a. Developing and updating emergency plans,
 - b. Coordinating these plans with other response organizations,
 - c. Distributing plan updates annually, and
 - d. Updating telephone numbers in emergency plans/procedures quarterly.
-
- D. 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.
 - a. This shall be done as often as necessary, but at least annually.
 - b. Revised pages of the plan will be marked with change bars and dated to clearly show where changes have been made.
 - c. In the event there is no change during the annual review, certification to this effect will be furnished to every plan holder.
 - d. Once updated, changes and/or revisions will be furnished to every plan holder based upon original and subsequent distribution.
 - e. Distribution of the state plan is made to all public and private entities having a response role.
 2. Maps will be reviewed annually and changed when necessary.
 3. Telephone listings associated with contacting affected agencies and response organizations are separate from the plan or procedures. These telephone listings should be reviewed and revised, if required, on an annual basis.
-

E. Training

The Radiological Branch Chief is responsible for ensuring Radiological Analysts and Resident Radiological Analysts are adequately trained to perform REP program planning. Training will include, but will not be limited to, conferences, lectures, professional development courses, and on-the-job training.

F. Letters of Agreement

1. Letters of Agreement (LOAs) are reviewed annually to verify their validity. LOAs 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 B.
-

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
STATE AGENCIES	
OFFICE OF THE GOVERNOR	
Executive Assistant	1
Assistant Press Secretary	1
OHIO DEPARTMENT OF PUBLIC SAFETY	
Director	1
Communications Director	1
OHIO DPS: EMERGENCY MANAGEMENT AGENCY	
Executive Director	1
Assistant Director	1
Preparedness Administrator	1
Operations Administrator	1
Communications Administrator	1
Administrative Administrator	1
Policy and Legislative Advisor	1
Executive Room	1
Watch Office	1
Radiological Branch Chief	1
Radiological Analyst Supervisor	1
Radiological Lab Supervisor	1
Radiological Analysts	3

OHIO DPS: EMERGENCY MANAGEMENT AGENCY

DBNPS Resident Radiological Analyst	1
BVPS Resident Radiological Analyst	1
PNPP Resident Radiological Analyst	1
Fiscal Branch Chief	1
Mitigation Branch Chief	1
Recovery Branch Chief	1
Logistics Branch Chief	1
Preparedness, Training, & Exercise Branch Chief	1
Public Affairs	1
Regional Operations	1
Northeast Regional Office	1
Northwest Regional Office	1
Dose Assessment Room	1
EOC Manager	1
Grants Branch Chief	

OHIO DPS: HOMELAND SECURITY

Executive Director	1
--------------------	---

OHIO DPS: STATE HIGHWAY PATROL

Ashtabula Post Commander	1
Bowling Green Post Commander	1
Bucyrus District Commander	1
Chardon Post Commander	1
Columbus Field Operations	1
Communications Center (Columbus)	1
Findlay District Commander	1
Fremont Post Commander	1
Highway Patrol Superintendent	1
OSHP Hub Dispatch Commander	1
Sandusky Post Commander	1
Toledo Post Commander	1
Warren District Commander	1

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Table XV-A: Plan Distribution List, Continued

Agency	Number of Copies
OHIO DEPARTMENT OF AGRICULTURE	
Director	1
Enforcement Division	1
Division of Food Safety	1
Public Information Officer	1
OHIO ENVIRONMENTAL PROTECTION AGENCY	
Radiological Response Coordinator	1
Central Office, DERR Emergency Response Manager	1
Division of Drinking & Ground Water Chief	1
NW District DERR Field Team Leader (Bowling Green)	1
NW District Chief (Bowling Green)	1
NE District Field DERR Team Leader (Twinsburg)	1
NE District Chief (Twinsburg)	1
Division of Materials and Waste Management Chief	1
Division of Surface Water Chief	1
Division of Environment Response & Revitalization Chief	1
Division of Environmental Response, Investigation & Enforcement Chief	1
Radiation Assessment Team Leader	1
OHIO DEPARTMENT OF HEALTH	
Director	1
Bureau of Environmental Health & Radiation Protection (BEHRP) Library	1
Chief, Office of Public Health Preparedness	1
Bureau Chief, Bureau of Environmental Health & Radiation Protection	1
Supervisor, ODH Laboratory	1
Supervisor, Radiological Health & Safety	1

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Table XV-A: Plan Distribution List, Continued

Agency	Number of Copies
OHIO DEPARTMENT OF NATURAL RESOURCES	
Director	1
Chief Law Administrator	1
Staff Officer	1
Division of Parks & Watercraft, Chief	1
Division of Parks & Watercraft, Law Administrator	1
Division of Wildlife, Law Administrator	1
Division of Parks & Watercraft, Northern Region Coordinator	1
Division of Wildlife, Chief	1
ADJUTANT GENERAL'S DEPARTMENT	
OHIO NATIONAL GUARD	
Adjutant General	1
Director, J5	1
Joint Plans (J55)	1
OHIO DEPARTMENT OF ADMINISTRATIVE SERVICES	
Director	1
OHIO DEPARTMENT OF INSURANCE	
Director	1
OHIO DEPARTMENT OF JOB AND FAMILY SERVICES	
Director	1
Business Continuity Manager	1
OHIO DEPARTMENT OF MENTAL HEALTH & ADDICTION SERVICES	
Director	1
OHIO DEPARTMENT OF TRANSPORTATION	
Director	1
Emergency Response Coordinator	1
District 11 Operations Engineer (New Philadelphia)	1
District 12 Roadway Services Manager (Garfield Heights)	1

