Beaver Valley Power Station
Shippingport, PA
Weirton Medical Center – West Virginia
After Action Report
Exercise Date – March 31, 2023
Radiological Emergency Preparedness (REP) Program

Published May 1, 2023

FEMA

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Beaver Valley Power Station Medical Services Drill After Action Report

Published Date: May 1, 2023

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EXECUTIVE SUMMARY

On March 31, 2023, a Medical Services Drill was conducted for the 10-mile Plume Exposure Pathway, Emergency Planning Zone (EPZ) around the Beaver Valley Power Station (BVPS) by the Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA) Region 3. The most recent prior Medical Services Drill for this site was conducted virtually and through the granting of exercise credit on March 31, 2021 due to the ongoing Covid-19 Public Health Emergency.

The purpose of the BVPS Medical Services Drill was to assess the State and local offsite response organizations' preparedness in responding to a radiological medical emergency. The Drill was held in accordance with FEMA's policies and guidance concerning the evaluation of State and local Radiological Emergency Response Plans (RERP) and procedures.

FEMA wishes to acknowledge the efforts of the many individuals in the State of West Virginia, the Weirton Medical Center, and the Brooke County Emergency Medical Service (EMS) Station 2 who were evaluated during this drill.

Protecting the public health and safety is the full-time job of some of the Drill participants and an additional assigned responsibility for others. Still, others have willingly sought this responsibility as volunteers providing vital emergency services twenty-four (24) hours a day to the communities in which they live. Cooperation and teamwork of all the participants was observed during this Drill.

This report contains the final evaluation of the Medical Services Drill. The State of West Virginia, the Weirton Medical Center, and the Brooke County EMS Station 2, demonstrated knowledge of their emergency response plans and procedures and adequately implemented them. There were no Level 1 or Level 2 Findings or Plan Issues as a result of this Drill.

Section 1 of this report, entitled Overview, presents the Exercise Planning Team and the Participating Organizations.

Section 2 of this report, entitled Design Summary, and includes the Purpose and Design, Objectives, Capabilities, and Activities, and the Scenario Summary.

Section 3 of this report, entitled Analysis of Capabilities contains detailed Exercise Evaluation and Results; a Summary Results of Evaluation; and Capability Target Demonstration and Evaluation Guidance Summary. Information on the demonstration for each jurisdiction or functional entity evaluated is presented in a jurisdiction-based, issue-only format.

Section 4 of this report, entitled Conclusion, is a description of FEMA's overall assessment of the capabilities of the participating organizations.

SECTION 1: EXERCISE OVERVIEW

1.1 Drill Details

Drill Name
2023 Weirton Medical Center Medical Services Drill

Type of Drill
Medical Services

Drill Date
March 31, 2023

Program
Department of Homeland Security/FEMA Radiological Emergency Preparedness Program

Scenario Type
Radioactive Contaminated/Injured Person

1.2 Planning Team Leadership

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1.3 Participating Organizations

Agencies and organizations of the following jurisdictions participated in the 2023 BVPS Medical Services Drill:

State Jurisdiction

State of West Virginia

- West Virginia Emergency Management Division

Risk Jurisdiction

- Hancock County Emergency Services

Support Jurisdiction

- Brooke County EMS Station 2

Private Organizations

- Weirton Medical Center

SECTION 2: DESIGN SUMMARY

2.1 Purpose and Design

On December 7, 1979, the President directed the Federal Emergency Management Agency (FEMA) to assume the lead responsibility for all off-site radiological planning and response. FEMA's activities were conducted pursuant to 44 Code of Federal Regulations (CFR) Parts 350, 351 and 352. These regulations are a key element in the Radiological Emergency Preparedness (REP) Program that was established following the Three Mile Island accident in March 1979.

44 CFR 350 establishes the policies and procedures for FEMA's initial and continued approval of State and local governments' radiological emergency planning and preparedness for commercial nuclear power plants. This approval is contingent, in part, on State and local government participation in joint exercises with licensees. FEMA's responsibilities in radiological emergency planning for fixed nuclear facilities include the following:

A. Taking the lead in offsite emergency planning and in the review and evaluation of radiological emergency response plans and procedures developed by State and local governments,
B. Determining whether such plans and procedures can be implemented on the basis of observation and evaluation of exercises of the plans and procedures conducted by State and local governments,
C. Responding to requests by the U.S. Nuclear Regulatory Commission (NRC) pursuant to the Memorandum of Understanding between the NRC and FEMA dated December 7, 2015 (Federal Register, Vol. 81, No. 57, March 24, 2016) and,
D. Coordinating the activities of the following Federal agencies with responsibilities in the radiological emergency planning process:
   - U.S. Department of Commerce
   - U.S. Nuclear Regulatory Commission
   - U.S. Environmental Protection Agency
   - U.S. Department of Energy
   - U.S. Department of Health and Human Services
   - U.S. Department of Transportation
   - U.S. Department of Agriculture
   - U.S. Department of the Interior
   - U.S. Food and Drug Administration

Representatives of these agencies serve on the Region 3 Regional Assistance Committee (RAC), which is chaired by FEMA. A Radiological Emergency Preparedness Medical Services Drill was conducted on March 31, 2023, to assess the capabilities of State and local emergency preparedness organizations in implementing their Radiological Emergency Response Plans (RERP) and procedures to protect the public health and safety during a radiological emergency involving the Beaver Valley Power Station.

The purpose of this exercise report is to present the drill results and findings on the performance of the off-site response organizations (OROs) during a simulated radiological emergency involving a contaminated injured individual.

The drill was designed to demonstrate and evaluate the responder's knowledge of patient and responder personal protective measures, equipment preparation and employment, and decontamination procedures. All activities were demonstrated in accordance with the participants' plans and procedures as they would be performed in an actual emergency, except as agreed to in the Exercise Plan and Extent-of-Play (EOP) Agreement.

The findings presented in this report are based on the evaluations of the Federal evaluator team, with final determinations made by the FEMA Region 3 Regional Assistance Committee (RAC) Chairperson and approved by FEMA Headquarters. These reports are provided to the Nuclear Regulatory Commission (NRC) and participating States. State and local governments utilize the findings contained in these reports for the purposes of planning, training, and improving emergency response capabilities.

The Capability Target utilized in the FEMA evaluation process are contained in the following:

- NUREG-0654/FEMA-REP-1, Rev. 2, "Capability Target for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," December 2019; and
- Radiological Emergency Preparedness Program Manual, December 2019.

2.2 Objectives, Capabilities and Activities

The Beaver Valley Power Station Medical Services Drill evaluated by FEMA was designed to demonstrate that the ORO can transport, transfer, monitor, decontaminate and treat a contaminated/injured person while minimizing any cross contamination during a radiological emergency. The demonstration included the ability to:

A. Respond to a radiation medical emergency following Hancock County Emergency Services, and the Weirton Medical Center procedures.
B. Monitor for radiation contamination and uptake, and to validate persons providing these services are adequately prepared to handle contaminated individuals.
C. Conduct timely and accurate communications between the hospital and offsite response agencies.
D. Exhibit correct priorities and appropriate techniques in Emergency Medical Services (EMS); transportation of patients; and pre-hospital and hospital emergency care of patients contaminated with radiation.
E. Demonstrate inter-agency cooperation between the Hancock County Emergency Services, and the Weirton Medical Center.

2.3 Scenario Summary

The scenario began at 0902 with a notification to the Weirton Medical Center, and the Brooke County EMS Station 2 via an exercise controller, that a Site Area Emergency (SAE) was declared at the Beaver Valley Power Station (BVPS).

At 0915, Weirton Medical Center was notified that a General Emergency was declared at BVPS and that there was an accident outside the plant. An emergency worker (EW) assigned to women's decontamination room trips and lands hands first on the concrete floor. The EW has a deformity to their left wrist and is complaining of great pain in the area. The patient's hands both have abrasions. The EW's pants are wet and have dirt to both knees.

At 0930, the Brooke County EMS Station 2 were directed to pick-up the patient for transport to the hospital. At 0945 the hospital was notified that the EMS were enroute with a potentially contaminated patient and provided an estimated arrival of 1000.

At 1000, the ambulance arrived at the hospital and conducted a clean transfer of the patient to the medical staff. In preparation for receiving the patient, the hospital Radiation Safety Officer mobilized the Radiation Emergency Area (REA) staff and conducted a radiological safety briefing to the hospital staff along with a set-up of the REA prior to the patient arrival.

The patient was appropriately treated for injuries and decontaminated prior to release from the hospital. The exercise was terminated at 1100.

SECTION 3: ANALYSIS OF CAPABILITIES

3.1 Evaluation and Results

Contained in this section are the results and findings of the evaluations of all jurisdictions and locations that participated in the March 31, 2023 Beaver Valley Power Station Medical Services Drill. The Drill was conducted to demonstrate the ability of the OROs to respond to a potentially contaminated injured person.

