



Nuclear Power Plant Exercise

Beaver Valley Power Station

Medical Services Drill

Radiological Emergency Preparedness Program

Final After-Action Report/Improvement Plan

Exercise Date: October 26, 2023

Report Date: December 22, 2023



FEMA

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Executive Summary

On October 26, 2023, the Department of Homeland Security (DHS)/Federal Emergency Management Agency (FEMA) Region 5 Radiological Emergency Preparedness (REP) Program staff, evaluated a REP Medical Services (MS-1) Drill in the Emergency Planning Zone (EPZ) for the Beaver Valley Power Station (BVPS).

The BVPS is located 22 miles northwest of Pittsburgh, Pennsylvania. The BVPS 10-mile Plume Exposure Pathway EPZ encompasses part of Columbiana County, Ohio, part of Beaver County, Pennsylvania, and Hancock County, West Virginia.

The purpose of the MS-1 Drill was to assess the capability of the local ambulance service regarding the treatment and transportation of a contaminated, injured individual to a medical facility and to assess the capability of the medical facility to receive, treat, and decontaminate the injured individual without spreading contamination. The MS-1 Drill was conducted in accordance with DHS/FEMA's policies and guidance from the State and local radiological emergency response plans and procedures.

Representatives from the East Palestine Fire Department and Salem Regional Medical Center participated in this drill. These representatives demonstrated knowledge of their emergency response plans and procedures and successfully implemented them. The DHS/FEMA evaluation team identified no Findings or Plan Issues.

The DHS/FEMA wishes to acknowledge the efforts of the individuals who participated in the drill and made it a success. The professionalism and teamwork of the participants was evident throughout all phases of the drill.

Section 1: Exercise Overview

Exercise Name	2023 BVPS Radiological Emergency Preparedness (REP) Medical Services Drill
Type of Exercise	Medical Services Drill
Exercise Date	October 26, 2023
Out of Sequence Date(s)	N/A
Program	Radiological Emergency Preparedness Program
FINAL Scenario Submittal to FEMA	September 14, 2023
FINAL Extent-of-Play Agreement Submittal to FEMA	September 19, 2023
Mission Area	Response, Preparedness, Protection
Core Capabilities	Environmental Response/Health & Safety
	Operational Coordination
	Planning
	Public Health, Healthcare, & Emergency Medical Services
Participating Organizations	See Appendix C for the extent of play agreement
Evaluated Facilities	See Appendix C for the extent of play agreement
Exercise Planning Team	Federal Emergency Management Agency Ohio Emergency Management Agency Ohio Department of Health Columbiana County Emergency Management Agency Energy Harbor, Inc. (Beaver Valley Power Station)
FEMA Exercise Evaluation Leadership Team	Sean O'Leary, Regional Assistance Committee (RAC) Chair Edward Golinski, Exercise Director Todd Trygier, Site Specialist Brian Reinhart, Site Specialist

Section 2: Exercise Design Summary

2.1 Exercise Purpose

The DHS/FEMA administers the Radiological Emergency Preparedness Program pursuant to the regulations found in Title 44 CFR parts §350, 351, 352, 353, and 354. CFR §350 codifies 16 planning standards that form the basis for radiological emergency response planning for the licensee, state, local, tribal, and territorial governments impacted by the emergency planning zones established for each nuclear power plant site in the United States. United States Nuclear Regulatory Commission regulations also codify the 16 planning standards for the licensee. 44 CFR §350 sets forth the mechanisms for the formal review and approval of state, local, tribal, and territorial government radiological emergency response plans and procedures by DHS/FEMA. One of the Radiological Emergency Preparedness Program cornerstones established by these regulations is the biennial exercise of offsite response capabilities. During these exercises, affected state, local, tribal, and territorial governments demonstrate the capability to implement their plans and procedures to protect the health and safety of the public in the event of a radiological incident at a nuclear plant.