Continued on next page

Table XV-A: Plan Distribution List, Continued

Agency	Number of Copies
OHIO DEPARTMENT OF TRANSPORTATION	
District 2 Operations Engineer (Bowling Green)	1
District 4 Highway Management (Ravenna)	1
OHIO STATE UNIVERSITY EXTENSION	
Director	1
PUBLIC UTILITIES COMMISSION OF OHIO	
Chairman	1
Utility Specialist	1
Chief, Transportation Enforcement Division	1
Director, Service Monitoring & Enforcement	1
RISK COUNTIES	
ASHTABULA COUNTY, OHIO	
County Commissioners	1
Director, County Emergency Management Agency	1
County Health Department	1
County Sheriff	1
COLUMBIANA COUNTY, OHIO	
County Commissioners	1
Director, County Emergency Management Agency	1
County Health Department	1
County Sheriff	1
County Sheriff's Office, Chief Deputy	1
ERIE COUNTY, OHIO	
Director, County Homeland Security and Emergency Management	1
GEAUGA COUNTY, OHIO	
County Commissioners	1
County Sheriff	1
Director, County Department of Emergency Services	1
County Health District	1

Continued on next page

Table XV-A: Plan Distribution List, Continued

Agency	Number of Copies
RISK COUNTIES	
LAKE COUNTY, OHIO	
County Commissioners	1
County Sheriff	1
Director, County Emergency Management Agency	1
Planner/LEPC Information Coordinator	1
County Health Department	1
LUCAS COUNTY, OHIO	
Director, 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
Director, County Emergency Management Agency	1
County Health Department	1
ADDITIONAL COUNTIES	
BVPS PLANNING AREA	
Director, Belmont County Emergency Management Agency	1
Director, Carroll County Emergency Management Agency	1
Director, Harrison County Emergency Management Agency	1
Director, Jefferson County Emergency Management Agency	1
Director, Mahoning County Emergency Management Agency	1
Director, Stark County Emergency Management Agency	1

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Table XV-A: Plan Distribution List, Continued

Agency	Number of Copies
BVPS PLANNING AREA	
Director, Stark County Emergency Management Agency	1
Director, Trumbull County Emergency Management Agency (Also part of PNPP Planning Area)	1
Director, Tuscarawas County Homeland Security and Emergency Management	1
DBNPS PLANNING AREA	
Director, Crawford County Emergency Management Agency	1
Director, Fulton County Emergency Management Agency	1
Director, Hancock County Emergency Management Agency	1
Director, Henry County Emergency Management Agency	1
Director, Huron County Emergency Management Agency	1
Director, Lorain County Emergency Management (Also part of PNPP Planning Area)	1
Director, Sandusky County Emergency Management Agency	1
Director, Seneca County Emergency Management Agency	1
Director, Wood County Emergency Management Agency	1
Director, Wyandot County Emergency Management Agency	1
PNPP PLANNING AREA	
Director, Cuyahoga County Emergency Management Agency	1
Director, Portage County Emergency Management Agency	1
Director, Summit County Emergency Management Agency	1
UTILITIES	
BEAVER VALLEY POWER STATION	
BVPS Emergency Planning Staff	1
BVPS Emergency Operations Facility (EOF)	1
BVPS Joint Information Center (JIC)	1

Continued on next page

Table XV-A: Plan Distribution List, Continued

Agency	Number of Copies
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
Station Document Control	1
Emergency Planning	1
PERRY NUCLEAR POWER PLANT	
PNPP Emergency Planning	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
FIRST ENERGY NUCLEAR OPERATING COMPANY	
Emergency Planning Manager	1
FERMI-2 NUCLEAR POWER PLANT	
Emergency Planning	1
CONTIGUOUS GOVERNMENTS	
CANADA	
Ministry of Community Safety and Correctional Services, Emergency Management Ontario	1
STATE OF MICHIGAN	
Department of State Police, Emergency Management Division	1
REP Unit Supervisor, Department of Environment, Great Lakes, and Energy	1
COMMONWEALTH OF PENNSYLVANIA	
Pennsylvania Emergency Management Agency	1
Director, Beaver County Emergency Services	1
STATE OF WEST VIRGINIA	
West Virginia Division of Homeland Security and Emergency Management	1

Table XV-A: Plan Distribution List, Continued

Agency	Number of Copies
STATE OF WEST VIRGINIA	
Director, Hancock County Office of Emergency Management	1
FEDERAL AGENCIES	
USDA – FARM SERVICE AGENCY	
Director	1
FEDERAL EMERGENCY MANAGEMENT AGENCY	
RAC Chair, Region V	2
U.S. ARMY CORPS OF ENGINEERS	
Pittsburgh District	1
Emergency Management Specialist, Buffalo District	1
U.S. FISH AND WILDLIFE	
Manager, Ottawa Wildlife Refuge	1
U.S. COAST GUARD	
Response Unit, Ninth Coast Guard District	1
Marine Safety Unit, Sector Detroit	
Sector Commander, Sector Buffalo	1
Sector Commander, Sector Detroit	1
U.S. NUCLEAR REGULATORY COMMISSION	
Director, Office of Nuclear Security and Incident Response Operations	1
Chief, Reactor Licensing Branch	1
Director, Division of Preparedness and Response	1
Region I State Liaison Officer	1
Region III State Liaison Officer	1
OTHER	
AMERICAN RED CROSS	
Regional Disaster Manager, Ohio Buckeye Region	1
Disaster Program Manager, Greater Cleveland Chapter	1

Table XV-A: Plan Distribution List, Continued

Agency	Number of Copies
AMERICAN RED CROSS	
Disaster Program Manager, Northwest Ohio Chapter	1
Division Disaster State Relations Director, Crossroads Division	1
Disaster Program Manager, Lake to River Chapter	1
Disaster Program Manager, West Central PA Chapter	1

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Appendix A – Glossary

Definitions

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.