Each jurisdiction and functional entity were evaluated on the basis of their demonstration of the appropriate Demonstration and Evaluation Guidance contained in the REP Program Manual. Detailed information on the Demonstration and Evaluation Guidance, and the Extent-of-Play Agreement is found in Appendix C.

The Drill was conducted and evaluated in accordance with the Radiological Emergency Preparedness Program Manual (December 2019) and NUREG-0654/FEMA-REP-1, Rev. 2. These Capability Targets included:

1.2 - Direction and Control, equipment, maps, displays, monitoring instruments, dosimetry, Potassium Iodide (KI) and other supplies are sufficient to support emergency operations.

2.2 - Emergency Worker Exposure Control Management

5.3 - Transportation and Treatment of Contaminated, Injured Individuals

3.2 Summary Results of Evaluation

The matrix presented in Table 3.1, on the following page, presents the status of the Capability Targets from the REP Program Manual that were scheduled for demonstration during this Drill by all participating jurisdictions and functional entities. Drill Demonstration and Evaluation Guidance are listed by number and the demonstration status of the Capability Target is indicated by the use of the following letters:

- (L1) Level 1 Finding: An observed or identified inadequacy of organizational performance in 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 event of a radiological emergency to protect the health and safety of the public living in the vicinity of a Nuclear Power Plant.
- (L2) Level 2 Finding: An observed or identified inadequacy of organizational performance in an assessment activity that is not considered, by itself, to adversely impact public health and safety.
- (P) Plan Issue: An observed or identified inadequacy in the off-site response organizations' emergency plan/implementing procedures, rather than that of the ORO's performance.
- (N) Not Demonstrated: The term applied to the status of a REP Evaluation Area Criterion indicating that the ORO, for a justifiable reason, did not demonstrate the Evaluation Area Criterion, as required in the Extent-of-Play Agreement or at the two-

year or eight-year interval required in the FEMA REP Program Manual.

- (M) Met: The status of a REP Evaluation Area Criterion indicating that the participating ORO demonstrated all demonstration Capability Target for the Evaluation Area Criterion to the level required in the Extent-of-Play Agreement with no findings assessed in the current exercise and no unresolved prior findings.

Table 3.1 – Summary of Drill Evaluation

Date: 2023 March 31 Site: Beaver Valley Power Station (M) Met, (1) Level 1 Finding, (2) Level 2 Finding, (P) Planning Issue	Capability Targets	Weirton Medical Center	Brooke County EMS Station 2
Objective 1: Emergency Operations Management			
Direction and Control, Facilities, Equipment, Supplies to Support Operations	1.2	M	M
Objective 2: Exposure Control			
Emergency Worker Exposure Control Management	2.2	M	M
Objective 5: Operate			
Transportation/Treatment of Contaminated, Injured Individuals	5.3	M	M

3.3. Capability Targets Evaluation Summaries

3.3.1 Private Organizations

In summary, the status of DHS/FEMA Capability Target for the Private Sector Organizations are as follows:

3.3.1.1 Weirton Medical Center

a. Met: 1.2, 2.2, 5.3
b. Level 1 Findings: NONE
c. Level 2 Findings: NONE
d. Plan Issues: NONE
e. Prior Issues – Resolved: NONE
f. Prior Issues – Unresolved: NONE

3.3.1.2 Brooke County EMS Station 2

a. Met: 1.2, 2.2, 5.3
b. Level 1 Findings: NONE
c. Level 2 Findings: NONE
d. Plan Issues: NONE
e. Prior Issues – Resolved: NONE
f. Prior Issues – Unresolved: NONE

SECTION 4: CONCLUSION

The State of West Virginia and private sector organizations demonstrated knowledge of their radiological emergency response plans and procedures and they were successfully implemented during the Beaver Valley Power Station Medical Services Drill evaluated on March 31, 2023.

Two FEMA evaluators provided analyses of three Capability Targets. These analyses resulted in a determination of no Findings, no new Plan issues, and no unresolved Plan Issues.

The Brooke County EMS Station 2 successfully demonstrated that necessary equipment and supplies were available to support the treatment of an injured/contaminated patient, and prioritized life-saving medical practices over contamination concerns, implemented protective measures through the use of personal protective equipment, regular glove changes, and control of cross contamination. Appropriate patient assessments were demonstrated as well as regular and ongoing communications with the Weirton Medical Center.