The results of this exercise, together with reviews of the radiological emergency response plans and verification of the periodic requirements set forth in NUREG-0654/FEMA-REP-1, Rev. 2, the annual letter of certification, and staff assistance visits, enabled FEMA to provide a statement with the transmission of this final after-action report to the United States Nuclear Regulatory Commission. This statement verifies that the affected state, local, tribal, and territorial plans and preparedness are: (1) adequate to protect the health and safety of the public living in the vicinity of the nuclear power facility by providing reasonable assurance that appropriate protective measures can be taken offsite in the event of a radiological incident; and (2) capable of being implemented. Using the Homeland Security Exercise and Evaluation Program methodology, core capabilities-based planning allows for exercise planning teams to develop exercise objectives and observe exercise outcomes through a framework of specific action items.

2.2 Exercise Core Capabilities

Furthermore, in an effort to strengthen response against catastrophic incidents, DHS/FEMA is aligning the REP Program with the National Preparedness System to ensure that not only preparedness is addressed, but also the five mission areas: prevention, protection, recovery, response, and mitigation. Additionally, the exercise objectives and capability targets assessed meet Radiological Emergency Preparedness Program Manual requirements and objectives. The core capabilities scheduled for demonstration during this exercise were:

- **Environmental Response/Health and Safety:** Conduct appropriate measures to ensure the protection of the health and safety of the public and workers, as well as the environment, from all-hazards in support of responder operations and the affected communities.
- **Operational Coordination:** Establish and maintain a unified and coordinated operational structure and process that appropriately integrates all critical stakeholders and supports the execution of core capabilities.
- **Planning:** Conduct a systematic process engaging the whole community as appropriate in the development of executable strategic, operational, and/or community-based approaches to meet defined objectives.

- **Public Health, Healthcare, and Emergency Medical Services:** Provide lifesaving medical treatment via emergency medical services and related operations and avoid additional disease and injury by providing targeted public health and medical support and products to all people in need within the affected area.

These core capabilities, when successfully demonstrated, meet the exercise objectives. The objectives for this exercise were as follows:

- **Objective 2:** Exposure Control
- **Objective 5:** Operate

Section 3: Analysis of Capabilities

3.1 Exercise Evaluation and Results

This section contains the results and findings of the evaluation of all jurisdictions and functional entities that participated in the Medical Services Drill conducted October 26, 2023. Each jurisdiction and functional entity were evaluated based on the demonstration of objectives, core capabilities, and capability targets as delineated in the DHS/FEMA Radiological Emergency Preparedness Program Manual dated December 2019. Capability Targets are listed by number and the demonstration status of those capability targets are indicated by the use of the following terms:

- **Met (M):** The jurisdiction or functional entity performed all activities under the objective/capability target to the level required per the work plan and/or the extent-of-play agreement, with no level 1 or level 2 findings evaluated under that objective/capability target during the current activity and no unresolved prior level 2 finding(s).
- **Level 1 Finding (L1):** An observed or identified inadequacy of organizational performance during an assessment activity 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 a nuclear power plant.
- **Level 2 Finding (L2):** An observed or identified inadequacy of organizational performance during an assessment activity that is not considered, by itself, to adversely impact public health and safety.
- **Plan Issue (P):** An observed or identified inadequacy in the offsite response organization's emergency plan/implementing procedures, rather than in that of the offsite response organization's performance.
- **Not Applicable (NA):** The objective/capability target does not apply to the jurisdiction.
- **Not Selected (NS):** For a justifiable reason, the jurisdiction or functional entity did not perform assessment activities under the objective/capability target as specified in the extent-of-play agreement.