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.

AS LOW AS REASONABLY ACHIEVABLE (ALARA): A philosophy followed to achieve making every reasonable effort to maintain exposures to ionizing radiation as far below the dose limits as practical. A practice to ensure consistency with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations. These means are in relation to utilization of nuclear energy and licensed materials in the public interest.

BACKGROUND RADIATION: The level of naturally occurring 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 650 milliRem per year.

Continued on next page

Definitions, Continued

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.

COMMUNITY CARE CENTER (CRC): See **RECEPTION CENTER**.

CONGREGATE 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, can also occur at care centers (see **RECEPTION CENTER**).

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

CONTAMINATION: Refers to radioactive materials not in their intended containers. Whether the contamination is considered “fixed” or “loose” depends on the degree of effort required to unfix or remove the contamination from a surface.

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.

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.

Continued on next page

Definitions, Continued

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 to ensure they do not exceed their dose limits.

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.

Continued on next page

Definitions, Continued

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 incident. The plume pathway EPZ is approximately 10 miles in radius, while the ingestion pathway EPZ has a radius of approximately 50 miles.

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 be exposed to per unit of time as measured in air (typically expressed in units of Roentgen (R) per hour, mR per hour or μ R 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.

Continued on next page

Definitions, Continued

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.

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 incident. 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.

Continued on next page

Definitions, Continued

INGESTION PHASE – See **INTERMEDIATE PHASE**.

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.

LEVEL 1 FINDING: An observed or identified inadequacy or organization performance in an exercise that could cause a determination that offsite emergency preparedness is not adequate to provide reasonable assurance that appropriate protective measures can be taken in the event of a radiological emergency to protect the health and safety of the public living in the vicinity of the nuclear power plant.

Continued on next page

Definitions, Continued

LEVEL 2 FINDING: An observed or identified inadequacy or organization performance in an exercise that is not considered, by itself, to adversely impact public health and safety.

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 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.

Continued on next page

Definitions, Continued

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.

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.

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).

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.

PLAN ISSUE: An identified inadequacy in the organization's emergency plan/implementing procedures, rather than in the organization's performance.

PLUME: Generally a gaseous atmospheric release from a nuclear power plant, in an incident 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.

Continued on next page

Definitions, Continued

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

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.

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.

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 per gram of the absorbing material or tissue (see Roentgen).

Continued on next page

Definitions, Continued

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.

RADIONUCLIDE: A radioactive isotope of a particular element.

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 occupancy or use after the emergency phase of a radiological emergency.

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

REENTRY: Workers or members of the public going into a restricted zone on a temporary basis 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.

Continued on next page

Definitions, Continued

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

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

ROENTGEN (R): A unit of exposure of gamma (or X-ray) radiation in field dosimetry. One roentgen is essentially equal to one rad (see **RADIATION ABSORBED DOSE (RAD)**). A unit for measuring the amount of radiation energy imparted to a volume of air. The roentgen can be used only to measure X-rays or gamma rays.

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.

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.

Continued on next page

Definitions, Continued

TURN-BACK VALUES: Accumulated exposure 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 internal contamination.

Appendix B – Letters of Agreement

NUREG Criterion A.3

1. OSU Nuclear Reactor Laboratory
2. USCG
3. Pennsylvania EMA
4. West Virginia Office of Emergency Services
5. Consolidated Rail Corporation
6. Province of Ontario
7. FENOC
8. Michigan State Police, Emergency Management Division
9. USDA FSA
10. ODNR
11. ODH
12. FAA

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

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Appendix C – References

NUREG Criterion P.6

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, National Response Framework, October 28, 2019
 - a. Nuclear/Radiological Incident Annex, October 2016
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. Food and Drug Administration. Guidance on Potassium Iodide as a Thyroid Blocking Agent in Radiation Emergencies. 2001
5. U.S. Code of Federal Regulations, Title 10, Part 50, App. E; Title 44, Part 350, App. E
6. U.S. Environmental Protection Agency. Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, USEPA-400-R-92-001, May 1992
7. U.S. Environmental Protection Agency. PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents, March 2013
8. Department of Energy. FRMAC Operations Manual , DOE/NV/25946-080, May 2010
9. Department of Energy. FRMAC Radiation Monitoring, Volume 1, Operations, DOE/NV 25946-1554, July 2012
10. Department of Energy. FRMAC Monitoring, Volume 2, Radiation Monitoring and Sampling, DOE/NV 25946-1558, July 2012
11. Department of Energy. FRMAC Assessment Manual, Volume 1 – Overview and Methods, SAND2019-0247 R, December 2018
12. Department of Energy. FRMAC Assessment Manual, Volume 2 – Pre-assessed Default Scenarios, SAND2010-2575P, February 2010
13. Federal Emergency Management Agency. Radiological Emergency Preparedness (REP) Program Manual, January 2016 and its associated references.