The Weirton Medical Center successfully demonstrated the mobilization of staff, staffing assignments, issue of dosimetry and monitoring equipment, and effective use of personal protective equipment during the exercise. The hospital staff effectively responded to communications from the Weirton Medical Center initiated the set-up and management of a Radiation Emergency Area, and accepted and successfully treated an injured/contaminated patient while administering life-saving medical attention over contamination concerns. In addition, the medical facility provided security control of the facility and overall protective measures for contamination control and prevention of cross-contamination.

Based on the results of the Drill and a review of the offsite radiological emergency response plans and procedures submitted, FEMA Region 3 has determined they are adequate (meeting the planning and preparedness standards of NUREG-0654/FEMA-REP-1, Revision 2, December 2019, as referenced in 44 CFR 350.5) and there is reasonable assurance they can be implemented, as demonstrated during this Drill.

An Improvement Plan (IP) will not be developed as part of this report.

APPENDIX A: EVALUATORS AND TEAM LEADERS

The following is the list of Evaluators and Team Leaders for the Beaver Valley Power Station Medical Services Drill evaluated on March 31, 2023. The following constitutes the managing staff for the evaluation:

- Tina Thomas, DHS/FEMA, Emergency Management Specialist
- Joseph Suders, DHS/FEMA, Senior Emergency Management Specialist

DATE: March 31, 2023
SITE: Beaver Valley Power Station

LOCATION	EVALUATORS	AGENCY
Weirton Medical Center	Joseph Suders	FEMA R3
Brooke County EMS Station 2	Tina Thomas	FEMA R3

APPENDIX B: ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
AAR	After Action Report
ALARA	As Low As Reasonably Achievable
ALC	Annual Letter of Certification
ANS	Alert and Notification System
BRP	Bureau of Radiation Protection
DHS	Department of Homeland Security
DRD	Direct Reading Dosimeter
EMS	Emergency Medical Services
EOP	Extent of Play
EPZ	Emergency Planning Zone
FEMA	Federal Emergency Management Agency
FMT	Field Monitoring Team
GE	General Emergency
IP	Improvement Plan
KI	Potassium Iodide
BVPS	Beaver Valley Power Station
MS	Medical Services
NRC	Nuclear Regulatory Commission
ORO	Offsite Response Organization
PEMA	Pennsylvania Emergency Management Agency
PPE	Personal Protective Equipment
PRD	Permanent Record Dosimeter
RAC	Regional Assistance Committee
REA	Radiation Emergency Area
REP	Radiological Emergency Preparedness
RERP	Radiological Emergency Response Plan
SAE	Site Area Emergency
SAV	Staff Assistance Visit
SOP	Standard Operating Procedure

APPENDIX C: EXTENT-OF-PLAY AGREEMENT

The Extent-of-Play Agreement was extracted from the Exercise Plan, which was drafted by the West Virginia Emergency Management Division, and is included in this report as an Appendix. The Extent-of-Play was negotiated and agreed upon by FEMA Region 3, and the West Virginia Emergency Management Division.

The Extent-of-Play was created as an overall tool for facilitation and implementation of the BVPS Medical Services Drill and to integrate the concepts and policies of the Homeland Security Exercise Evaluation Program with the Radiological Emergency Preparedness Program Exercise Methodology.

Method of Operation and Extent of Play

OBJECTIVE 1 – Emergency Operations Management

Capability Target 1.2: Direction and Control *(Vice Sub-Element 1.b.1, 1.c.1, 1.e.1)*
Core Capabilities: Operational Coordination; Environmental Response/Health and Safety; Public Information and Warning; Mass Care Services; Public Health, Healthcare, and Emergency Medical Services; Situational Assessment; Critical Transportation; Planning
Recommended Evaluation Frequencies: At every assessment activity
Recommended Assessment Activities: Exercise; Drill
Planning Reference: NUREG-0654/FEMA-REP-1, Rev. 2 (A.1, A.1.a, A.1.b, A.1.c, A.2, A.3, A.5, C.2, C.2.a, C.2.b, C.3, D.4, E.1, H.6, and O.1)
Intent: The capability to provide overall direction and control of response efforts, commensurate with the responsibilities of leadership, as detailed in plans/procedures.