Table 3.1.1 Summary – Columbiana County

SITE: Beaver Valley Power Station DATE: October 26, 2023 M: Met L1: Level 1 Finding L2: Level 2 Finding P: Plan Issue NA: Not Applicable NS: Not Selected	East Palestine Fire/EMS	Salem Regional Medical Center
Objective 1: Emergency Operations Management Capability Targets		
1.1: Mobilization	NA	NA
1.2: Direction and Control	NA	NA
1.3: Protective Action Recommendations	NA	NA
1.4: Protective Action Decisions Plume Phase	NA	NA
1.5: Protective Action Decision Implementation Plume Phase	NA	NA
1.6: Protective Action Decisions Post-Plume Phase	NA	NA
1.7: Protective Action Decision Implementation for the Post-Plume Phase	NA	NA
Objective 2: Exposure Control Capability Targets		
2.1: Emergency Worker Exposure Control Decision-Making Process	NA	NA
2.2: Emergency Worker Exposure Control Management	M	M
Objective 3: Alert and Notification Capability Targets		
3.1: Communications	NA	NA
3.2: Alert and Notification of the Public	NA	NA
3.3: Emergency Information and Instructions Public and News Media	NA	NA
Objective 4: Detect, Measure, Sample, Analyze, and Assess Capability Targets		
4.1: Field Monitoring Teams Management	NA	NA
4.2: Plume Phase Measurements and Sampling	NA	NA
4.3: Post-Plume Phase Measurements and Sampling	NA	NA
4.4: Laboratory Operations	NA	NA
4.5: Plume Phase Analysis and Dose Assessment	NA	NA
4.6: Post-Plume Phase Sampling Plan Development and Analysis	NA	NA
Objective 5: Operate Capability Targets		
5.1: Monitoring, Decontamination, Sheltering, and Registration of Evacuees	NA	NA
5.2: Monitoring & Decontamination of Emergency Workers, Equipment, & Vehicles	NA	NA
5.3: Transportation and Treatment of Contaminated, Injured Individuals	M	M
5.4: Traffic and Access Control	NA	NA

3.2 Detailed Results of Exercise Evaluation

The Homeland Security Exercise and Evaluation Program methodology is an analytical process used to assess the demonstration of specific capabilities during an exercise. A capability provides a means to perform one or more capability targets under specified conditions and to specific performance standards. Core capabilities form the foundation of the Department of Homeland Security/Federal Emergency Management Agency Region 5 Radiological Emergency Preparedness Program evaluations. Each jurisdiction's standalone capability summaries are provided below.

3.2.1 Columbiana County

3.2.1.1 East Palestine Fire/EMS

Capability Target: 2.2 Emergency Worker Exposure Control Management

Core Capabilities: Operational Coordination; Environmental Response/Health and Safety; Planning

All activities described in the capability target were carried out in accordance with the plan, procedures, and extent-of-play agreement.

In summary, the status of DHS/FEMA evaluated Capability Target and Core Capabilities is as follows:

MET: The Capability Target and Core Capabilities identified in the DHS/FEMA approved extent-of-play agreement.

Capability Target: 5.3 Transportation and Treatment of Contaminated Injured Individuals

Core Capabilities: Environmental Response/Health and Safety; Public Health, Healthcare, and Emergency Medical Services; Planning

All activities described in the capability target were carried out in accordance with the plan, procedures, and extent-of-play agreement.

In summary, the status of DHS/FEMA evaluated Capability Target and Core Capabilities is as follows:

MET: The Capability Target and Core Capabilities identified in the DHS/FEMA approved extent-of-play agreement.

3.2.1.2 Salem Regional Medical Center

Capability Target: 2.2 Emergency Worker Exposure Control Management

Core Capabilities: Operational Coordination; Environmental Response/Health and Safety; Planning

All activities described in the capability target were carried out in accordance with the plan, procedures, and extent-of-play agreement.

In summary, the status of DHS/FEMA evaluated Capability Target and Core Capabilities is as follows:

MET: The Capability Target and Core Capabilities identified in the DHS/FEMA approved extent-of-play agreement.

Capability Target: 5.3 Transportation and Treatment of Contaminated Injured Individuals
Core Capabilities: Environmental Response/Health and Safety; Public Health, Healthcare, and
Emergency Medical Services; Planning

All activities described in the capability target were carried out in accordance with the plan, procedures, and extent-of-play agreement.

In summary, the status of DHS/FEMA evaluated Capability Target and Core Capabilities is as follows:

MET: The Capability Target and Core Capabilities identified in the DHS/FEMA approved extent-of-play agreement.