Continued on next page

NUREG Criterion P.6, Continued

Federal,
continued

14. 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
-

State

1. Ohio Revised Code
 2. Ohio Administrative Code
 3. ODA, Radiological Emergency Information for Food Producers, Processors, and Distributors, 2020
 4. State of Ohio Emergency Operations Plan
 5. ODH KI Directive 10-BEHRP-01
 6. ODH Radiological Emergency Preparedness Manual 10-BEHRP-M01
 7. ODH Memorandum, "Notice of Potassium Iodide (KI) Shelf Life Extension," November 4, 2019
-

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
-

Continued on next page

NUREG Criterion P.6, Continued

Other

1. Ashtabula County Radiological Emergency Response Plan
 2. Beaver County (PA) Emergency Response Plan
 3. Beaver Valley Power Station Radiological Emergency Response Plan –
Columbiana County
 4. Erie County Emergency Response Plan
 5. Geauga County Department of Emergency Services Radiological Emergency
Response Plan for an Emergency at the Perry Nuclear Power Plant
 6. Hancock County (WV) Emergency Response Plan
 7. Radiological Emergency Response Plan for an Emergency at the Perry Nuclear
Power Plant - Lake County Emergency Management Agency
 8. Lucas County Radiological Emergency Response Plan
 9. Ottawa County Radiological Emergency Response Plan
 10. Sandusky County Emergency Response Plan
 11. Wood County Emergency Response Plan
 12. Michigan Department of Environment, Great Lakes, and Energy Nuclear
Facilities Emergency Response Plan
 13. Michigan Emergency Management Plan
 14. Pennsylvania Department of Agriculture. Farmer’s Emergency Information
 15. Pennsylvania Emergency Response Plan
 16. West Virginia Radiological Emergency Response Plan
 17. Ontario Provincial Nuclear Emergency Response Plan
 - a. Master Plan
 - b. Implementing Plan for a Transborder Nuclear Emergency
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Appendix D – State Procedures

NUREG-0654 Criterion P.7

Procedure	Section
OHIO DEPARTMENT OF AGRICULTURE	
Standard Operating Procedures for a Contamination Incident Involving Nuclear Materials – Milk Sampling	I; VIII; XII
Standard Operating Procedures for a Contamination Incident Involving Nuclear Materials - Leafy Vegetation Sampling	VIII; XII
OHIO DEPARTMENT OF HEALTH	
10-BEHRP-M01 Radiological Emergency Preparedness Manual	I; VI; VII; VIII; IX; X
ODH-SOP-PWS-0001 IZRRAG Event – Private Water Systems Program Standard Operating Procedure	I; VIII; XII
RAD-REP-0365 Radiological Environmental Monitoring Manual – Soil Counting Procedure	I; VIII; XII
OHIO DEPARTMENT OF NATURAL RESOURCES	
Radioactive Sampling Guidelines for Fish and Wildlife	I; VIII; XII
OHIO EMERGENCY MANAGEMENT AGENCY	
101 – SEOC Activation	I; III; IV; VI; VII
301 – Joint Information Center Activation	VI
321 – Media Advisory and Release	VI
650 – Radiological Assessment Branch Director	III; IV
652 – State Dose Assessment Systems Operator	I; III; VII; VIII; XII
653 – Assessment Room Activation	III; VII
657 – FMT Coordinator	I; V; VII; VIII; IX; X; XII
658 – FMT Member	I; III; VIII; IX; X
659 – Dosimetry Coordinator	I; IX; X
660 – FMT Courier	XIV
663 – FTC Coordinator	I; III; IX; X; XII

NPCT 1-5 Communications Tests	XIII
Beaver Valley Power Station Notification	I; III; IV; VI; XII
Davis-Besse Nuclear Power Plant Notification	I; III; IV; VI; XII
Perry Nuclear Power Plant Notification	I; III; IV; VI; XII
Ohio Environmental Protection Agency	
Drinking Water Sampling (Deposition) Guidelines During a Nuclear Power Plant Incident (Ohio USEPA)	I; VIII; XII
Ohio Environmental Protection Agency Radioactive Sampling Guidelines for Hard Surfaces	I; VIII; XII
Ohio Environmental Protection Agency Radioactive Sampling Guidelines for Snow	I; VIII; XII
Ohio Environmental Protection Agency Radioactive Sampling Guidelines for Surface Water	I; VIII; XII
Ohio Environmental Protection Agency Radioactive Sampling Guidelines for Vegetation	I; VIII; XII
Soil Sampling Guidelines (Ground Deposition) Guidelines During a Nuclear Power Plant Incident (Ohio USEPA)	I; VIII; XII