Demonstration and Evaluation Guidance:

- Support protective action decision-making.
- Conduct briefings in a timely manner.
- Maintain situational awareness.
- Coordinate response activities with other organizations.
- Obtain resources to support emergency operations.
- Provide and maintain adequate facilities and equipment to support the emergency response.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

State Negotiated Extent of Play:
N/A
Risk Jurisdictions Negotiated Extent of Play:
Equipment and supplies may be inspected prior to or after exercise play for evaluation purposes.
Support Jurisdictions Negotiated Extent of Play:
N/A
Outstanding Issues:
None

OBJECTIVE 2 - Exposure Control

Capability Target 2.2: Emergency Worker Exposure Control Management *(VICE Sub-Element 3.a.1)*
Core Capabilities: Operational Coordination; Environmental Response/Health and Safety; Planning
Recommended Evaluation Frequencies: Biennially
Recommended Assessment Activities: Exercise; Drill
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)
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.

Demonstration and Evaluation Guidance:

- Maintain an appropriate inventory of DRDs that are leak-tested or current in calibration.
- Maintain an appropriate inventory of PRDs.
- Retain an adequate supply of radioprotective drugs.
- Adequately distribute appropriate DRDs and PRDs.
- Adequately distribute radioprotective drugs to emergency workers.
- Record and report exposures in the field.
- Implement decisions to administer radioprotective drugs.
- Report to individual responsible for managing exposure and dose when limits are reached.
- 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.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

State Negotiated Extent of Play:
N/A
Risk Jurisdictions Negotiated Extent of Play:
The facility is located outside the 10-mile EPZ and KI is not distributed to hospital personnel.
Support Jurisdictions Negotiated Extent of Play:
N/A
Outstanding Issues:
None

OBJECTIVE 5 - Operate

Capability Target 5.3: Transportation and Treatment of Contaminated, Injured Individuals *(Vice Sub-Element: 6.d.1)*
Core Capabilities: Environmental Response/Health and Safety; Public Health, Healthcare, Emergency Medical Services; Planning
Recommended Evaluation Frequencies: Biennially
Recommended Assessment Activities: Medical Services Drill (N.4.b)
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)
Intent: The capability to provide medical transport and treatment services to contaminated, injured individuals.

Demonstration and Evaluation Guidance:

Transportation

- Transport contaminated, injured individuals to medical facilities.
- Maintain communications between the medical transportation provider and the receiving medical facility.

Medical Facility

- Operationally check instruments and equipment.
- Set-up, activate, and operate an REA.
- Monitor and decontaminate the individual, equipment, and other items.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

State Negotiated Extent of Play:
N/A
Risk Jurisdictions Negotiated Extent of Play:
The exercise will start at the Site Area Emergency level. The ambulance and hospital staff will not cover surfaces for exercise purposes. The staff may be interviewed regarding covering surfaces (floors, walls, etc.) Transportation of the patient to the hospital during the exercise will be in a non-emergent fashion obeying all traffic and safety guidelines. The exercise will be conducted in an area that may have regular hospital operational traffic and may require allowing those patients and personnel to pass through the exercise area, demonstration of securing the area for a true event may be done by interview so that the day-to-day operations and patient care is not interrupted. Removing of clothing of a "live" actor will be clothing designated to be removed to protect modesty, should a manikin be used as a victim then all articles requiring removal may be removed.
Support Jurisdictions Negotiated Extent of Play:
N/A
Outstanding Issues:
None