Section 4: Conclusion

The DHS/FEMA assesses offsite response organization preparedness on an ongoing basis in accordance with Title 44 C.F.R. § 350, 351, 352, 353, and 354 planning standards, the DHS/FEMA REP Program Manual guidance, the National Preparedness Goal, and through the assessment of selected core capabilities and capability targets. This report documents the demonstration-based assessment activities pursuant to the core capabilities and capability targets selected for the East Palestine Fire Department and Salem Regional Medical Center Medical Services Drill.

The analysis of capabilities in Section 3 described the State of Ohio's Beaver Valley Power Station offsite response capabilities and actions taken during October 26, 2023, drill. The demonstration-based assessment activities evaluated by objectives, core capabilities, and capability targets were successfully demonstrated. All offsite response organizations demonstrated knowledge of their emergency response plans and procedures and successfully demonstrated the ability to protect the health and safety of the public in the event of an incident involving the Beaver Valley Power Station.

The DHS/FEMA evaluation team identified no Findings or Plan Issues identified for the State of Ohio and Columbiana County.

Based on the results of this Medical Services Drill, the planning and preparedness for the State of Ohio and affected local jurisdictions provide reasonable assurance that appropriate measures can be taken to protect public health and safety. Therefore, Title 44 C.F.R. § 350, 351, 352, 353, and 354, approval of the offsite radiological emergency response plans and preparedness for the State of Ohio and Columbiana County remains in effect.

The DHS/FEMA wishes to acknowledge the efforts of the many individuals and organizations who participated and made this exercise a success.

Appendix A: Evaluation Team

EXERCISE DATE: October 26, 2023

SITE: Beaver Valley Power Station

Exercise Management	Name	Agency/ Organization
Chair, Regional Assistance Committee	Sean O’Leary	DHS/FEMA
Exercise Director	Edward Golinski	DHS/FEMA
Ohio Site Specialist	Todd Trygier	DHS/FEMA
Ohio Site Specialist	Brian Reinhart	DHS/FEMA

Evaluated Offsite Response Organizations/Locations	Evaluator	Agency/ Organization
Columbiana County		
East Palestine Fire/EMS	Todd Trygier	DHS/FEMA
Salem Regional Medical Center	Brian Reinhart	DHS/FEMA

Appendix B: Acronyms and Abbreviations

ACRONYM	DESCRIPTION
BVPS	Beaver Valley Power Station
CFR	Code of Federal Regulations
DHS	Department of Homeland Security
EMS	Emergency Medical Services
EPZ	Emergency Planning Zone
FEMA	Federal Emergency Management Agency
MS-1	Medical Services
NUREG	United States Nuclear Regulatory Commission Regulation
REP	Radiological Emergency Preparedness

Appendix C: Extent-of-Play Agreements

Medical Services Exercise

Beaver Valley Power Station

Radiological Emergency Preparedness (REP) Program

Extent-of-Play Agreement for Columbiana County



October 26, 2023

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Section 1: Exercise Overview

Overarching Purpose

The purpose of this extent of play agreement (EOP) identifies the conditions that will be used to conduct, control and evaluate the 2023 Columbiana County Medical Services exercise, as agreed to by the offsite response organizations and Federal Emergency Management Agency (FEMA) Region 5, Radiological Assistance Committee (RAC) Chair.

The extent-of-play agreement is negotiated during the exercise planning process and documents deviations from activities as described in plans and procedures for exercise demonstration purposes. The extent-of-play agreement identifies the capability targets that will be evaluated during the exercise, including any exceptions, as well as the entities responsible for demonstrating the capability targets.

Scope

The exercise has Out-of-Sequence field demonstration activities.

Out of Sequence activities will be managed by the Lead Controller at each field location and will be run independently. All demonstrations will commence promptly and, barring any complications, not continue past the end time. (See Table – 1)

Demonstration Windows

Demonstration windows are those periods of time designated in the exercise during which specified demonstrations will be accomplished.

The schedule of activities including OROs, locations, dates, and times for In- and Out-of-Sequence Play activities are summarized in Table 1 below. Additional information is provided in Section 4.

Table 1 – Schedule of Activities

(All in-sequence times are approximations.)