Appendix E – NUREG-0654 Crosswalk

NUREG Criterion P.8

Criterion	EOP ²²	ROM ²³	Location
A.1.a.i	X		ESF-1 – ESF-15
		X	I.2 – I.19; Table I-A; Figure I-B; Figure I-C
A.1.a.ii	X		ESF-1 – ESF-15
		X	I.2 – I.19; Table I-A
A.1.b.i	X		ESF-1 V.B; ESF-2 VI.B; ESF-3 IV.B; ESF-4 V.B; ESF-5 IV.C; ESF-6 V.B; ESF-7 IV.B; ESF-8 V.E; ESF-9 VI.B; ESF-10 IV.C; ESF-11 IV.B; ESF-12 IV.B; ESF-13 IV.B; ESF-14 IV; ESF-15 IV
		X	I.2 – I.18
A.1.b.ii	X		ESF-1 V.B; ESF-2 VI.B; ESF-3 IV.B; ESF-4 V.B; ESF-5 IV.C; ESF-6 V.B; ESF-7 IV.B; ESF-8 V.E; ESF-9 VI.B; ESF-10 IV.C; ESF-11 IV.B; ESF-12 IV.B; ESF-13 IV.B; ESF-14 IV; ESF-15 IV
		X	I.2 – I.18
A.1.c.i		X	Figures I-B, I-C, I-D
A.1.d.i	X		I.F; V.A.1.c
		X	I.2.A.1; I.3.A.1; XV.1.C.1
A.1.d.ii	X		I.F; V.A.1.c
		X	XV.1.C.2
A.1.e.i		X	I.6.A.3.e
A.1.e.ii		X	I.6.A.3
A.1.e.iii		X	I.6.A.3
A.1.e.iv		X	I.6.A.3.e
A.1.e.v		X	V.1.A
A.2.a.i	X		ESF-1 – ESF-15
		X	I.2 – I.18
A.2.a.ii	X		ESF-1 – ESF-15
		X	I.2 – I.18
A.2.a.iii	X		Tab A
		X	Table I-A
A.2.b.i	X		I.C; II.C.2
		X	I.1.B; I.2.A.1
A.2.b.ii	X		III.J.6.d; III.J.7.c
		X	I.2.A.7; I.2.A.8; XV.1.C.1
A.2.b.iii			N/A
A.2.b.iv			Appendix B

²² State of Ohio Emergency Operations Plan

²³ State of Ohio Radiological Operations Manual 2020

A.3.i	X		V.E; V.F; ESF-1 – ESF-15; TIA-1
		X	XV.1.F
A.3.ii	X		V.E; V.F
		X	Appendix B
A.3.iii		X	Appendix B
A.3.iv			N/A
A.3.v		X	XV.1.F.2
A.3.vi		X	XV.1.F.1
A.4.i		X	VII.1.A.2.h.i; VII.1.A.2.h.ii.2
A.4.ii		X	VII.1.A.2.h.ii.5
A.4.iii		X	VII.1.A.2.h.ii.5
A.4.iv		X	VII.1.A.2.h.ii.1, Footnote (13)
A.4.v		X	VII.1.A.2.h.ii
C.1.a.i		X	I.1.C; IX.1.A
C.1.b		X	II.1.C.2.B; II.4.B; Table II-B; Table II-C
C.1.b.i		X	II.4.B
C.1.b.ii		X	II.1.C; Table II-B; Table II-C
C.1.b.iii		X	Table II-B; Table II-C
C.1.c.i		X	II.4.C; Table II-D; Table II-E
C.1.c.ii		X	II.5
C.1.c.iii	X		ESF-2.II
C.2		X	I.2.A.6; I.3.H.1; I.9.A.4.c; III.2.C.5
C.3.i		X	II.1.B; II.1.C
C.3.ii		X	II.1.B
C.3.iii		X	II.1.B.3; II.1.B.4
C.3.iv		X	II.1.B; II.1.C; Table II-B; Table II-C
C.4.i		X	XV.1.F; Appendix B
C.6.i			N/A
C.6.ii			N/A
C.6.iii			N/A
C.6.iv			N/A
C.6.v			N/A
D.3.i		X	III.1 – III.4
D.3.ii		X	III.1 – III.4
D.4.i		X	Table I-E; III.1 – III.4
E.1.i		X	IV.1.A; IV.1.B; V.1.A
E.1.ii		X	IV.1.A.3
E.1.iii		X	IV.1.C.1
E.2.i		X	IV.2.A
E.2.ii		X	IV.2.B
E.2.iii		X	IV.2.A.3; Table IV-B
E.2.iv		X	Table IV-A
E.2.v		X	V.1.B; V.1.C
E.5.i			N/A
E.5.ii			N/A

E.5.iii			N/A
E.5.iv			N/A
E.5.v			N/A
E.5.vi			N/A
E.6.i			N/A
E.6.ii			N/A
E.6.iii			N/A
E.7.i			N/A
E.7.ii			N/A
E.7.iii			N/A
E.7.iv			N/A
E.7.v			N/A
F.1.a.i			V.1.A
F.1.a.ii		X	I.6.A.3
F.1.a.iii		X	Figure V-A
F.1.b.i			N/A
F.1.b.ii			N/A
F.1.b.iii		X	V.1.B; Figure V-A
F.1.c.i	X		ESF-2 II.C – ESF-2 II.D
		X	V.1.B
F.1.c.ii	X		ESF-2 II.C – ESF-2 II.D
		X	V.1.B
F.1.d.i		X	V.1.E; Figure V-A
F.1.d.ii		X	V.1.D
F.1.e.i		X	I.3.B.1; IV.2.A; IV.2.B; V.1.C
F.1.e.ii		X	Table IV-A
F.2.i			N/A
F.2.ii			N/A
F.3.i		X	V.1.I; XIII.6.B; XIII.7; Table XIII-A
G.1.i		X	VI.1
G.1.ii			N/A
G.1.iii		X	VI.1.E
G.1.iv		X	VI.2.A
G.1.v			N/A
G.1.vi			N/A
G.2.i		X	VI.1
G.2.ii		X	VI.2.A.1 – VI.2.A.4
G.2.iii		X	VI.1.E
G.3.a.i		X	VI.4.B.5.d
G.3.a.ii		X	VI.3.C; VI.4.G.4
G.3.a.iii			N/A
G.3.a.iv		X	VI.4.H
G.3.a.v		X	VI.4.B; VI.4.H
G.4.a.i	X		TIA-IV.B.8
		X	I.3.A.10; VI.4.B