Appendix C: Participating Agencies

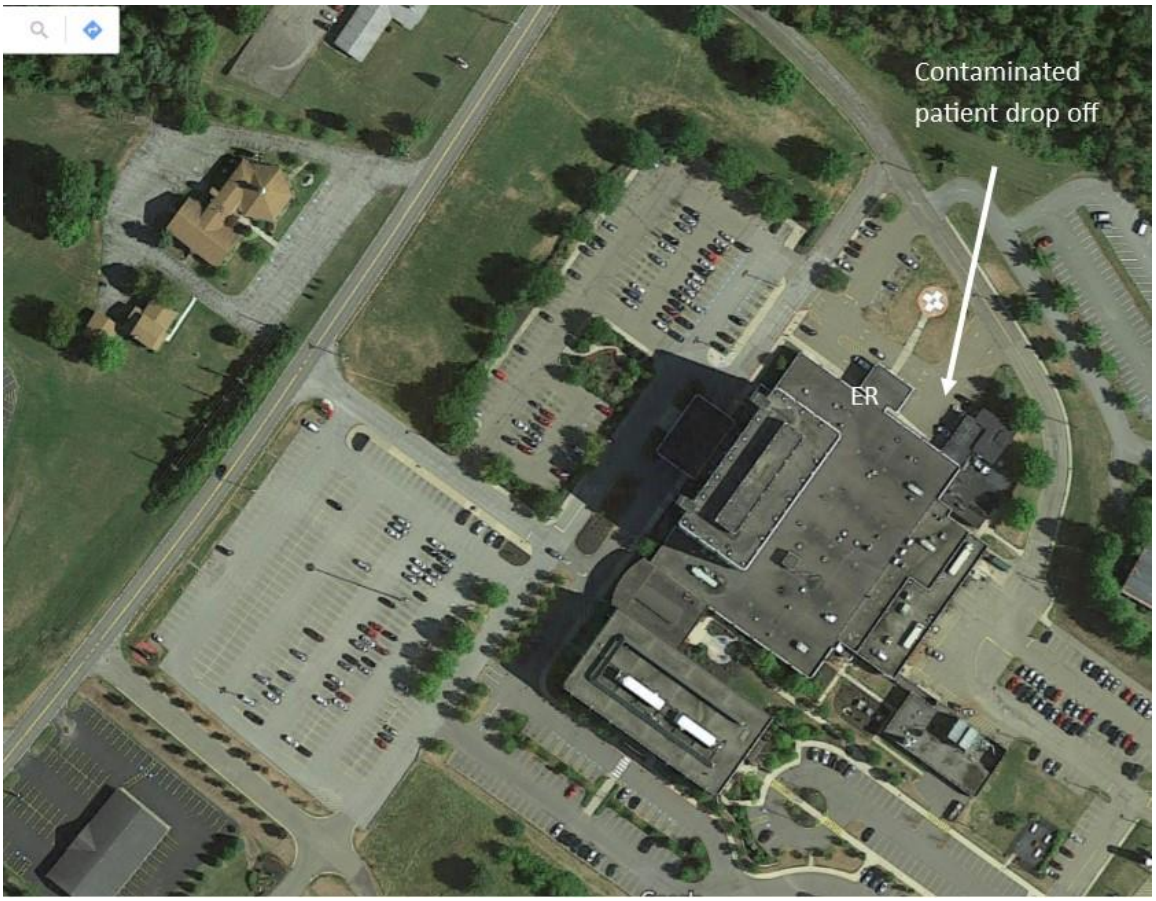
Federal Agencies
FEMA Region 3 REP

State Jurisdictions
WV EMD
WV DHHR
Risk Jurisdictions
Hancock County HSEM
Brooke County EMS
Private Sector Organizations
Weirton Medical Center
Beaver Valley Power Station

Appendix D: Directions/Addresses/Maps

List all Exercise Locations with Addresses

Risk Locations	
Venue	**Address**
Weirton Medical Center	601 Colliers Way, Weirton, WV 26062
Brooke County Ambulance Station 2	10110 SR-2, Follansbee, WV 26037



Weirton Medical Center

Brooke EMS Station 2

Appendix E: Acronyms

Acronym	Description
AAC	Accident Assessment Center
AAM	After-Action Meeting
AAR	After-Action Report
ACP	Access Control Point
ALARA	As Low As Reasonably Achievable
ALC	Annual Letter of Certification
ANS	Alert and Notification System
ANSI	American National Standards Institute
ARC	American Red Cross
ARES	Amateur Radio Emergency Services
A-Team	Advisory Team for Environment, Food, and Health
BRP	Bureau of Radiation Protection
BURA	Back Up Route Alerting
BVPS	Beaver Valley Power Station
BZ	Buffer Zone
CAD	Computer Aided Display
C/E	Controller and Evaluator
CED	Committed Effective Dose
CC	Core Capabilties
CCC	Congregate Care Center
CDC	U.S. Center for Disease Control and Prevention
CCL	Core Capabilities List
CCNP	Cisco Certified Network Professional
CCNPP	Calvert Cliffs Nuclear Power Plant
C/E	Controller Evaluator
CDE	Committed Dose Equivalent
CDV	Civil Defense Victoreen
CERC	Corporate Emergency Response Center
CERT	Community Emergency Response Team
CFR	Code of Federal Regulations
CNS	Commonwealth Notification System
C&O	Concepts and Objectives Meeting
CO	Communication Officer
COL	Combined Operating License
CPG	Comprehensive Preparedness Guide
CPM	Counts Per Minute
CRCC	Commonwealth Response Coordination Center
CST	Civil Support Team
DAC	Dose Assessment Coordinator
DAD	Digital Alarming Dosimetry
DAS	Director of Auxillary Services
DCPM	Disintegrating Counts Per Minute
DDHS	U.S. Department of Health and Human Services
DEMA	Delaware Emergency Management Agency
DHS	U.S. Department of Homeland Security
DIL	Derived Intervention Level
DIR	Disaster Initiated Review
DOE	U.S. Department of Energy

