Calvert Cliffs Nuclear Power Plant

CalvertHealth Medical Center

After Action Report

December 27, 2023

FEMA

This page intentionally left blank

Table of Contents

Executive Summary 4

Section 1: Exercise Overview 5
1.1. Drill Details 5
1.2. Planning Team Leadership 5
1.3. Participating Organizations 5

Section 2: Design Summary 7
2.1. Purpose and Design 7
2.2. Core Capabilities and Objectives 8
2.3. Scenario Summary 8

Section 3: Analysis of Capabilities 10
3.1. Evaluation and Results 10
3.2. Summary Results of Evaluation 10
3.3. Criteria Evaluation Summaries 11

Section 4: Conclusion 14

Appendix A: Exercise Evaluators 15

Appendix B: Extent-of-Play Agreement 16

Executive Summary

On December 1, 2023, a Medical Services Drill was conducted for the 10-mile Plume Exposure Pathway, Emergency Planning Zone (EPZ) around the Calvert Cliffs Nuclear Power Plant (CCNPP) 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 on June 22, 2022.

The purpose of the CCNPP 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. The core capability demonstrated during this drill was: 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, medical, and behavioral health support, and products to all affected populations.

FEMA wishes to acknowledge the efforts of the many individuals in the Maryland Department of Emergency Management, Calvert County Department of Environmental Health, CalvertHealth Medical Center, and Calvert County Emergency Medical Service 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 CCNPP Medical Services Drill. The Maryland Department of Emergency Management, Calvert County Department of Environmental Health, CalvertHealth Medical Center, and Calvert County Emergency Medical Service demonstrated knowledge of their emergency response plans and procedures and adequately implemented them. There were no Level 1 findings, two Level 2 Findings, and no Plan Issues as a result of this Drill. The Level 2 Findings assessed to Calvert Health Medical Center and the Calvert County Department of Environmental Health were successfully redemonstrated during the exercise and are closed.

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
CalvertHealth Medical Center

Type of Drill
Medical Services

Drill Date
December 1, 2023

Program
Department of Homeland Security/FEMA Radiological Emergency Preparedness Program

Scenario Type
Radioactive Contaminated/Injured Person

1.2. Planning Team Leadership

Alexander Hazard
Emergency Management Specialist
DHS/FEMA Region 3
One Independence Mall, 6th Floor 615 Chestnut Street
Philadelphia, PA, 19106-4404
(202) 258-4562
alexander.hazard@fema.dhs.gov

Marci Catlett
Sr. Technological Hazard Preparedness Specialist
Maryland Department of Emergency Management
5401 Rue Saint Lo Drive
Reisterstown, MD 21136

1.3. Participating Organizations

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

State Jurisdiction

- State of Maryland
- Maryland Department of Emergency Management

County Jurisdiction & Private Organizations

- CalvertHealth Medical Center

- Calvert County Department of Environmental Health
- Calvert County Emergency Medical Service

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 based on 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 December 1, 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 CCNPP.

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 criteria utilized in the FEMA evaluation process are contained in the following:

- NUREG-0654/FEMA-REP-1, Rev. 2, "Criteria 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. Core Capabilities and Objectives

The CCNPP 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. Core capabilities-based planning allowed the exercise planning team to develop the objective and observe associated outcomes through a framework of specific action items. Additionally, the objective and capability target assessed met Radiological Emergency Preparedness Program Manual guidance.

The core capability demonstrated during this drill was:

- 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, medical, and behavioral health support, and products to all affected populations.

This core capability, when successfully demonstrated, met the drill objective. The objectives for this drill were:

- Objective 2: Exposure Control
- Objective 5: Operate

The capability targets for this drill were:

- Capability Target 2.2: Emergency Worker Exposure Control Management
- Capability Target 5.3: Transportation and Treatment of Contaminated, Injured Individuals

2.3. Scenario Summary

The scenario began with notification by controller inject to Calvert Health Medical Center (CHMC) that the Calvert Cliffs Nuclear Power Plant (CCNPP) was at General Emergency (GE). The communications for this exercise were communicated by an exercise controller from the Maryland Department of Emergency Management. At 0946, the hospital was notified that an

EMS crew was being dispatched for a potentially contaminated patient in the emergency planning zone.

The EMS crew arrived on scene and was informed the patient was potentially contaminated due to a fall as they were evacuating their residence in the emergency planning zone. The crew with their Personal Protection Equipment (PPE) on approached the area. The patient was a 25-year-old and was complaining of leg pain and was bleeding around their right shin. The EMS crew conducted patient assessment and packaged the patient with contamination control methods in-place for transport to the hospital. The EMS unit called the hospital to notify them of the patient condition and their estimated response time to the hospital. The patient was then transferred from the ambulance to the personnel waiting at the hospital. The ambulance and hospital crew demonstrated handling and screening of the potentially contaminated patient.