G.4.a.ii		X	VI.4.B.4
G.4.a.iii		X	V.1.G; VI.3.A.2
G.4.a.iv	X		TIA-IV.B.8
		X	III.3.B.24; IV.3.A.2; VI.3.A.4.d; VI.4.J
G.4.b.i		X	VI.4.B.5; VI.4.E
G.4.b.ii		X	V.1.G
G.4.b.ii.a		X	VI.4.B.5.c
G.4.b.ii.b		X	V.1.G
G.4.c.i		X	VI.4.I
G.4.c.ii		X	VI.4.I.1
G.4.c.iii		X	VI.4.I.5
G.4.c.iv			N/A
G.5.i		X	VI.5.A.1
G.5.ii		X	VI.5.A.1
G.5.iii		X	VI.5.A.1
H.3.i		X	VII.1.A; Figure VII-A
H.3.ii		X	VII.1.B
H.3.iii		X	VII.1.B.13
H.3.iv		X	VII.1.C
H.3.v		X	VII.1.A
H.3.vi		X	VII.1.A.2.g
H.4.i		X	III.2.C.3; III.2.C.4; III.3.B.2; VII.1.A.2
H.4.ii		X	VII.1.A.2.i; VII.1.A.2.j
H.4.iii		X	VII.1.A.2.h.ii.5
H.7.i		X	658 FMT SOP (Attachment 4)
H.7.ii			N/A
H.10.i		X	II.1.B.5; VII.2.A.1; VII.2.B
H.10.ii		X	II.1.B.5; VII.2.A.2, 3, 5

H.11.i		X	VII.2.A.8; VII.2.B, Table VII-D; Table VII-E; 658 FMT SOP (Attachments 4; 5); SOP-07 ODA SOP for a Contamination Incident Involving Nuclear Materials - Milk Sampling (Attachment 1); SOP-02 ODA SOP for a Contamination Incident Involving Nuclear Materials – Leafy Vegetation Sampling (Attachment 1); ODNR Radioactive Sampling Guidelines for Fish and Wildlife (Fish Sample Guidelines, Game Sample Guidelines); Drinking Water Sampling (Deposition) Guidelines During a Nuclear Power Plant Incident (Ohio USEPA) (3.3); OEPA Radioactive Sampling Guidelines for Hard Surfaces (Ohio EPA Wipe Sample Guidelines); OEPA Radioactive Sampling Guidelines for Snow (Ohio EPA Snow Sampling Guidelines); OEPA Radioactive Sampling Guidelines for Surface Water (Ohio EPA Surface Water Radiological Sample Guidelines); OEPA Radioactive Sampling Guidelines for Vegetation (Ohio EPA Vegetation Sample Guidelines); Soil Sampling Guidelines (Ground Deposition) Guidelines During a Nuclear Power Plant Incident (Ohio USEPA) (3.3); ODH-SOP-PWS-0001 Private Water Systems Program SOP (Appendix A)
H.11.ii		X	VII.2.A.8; VII.2.B; 658 FMT SOP (Attachments 4; 5); SOP-07 ODA SOP for a Contamination Incident Involving Nuclear Materials - Milk Sampling (Attachment 1); SOP-02 ODA SOP for a Contamination Incident Involving Nuclear Materials – Leafy Vegetation Sampling (Attachment 1); ODNR Radioactive Sampling Guidelines for Fish and Wildlife (Fish Sample Guidelines, Game Sample Guidelines); Drinking Water Sampling (Deposition) Guidelines During a Nuclear Power Plant Incident (Ohio USEPA) (3.3); OEPA Radioactive Sampling Guidelines for Hard Surfaces (Ohio EPA Wipe Sample Guidelines); OEPA Radioactive Sampling Guidelines for Snow (Ohio EPA Snow Sampling Guidelines); OEPA Radioactive Sampling Guidelines for Surface Water (Ohio EPA Surface Water Radiological Sample Guidelines); OEPA Radioactive Sampling Guidelines for Vegetation (Ohio EPA Vegetation Sample Guidelines); Soil Sampling Guidelines (Ground Deposition) Guidelines During a Nuclear Power Plant Incident (Ohio USEPA) (3.3); ODH-SOP-PWS-0001 Private Water Systems Program SOP (Appendix A)
H.12.i		X	I.3.I; I.9.B
H.12.ii		X	VII.3; VIII.3.B.1
H.12.iii		X	I.6.A.6; I.12.A.5; I.17.A.7; VII.3