DOT	U.S. Department of Transportation
DRD	Direct Reading Dosimeter
DRF	Dosimetry Record Form
DRL	Derived Response Level
DSP	Delaware State Police
EA	Exception Area
EA	Exclusion Area
EA	External Affairs
EAC	Evacuation Assembly Center
EAL	Emergency Action Level
EARA	Exception Area Route Alerting
EAS	Emergency Alert System
EC	Emergency Coordinator
EEG	Exercise Evaluation Guide
ECL	Emergency Classification Level
ECO	Exposure Control Officer
EDE	Effective Dose Equivalent
EMC	Emergency Management Coordinator
EMD	Emergency Management Director
EMnet	Emergency Management Network
EMS	Emergency Medical Services
ENS	Emergency Notification System
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EOP	Extent of Play
EPA	U.S. Environmental Protection Agency
EPT	Exercise Planning Team
EPZ	Emergency Planning Zone
ER	Emergency Room
ERDS	Emergency Response Data System
ERM	Emergency Response Manager
ERO	Emergency Response Organization
ERV	Emergency Response Vehicle
ESC	Emergency Services Coordinator
ESF	Emergency Support Function
ESP	Early Site Permit
ETA	Estimated Time of Arrival
ETE	Evacuation Time Estimate
EW	Emergency Workers
EWMDS	Emergency Worker Monitoring and Decontamination Station
ExPlan	Exercise Plan
FBI	Federal Bureau of Investigation
FCC	U.S. Federal Communications Commission
FD	Fire Department
FDA	U.S. Food and Drug Administration
FE	Functional Exerise
FEMA	Federal Emergency Management Agency
FMT	Field Monitoring Team
FPE	Full Participation Exercise
FPM	Final Planning Meeting
FRMAC	Federal Radiological Monitoring Assessment Center
FRPCC	Federal Radiological Preparedness Coordinating Committee
FSE	Full Scale Exercise

FST	Field Sampling Team
FTC	Field Team Coordinator
GE	General Emergency
GIS	Geographic Information Systems
GM	Guidance Memorandum
G-M	Geiger-Mueller
GPS	Global Positioning System
Gy	Gray
HAB	Hostile Action Based
HAN	Health Alert Network
HHS	U.S. Health and Human Services
HazMat	Hazardous Materials
HF	High Frequency
HP	Health Physicist
HSEEP	Homeland Security Exercise and Evaluation Program
HSPD	Homeland Security Presidential Directive
IC	Incident Commander
ICP	Incident Command Post
ICS	Incident Command System
IP	Improvement Plan
IPAWS	Integrated Public Alert and Warning System
IPM	Initial Planning Meeting
IPZ	Ingestion Pathway Zone
IWP	Initial Warning Point
JIC	Joint Information Center
JIS	Joint Information System
KI	Potassium Iodide
LCD	Liquid Crystal Display
LEOF	Local Emergency Operations Facility
LGS	Limerick Generating Station
LHD	Local Health Department
LOA	Letter of Agreement
MCC	Mass Care Center
MDDT	Mobile Data Display Terminal
MDE	Maryland Department of Environment
MDEM	Maryland Department of Emergency Management
MDT	Mobile Data Terminals
MJOC	Media Joint Operations Center
MHz	Megahertz
MIDAS	Meteorological Information Dose Assessment System
MOU	Memorandum of Understanding
MS-1	Medical Services Hospital
MSEL	Master Scenario Events List
MSP	Maryland State Police
NAPS	North Anna Power Station
NAWAS	National Warning System
NEP	National Exercise Program
NGO	Non-Governmental Organization
NIMS	National Incident Management System
NNSA	National Nuclear Security Administration
NOAA	National Oceanic and Atmospheric Administration
NPD	National Preparedness Directorate