Activity	ORO/Location	Date/Time
Transportation of Contaminated Injured Individuals	East Palestine Fire/EMS	Thursday, October 26, 2023 1:00 p.m. (estimated)
Treatment of Contaminated Injured Individuals	Salem Regional Medical Center	Thursday, October 26, 2023 1:00 p.m. (estimated)

Re-demonstration

All activities will be demonstrated fully in accordance with respective plans and procedures as they would be in an actual emergency. This extent-of-play agreement is written by exception. If an exception is not included below then the activity will be demonstrated as described in plans and/or procedures. Any issue or discrepancy arising during the Medical Services Exercise may be re-demonstrated during the week of the exercise, October 26, 2023, if allowed by the RAC Chair, or as listed in Section 5. This allowance may be granted if it is not disruptive to exercise play and is mutually agreed to by the lead offsite response

organization controller and lead FEMA evaluator. Issues resolved as a result of a re-demonstration will be noted as Findings resolved through re-demonstration.

Activities, Core Capabilities, and Exercise Objectives

Activity	Core Capability	Exercise Objective
Transportation of Contaminated Injured Individuals	Environmental Response/Health and Safety; Public Health, Healthcare, Emergency Medical Services; Planning	Objective 2: Exposure Control Objective 5: Operate
Treatment of Contaminated Injured Individuals	Environmental Response/Health and Safety; Public Health, Healthcare, Emergency Medical Services; Planning	Objective 2: Exposure Control Objective 5: Operate

Section 2: Extent-of-Play Agreement

Standards & References

Columbiana County OROs will use the following references, plans, and procedures during exercise play:

- Beaver Valley Power Station Radiological Emergency Response Plan, Revision 35, January 2023.
- DHS/FEMA REP Program Manual December 2019
- NUREG 0654/FEMA REP 1 Rev. 2
- Beaver Valley Power Station Suggested Operational Guidance, latest revisions.

Exercise Participants

County and local Offsite Response Organizations (ORO) that will participate in this exercise may include but are not limited to the following:

- East Palestine Fire/EMS
- Salem Regional Medical Center

Signatures & Conditions

The following agree to support this exercise as described herein:

Exercise Director	Representative of Participating Organization
Peggy Clark Director Columbiana County EMA	Keith Drabick Chief East Palestine Fire/EMS
	Dr. Anita Hackstedde President & CEO Salem Regional Medical Center

Section 3: Objectives and Exceptions

Objective 2: Exposure Control

Capability Target 2.2: Emergency Worker Exposure Control Management - Emergency workers manage radiological exposure and dose in accordance with the plans/procedures.

Intent: The capability of emergency workers to manage dose and exposure, use equipment (e.g., dosimetry, radio protective drugs), and identify procedures to monitor their exposure and dose, including following procedures to obtain authorization to receive emergency exposures in excess of the PAGs.

Planning reference: NUREG-0654/FEMA-REP-1, Rev. 2 (C.2.c, H.11, H.11.b, K.2.b, K.3, K.3.a, M.1.b, and O.1)

Core Capabilities: Operational Coordination; Environmental Response/Health and Safety; Planning

Exercise Parameters: Direct-reading dosimeters (DRDs), permanent-record dosimeters (PRDs), and potassium iodide (KI) are issued to emergency workers prior to deployment in the field. In the event that the use of KI is recommended for emergency workers, participants will simulate taking KI.

Assessment	Venue(s)	Extent-of-Play
Maintain an appropriate inventory of DRDs that are leak-tested or current in calibration.	East Palestine Fire/EMS Salem Regional Medical Center	No Exceptions
Maintain an appropriate inventory of PRDs.	East Palestine Fire/EMS Salem Regional Medical Center	No Exceptions
Emergency workers must demonstrate basic knowledge of procedures for using KI and the use of dosimeters whether or not the scenario drives the implementation of KI use. This can be accomplished by an interview with the evaluator	East Palestine Fire/EMS Salem Regional Medical Center	Exception- Hospital staff is outside the EPZ, KI is not required for them.
Retain an adequate supply of radioprotective drugs.	East Palestine Fire/EMS	No Exception
Adequately distribute appropriate DRDs and PRDs.	East Palestine Fire/EMS Salem Regional Medical Center	No Exception
Adequately distribute radioprotective drugs to emergency workers.	East Palestine Fire/EMS	No Exception
Record and report exposures in the field.	East Palestine Fire/EMS	No Exception