I.7.i		X	I.3.K; I.9.A.6; VIII.1.A
I.7.ii		X	VIII.1
I.8.i		X	III.2.C.6; IV.2.A; V.1.C; VIII.1.B
I.8.ii		X	I.3.K; I.9.A.6; VIII.1.C
I.8.iii		X	VIII.1.E; VIII.1.G
I.8.iv		X	VIII.1.F
I.8.v		X	I.3.K
I.8.vi		X	V.1.D; VII.2.A.8; VIII.1.K; VIII.2.H
I.8.vii		X	658 FMT SOP; SOP-07 ODA SOP for a Contamination Incident Involving Nuclear Materials - Milk Sampling; SOP-02 ODA SOP for a Contamination Incident Involving Nuclear Materials – Leafy Vegetation Sampling; ODNR Radioactive Sampling Guidelines for Fish and Wildlife; Drinking Water Sampling (Deposition) Guidelines During a Nuclear Power Plant Incident (Ohio USEPA); OEPA Radioactive Sampling Guidelines for Hard Surfaces; OEPA Radioactive Sampling Guidelines for Snow; OEPA Radioactive Sampling Guidelines for Surface Water; OEPA Radioactive Sampling Guidelines for Vegetation; Soil Sampling Guidelines (Ground Deposition) Guidelines During a Nuclear Power Plant Incident (Ohio USEPA)
I.8.viii		X	II.1
I.8.ix		X	VIII.1.I
I.9.i			VIII.1.J
I.9.ii			Tables IX-B, IX-D, IX-F; Figures IX-C, IX-E, IX-G – IX-J; 657 FMT Coordinator SOP (3.0); 658 FMT SOP (3.7; 3.9)
I.10.i		X	I.3.I; I.9.A.2; I.9.B; VIII.3.A
I.10.ii		X	VIII.3.A.
I.10.iii		X	VIII.3.A.1
I.10.iv		X	VIII.3.A
I.10.v		X	VIII.3.A
I.10.vi		X	VIII.3.A.5
I.10.vii		X	I.3.I.3; I.9.B.3
I.11.i		X	VIII.1.I
J.2.i		X	IX.1.C.2
J.2.ii			N/A
J.2.iii		X	IX.1.C.2
J.9.i		X	III.5.B.2; IX.2.A; IX.3; X.4.A.1; XII.3.A.2; XII.7.B.1; Table XII-B; Table XII-C
J.9.ii	X		V.A.1.1
		X	IX.3.C
J.10.a.i		X	Figures IX-C, IX-E, IX-G, IX-H, IX-I, IX-J, IX-K; IX-L
J.10.a.ii		X	IX.5.A.2

J.10.b.i			N/A
J.10.c.i		X	N/A
J.10.d.i			N/A
J.10.d.ii			N/A
J.10.d.iii			N/A
J.10.d.iv			N/A
J.10.d.v			N/A
J.10.e.i		X	IX.1.B.1; X.5.B
J.10.e.ii		X	X.5.E
J.10.e.iii		X	I.9.C.5; X.5.C; X.5.D
J.10.e.iv		X	IX.1.B.4.d; X.5.F
J.10.f.i		X	X.5.B
J.10.f.ii		X	X.5.B
J.10.g.i		X	IX.1.C; IX.1.D; IX.4.A
J.10.g.ii		X	IX.14.B.2
J.10.g.iii		X	II.4.A
J.10.g.iv			N/A
J.10.g.v			N/A
J.10.h.i			N/A
J.10.h.ii			N/A
J.10.h.iii			N/A
J.10.h.iv			N/A
J.10.h.v			N/A
J.10.h.vi			N/A
J.10.h.vii			N/A
J.10.i.i		X	Appendix C
J.10.i.ii			N/A
J.10.i.iii			N/A
J.10.i.iv			N/A
J.10.j.i	X		ESF-1.V.B.5; ESF—13.III.A.4.e
		X	I.6.A.7; I.6.A.12; I.17.A.3; Table I-A; IX.1.C; IX.1.D.1; IX.4.A
J.10.j.ii			N/A
J.10.j.iii		X	I.17.A.3; IX.1.D.3; IX.4.C
J.10.j.iv		X	I.3.A.6; I.6.A.12; I.12.A.3; III.3.B.8; III.3.B.9; III.3.B.15; IX.1.C.1; IX.4.C
J.10.j.v		X	I.3.A.6; I.6.A.7; I.6.A.12; I.12.A.3; III.3.B.8; III.3.B.9; III.3.B.15; IX.1.C.1; IX.1.D; IX.4.A; IX.4.C
J.10.j.vi			N/A
J.10.k.i	X		ESF-1.IV.A.3.e; ESF-1.V.B.2.a; ESF-1.V.B.4.b
		X	I.17.A.3; IX.1.D
J.10.k.ii	X		ESF-1.V.B.4.b; ESF-1.V.B.5
		X	IX.1.C.e
J.10.l.i			N/A
J.10.l.ii			N/A