NOUE	Notification of Unusual Event
NPP	Nuclear Power Plant
NPS	National Preparedness System
NRC	U.S. Nuclear Regulatory Commission
NRIA	Nuclear Radiological Incident Annex
NUREG	Nuclear Regulatory
NWS	National Weather Service
OCA	Owner Controlled Area
OJT	On-The-Job Training
OOS	Out of Sequence
ORH	Office of Radiological Health
ORO	Offsite Response Organization
OSC	Operations Support Center
OSD	Optically Stimulated Dosimeter
OSHA	U.S. Occupational Safety and Health Administration
OSLD	Optically Stimulated Luminescence Dosimeter
PA	Public Affairs
PAD	Protective Action Decision
PAG	Protective Action Guideline
PAR	Protective Action Recommendation
PARA	Primary Area Route Alerting
PAZ	Protective Action Zone
PCA	Preliminary Capabilities Assessment
PBAPS	Peach Bottom Atomic Powers Station
PD	Police Department
PDAFN	Persons with Disabilities/Access and Funtional Needs
PED	Personal Electronic Dosimeter
PEMA	Pennsylvania Emergency Management Agency
PII	Personally Identifiable Information
PIO	Public Information Officer
PPD	Presidential Policy Directive
PPE	Personal Protective Equipment
PPP	Post-Plume Phase
PRA	Primary Route Alerting
PRD	Permanent Record Dosimeter
PS	Planning Standard
PSP	Pennsylvania State Police
R	Roentgen
RA	Regional Administrator
R/h	Roentgen per hour
RAC	Regional Assistance Committee
RACES	Radio Amateur Civil Emergency Services
RAD	Radiation Absorbed Dose
RAO	Radiation Assessment Officer
RC	Reception Center or Relocation Center
RDO	Radiation Defense Officer
REA	Radiation Emergency Area
REC	Radiation Exposure Control
REM	Roentgen Equivalent Man (rem)
REP	Radiological Emergency Plan
REPP	Radiological Emergency Preparedness Program
RERP	Radiological Emergency Response Plan
RHP	Radiological Health Program

RML	Radiological Mobile Laboratory
RO	Radiological Officer
ROO	Radiological Operations Officer
RPM	Radiological Emergency Preparedness Program Manual
RSO	Radiation Safety Oficer
RTF	Radiological Task Force
SA	Staging Area
SAC	Staging Area Coordinator
SAE	Site Area Emergency
SAIC	Science Applications International Corporation
SAM	Staging Area Manager
SAV	Staff Assistance Visit
SCBA	Self-Contained Breathing Apparatus
SEOC	State Emergency Operations Center
SERS	State Emergency Radio System
SEVAN	State Emergency Voice Activation Network
SFMT	State Field Monitoring Team
SHC	Salem Hope Creek
SIP	Shelter In Place
SIRS	Statewide Interoperability Radio System
SME	Subject Matter Expert
SO	State Official
SOP	Standard Operating Procedure
SPS	Surry Power Station
SRO	School Resources Officer
SSES	Susquehanna Steam Electric Station
SSO	Social Services Officer
STARS	Statewide Area Radio System
SPS	Surry Power Station
Sv	Sievert (sv)
SWAN	State Warning Alert Notification
TAC	Technical Assistance Center
TACP	Traffic and Access Control Point
TCP	Traffic Control Point
TED	Total Effective Dose (whole body dose)
TEDE	Total Effective Dose Equivalent
TEP	Training and Exercise Plan
TEPW	Training and Exercise Planning Workshop
THD	Technological Hazards Division
THIRA	Threat and Hazard Identification and Risk Assessment
TLD	Thermoluminescent Dosimeter
TMI	Three Mile Island
TO	Transportation Officer
TSC	Technical Support Center
TTD/TTY	Telecommunication Device for the Deaf/TeleType
TTX	Tabletop Exercise
UEM	Utility Emergency Manager
USDA	U.S. Department of Agriculture
UTL	Universal Task List
VDEM	Virginia Department of Emergency Management
VDH	Virginia Department of Health
VDOT	Virginia Department of Transportation
VEOC	Virginia Emergency Operations Center

VERT	Virginia Emergency Response Team
VEST	Virginia Emergency Support Team
VHF	Very High Frequency
VMS	Variable Message Sign
VSP	Virginia State Police
VOAD	Voluntary Organizations Active in Disaster
VOIP	Voice Over Internet Protocol
WEA	Wireless Emergency Alerts
WVDEP	West Virginia Department of Environmental Protection
WVDHHR	West Virginia Department of Health and Human Resources
WV EMD	West Virginia Emergency Management Division
WVSP	West Virginia State Police