Assessment	Venue(s)	Extent-of-Play
	Salem Regional Medical Center	
Implement decisions to administer radioprotective drugs.	East Palestine Fire/EMS	Exception: Ingestion of KI will be simulated.
Report to individual responsible for managing exposure and dose when limits are reached.	East Palestine Fire/EMS Salem Regional Medical Center	No Exception
Implement exposure control decisions to members of the public from radiological exposure and control dose for those who are authorized to temporarily reenter a restricted area.	Not Selected	Performed during county RRRR exercise.

Objective 5: Operate

Capability Target 5.3: Transportation and Treatment of Contaminated Individuals - Transport contaminated, injured individuals to medical facilities with the capability to monitor and decontaminate.

Intent: The capability to provide medical transport and treatment services to contaminated, injured individuals.

Planning reference: NUREG-0654/FEMA-REP-1, Rev. 2 (C.2.d, F.2, H.11, H.12, J.2, K.3, K.4, L.1, L.3, L.4, and O.1)

Core Capabilities: Environmental Response/Health and Safety; Public Health, Healthcare, Emergency Medical Services; Planning

Exercise Parameters: East Palestine Fire/EMS will be the transportation provider for this exercise. Salem Regional Medical Center will be the treatment facility for this exercise.

Assessment	Venue(s)	Extent-of-Play
Transport contaminated, injured individuals to medical facilities.	East Palestine Fire/EMS	The actual transport will occur at East Palestine Fire/EMS to Salem Regional Medical Center
Maintain communications between the medical transportation provider and the receiving medical facility.	East Palestine Fire/EMS Salem Regional Medical Center	No Exception
Operationally check instruments and equipment.	East Palestine Fire/EMS Salem Regional Medical Center	No Exception
Set-up, activate, and operate an REA.	Salem Regional Medical Center	No Exception

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Assessment	Venue(s)	Extent-of-Play
Monitor and decontaminate the individual, equipment, and other items.	Salem Regional Medical Center	No Exception

Section 4: Demonstration Locations, Dates, Times, and Contacts

THURSDAY, October 26, 2023

PATIENT TRANSPORT – EAST PALESTINE FIRE/EMS			
Address:	East Palestine Fire/EMS		
	67 E. Clark St		
	East Palestine, OH 44413		
Contact:	Brian Rutledge		
Telephone:	(330) 360-6912		
Action Location:	Same as Above		
Date:	Thursday, October 26, 2023		
Time:	1:00 p.m. – 4:30 p.m. (estimated)		

PATIENT TREATMENT – SALEM REGIONAL MEDICAL CENTER		
Address:	Salem Regional Medical Center	
	1995 E State St	
	Salem, OH 44460	
Contact:	Peggy Clark	
Telephone:	(742) 312-7144	
Action Location:	Same as Above	
Date:	Thursday, October 26, 2023	
Time:	1:00 p.m. – 4:30 p.m. (estimated)	

Section 5: Back-up Documentation

Re-demonstration Criterion

- 2.2 – May be re-demonstrated immediately for credit, at the decision of the Jurisdiction FEMA Team Leader
- 5.3 – May be re-demonstrated immediately for credit, at the decision of the Jurisdiction FEMA Team Leader

Section 6: Acronyms

Acronym	Term
DHS	U.S. Department of Homeland Security
DRD	Direct-Reading Dosimeter
EMS	Emergency Medical Services
EPZ	Emergency Planning Zone
FEMA	Federal Emergency Management Agency
KI	Potassium Iodide
ORO	Offsite Response Organization
PRD	Permanent Record Dosimeter
RAC	Regional Assistance Committee
REA	Radiation Emergency Area
REP	Radiological Emergency Preparedness
RRRR	Relocate, Reenter, Return, Recovery