J.10.m.i		X	IX.3; Table IX-A
J.10.m.ii			N/A
J.10.m.iii			N/A
J.11.i		X	XII.1
J.11.ii		X	XII.2
J.11.iii		X	XII.3.J
J.11.iv		X	VIII.1.M; VIII.2.B; VIII.2.D; VIII.2.J; XII.3.J.5.a
J.11.v		X	II.1; VII.3.B.4
J.11.vi		X	XII.4.C.3; XII.4.H.1
J.11.vii		X	XII.4.C.2; XII.4.H.1
J.11.viii		X	Table XII-B
J.11.ix		X	IX.5
J.11.x		X	VI.2.A.4; XII.4.G; XII.4.H.2
J.12.i			N/A
J.12.ii			Table X-C
J.12.iii			N/A
J.12.iv			N/A
J.12.v			N/A
K.3.a.i		X	X.2; X.3.A;
K.3.a.ii		X	X.3; X.4; Table X-A
K.3.a.iii		X	X.2.A.5
K.3.a.iv		X	X.2.B.4
K.3.a.v		X	X.2.B.4; X.2.B.5
K.3.a.vi		X	X.2.A.5
K.3.a.vii		X	X.2; XII.6.B.5
K.3.a.viii		X	X.4.A.4.e; X.4.A.6.d
K.3.b.i		X	X.2.B; Table X-A
K.3.b.ii		X	X.2.B.3; Table X-A
K.3.b.iii		X	X.2.B.1; Figure X-B
K.3.b.iv		X	X.4.A.6
K.4.i		X	X.4; Table X-A
K.4.ii		X	X.4.A.4.e; X.4.A.6
K.4.iii			N/A
K.4.iv		X	X.4.A.4.e; X.4.A.6.c; Table X-A
K.4.v		X	X.4.A.4.e; X.4.A.6.c
K.4.vi		X	X.4.A.4.e.ii; Table X-A
K.4.vii		X	X.4; Table X-A
K.5.a.i			N/A
K.5.a.ii			N/A
K.5.a.iii			N/A
K.5.a.iv		X	Table X-C
K.5.a.v			N/A
K.5.a.vi			N/A
K.5.b.i			N/A
K.5.b.ii			N/A

K.5.b.iii			N/A
K.5.b.iv			Table X-C
K.5.b.v			N/A
K.5.b.vi			N/A
K.5.b.vii			N/A
L.1.i			N/A
L.1.ii			N/A
L.1.iii			N/A
L.1.iv			N/A
L.1.v		X	X.2.B
L.3.i		X	XI.1.A
L.4.i			N/A
L.4.ii			N/A
L.4.iii			N/A
L.4.iv			N/A
L.4.v			N/A
L.4.vi			N/A
L.4.vii			N/A
L.4.viii			N/A
M.1.i		X	XII.5.E.1
M.1.ii		X	XII.5.B
M.1.iii		X	XII.7
M.1.iv		X	XII.6
M.1.v		X	XII.8
M.1.vi		X	III.6.B; XII.9
M.3.i		X	XII.9.B.1
M.3.ii		X	XII.9.B.1
M.4.i		X	I.9.B.4; VIII.3.B
N.1.a.i		X	XIII.1.B.3; XIII.1.B.4
N.1.b.i		X	XIII.2.A; Tables XIII-A – XIII-B
N.1.b.ii		X	XIII.2.A
N.1.d.i		X	XIII.2.B.1; Tables XIII-A – XIII-B
N.1.d.ii			N/A
N.1.d.iii		X	XIII.2.B.3
N.1.d.iv		X	XIII.2.B.5
N.2.a.i		X	XIII.6.B.1; Table XIII-A
N.2.a.ii		X	XIII.6.B.2; Table XIII-A
N.2.a.iii		X	XIII.6.B.3; Table XIII-A
N.2.a.iv		X	XIII.6.B.4; Table XIII-A
N.2.c.i			N/A
N.2.d.i		X	XIII.6.C; Table XIII-A
N.2.e(1).i		X	XIII.6.D; Table XIII-A
N.3.i		X	XIII.4.A
N.4.i		X	XIII.5.A
N.5.i		X	XIII.5.F

O.1.i		X	XIV.1
O.1.ii			N/A
O.1.iii		X	XIV.2.E
O.1.iv		X	XIV.1
O.1.b.i			N/A
O.4.a.i		X	XIV.2.D; Table XIV-E
O.4.a.ii		X	Tables XIV-A – XIV-D
O.4.a.iii		X	XIV.2.C
O.4.a.iv		X	XIV.3
O.4.b.i		X	XIV.2.D; Table XIV-E
O.4.b.ii		X	Tables XIV-A – XIV-D
O.4.b.iii		X	XIV.2.C
O.4.b.iv		X	XIV.3
O.4.c.i		X	XIV.2.D; Table XIV-E
O.4.c.ii		X	Tables XIV-A – XIV-D
O.4.c.iii		X	XIV.2.C
O.4.c.iv		X	XIV.3
O.4.d.i			N/A
O.4.d.ii			N/A
O.4.d.iii			N/A
O.4.d.iv			N/A
O.4.f.i			N/A
O.4.f.ii			N/A
O.4.f.iii			N/A
O.4.f.iv			N/A
O.4.g.i			N/A
O.4.g.ii			N/A
O.4.g.iii			N/A
O.4.g.iv			N/A
O.4.h.i			N/A
O.4.h.ii			N/A
O.4.h.iii			N/A
O.4.h.iv			N/A
O.4.j.i		X	XIV.2.B.10; Table XIV-E
O.4.j.ii		X	Table XIV-A
O.4.j.iii		X	XIV.2.C
O.4.j.iv		X	XIV.3
O.5.i		X	XIV.2.C; XIV.3
P.1.i		X	XV.1.C.2
P.1.ii		X	Tables XIV-A – XIV.E
P.2.i		X	XV.1.C.1
P.3.i		X	XV.1.C.2
P.4.i		X	XV.1.D
P.4.ii		X	XIII.5.F
P.4.iii		X	XV.1.D.2

P.4.iv		X	VI.2.A.1
P.5.i		X	Table XV-A
P.5.ii		X	XV.1.C.2.c; XV.1.D.1.a; Table XV-A
P.5.iii		X	XV.1.D.1.b
P.6.i		X	Appendix C
P.7.i		X	Appendix D
P.8.i		X	Table of Contents
P.8.ii		X	Appendix E
P.10.i		X	XV.1.C.2.d