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 Calvert Cliffs Nuclear Power Plant Medical Services Drill on December 1, 2023. 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 based on 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:

- Capability Target 2.2 - Emergency Worker Exposure Control Management
- Capability Target 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 pages, 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 criteria is indicated using the following letters:

- (L1) Level 1 Finding: 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 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 during 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 criteria 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: December 1, 2023 Site: Calvert Cliffs Nuclear Power Plant (M) Met, (1) Level 1 Finding, (2) Level 2 Finding, (P) Planning Issue	Capability Targets	CalvertHealth Medical Center	Calvert County Department of Environmental Health	Calvert County Emergency Medical Service
Objective 2: Exposure Control Emergency Worker Exposure Control Management	2.2	M	M	M
Objective 5: Operate Transportation/Treatment of Contaminated, Injured Individuals	5.3	L2 – Closed	L2 – Closed	M

3.3. Criteria Evaluation Summaries

In summary, the status of DHS/FEMA criteria for the County and Private Sector Organizations are as follows:

3.3.1 County and Private Organizations

3.3.2.1 Calvert Health Medical Center

a. Met: 2.2, 5.3
b. Level 1 Findings: NONE
c. Level 2 Findings: ONE (Closed)

CONDITION:
Staff at the Calvert Health Medical Center failed to exercise care to control the spread of radiological contamination when processing a patient in the hospital radiological emergency area (REA). During the decontamination process, the decontamination team did not use proper cross-contamination prevention techniques and improperly irrigated a wound by bending the leg at the knee and not covering adjacent areas or using good radiological hygiene in accordance with the hospital plan. This allowed irrigation runoff to flow down the patient's leg and foot.

POSSIBLE CAUSE:
Although previously trained and briefed on how to successfully conduct these activities, the REA staff did not reference the hospital plan which states that staff will avoid cross contamination of non-contaminated areas by covering the adjacent areas and using good radiological hygiene during patient decontamination.

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)
- Calvert Health Medical Center, Decontamination and Treatment of the Radioactively Contaminated Patient, January 2023

EFFECTS:
Contaminated runoff from the evacuee's wound created a cross contamination

concern that could spread to the evacuee's leg and foot.

CORRECTIVE ACTION:
A pause to drill play and discussion with the Maryland Department of Emergency Management (MDEM) controller and Calvert Health Medical Center leadership resulted in a redemonstration opportunity. MDEM provided corrective training for the hospital staff and successfully redemonstrated decontamination and contamination control procedures once drill play resumed.

a. Plan Issues: NONE
b. Prior Issues – Resolved: NONE
c. Prior Issues – Unresolved: NONE

3.3.2.2 Calvert County Department of Environmental Health

a. Met: 2.2, 5.3
b. Level 1 Findings: NONE
c. Level 2 Findings: ONE (Closed)

CONDITION:
Staff at the Calvert County Department of Environmental Health (CCDEH) failed to exercise care to control the spread of radiological contamination when sending emergency workers to be monitored after transportation of a contaminated evacuee. After the transportation of a potentially contaminated evacuee from the Calvert Cliffs Emergency Planning Zone to the Calvert Health Medical Center the CCDEH staff had the ambulance crew directed to an area that was not sufficient to ensure proper screening of the ambulance crew and reduce spread of contamination.

POSSIBLE CAUSE:
Although previously trained and briefed on how to successfully conduct these activities, staff did not reference their procedures or use contamination control tools that were onsite during the exercise. Signage to direct the ambulance crew to designated areas to be monitored for potential contamination was never set up or used to help limit cross contamination.

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)
- Calvert Health Medical Center, Decontamination and Treatment of the Radioactively Contaminated Patient, January 2023

EFFECTS:
Without proper controls, radiological contamination could have been spread throughout the Calvert Health Medical Center.

CORRECTIVE ACTION:
During the exercise, a pause was called so that the evaluator and controllers could discuss this situation. It was agreed that on-the-spot corrective training would be provided to staff by the Maryland Department of Emergency Management Agency so that this condition could be addressed. Play was resumed upon conclusion of the corrective training, and staff then successfully redemonstrated contamination control

methods for the ambulance crew by CCDEH.

It is recommended that all responders and hospital staff become familiar with the correct contamination control signage available, and hospital security or CCDEH set up the contamination control area outside the Radiation Emergency Area (REA) in accordance with their plans and procedures to ensure emergency workers are properly screened after bringing a patient to Calvert Health Medical Center.

d. Plan Issues: NONE
e. Prior Issues – Resolved: NONE
f. Prior Issues – Unresolved: NONE

3.3.2.3 Calvert County Emergency Medical Service

a. Met: 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 Maryland and private sector organizations demonstrated knowledge of their radiological emergency response plans and procedures and they were successfully implemented during the Calvert Cliffs Nuclear Power Plant Medical Services Drill evaluated on December 1, 2023.

Two FEMA evaluators provided analyses of the core capability: Public Health, Healthcare, and Emergency Medical Services, as well as two capability targets: Emergency Worker Exposure Control Management; and Transportation/Treatment of Contaminated, Injured Individuals. These analyses resulted in a determination of two Level 2 Findings, no new Plan issues, and no unresolved Plan Issues. The Level 2 Findings assessed to Calvert Health Medical Center and the Calvert County Department of Environmental Health were successfully redemonstrated during the exercise and are closed.

Calvert County Emergency Medical Service and Calvert County Department of Environmental Health 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 using personal protective equipment, regular glove changes, and control of cross contamination. Appropriate patient assessments were demonstrated as well as regular and ongoing communications with CalvertHealth Medical Center.

CalvertHealth 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 Calvert County Emergency Medical Service, initiated the set-up and management of a Radiation Emergency Area, 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: Exercise Evaluators

The following is the list of Evaluators for the Calvert Cliffs Nuclear Power Plant Medical Services Drill evaluated on December 1, 2023. The following constitutes the managing staff for the evaluation:

- Alexander Hazard, DHS/FEMA, Emergency Management Specialist
- Taylor Griffiths, DHS/FEMA, Emergency Management Specialist

Location/Venue	Evaluator	Agency
CalvertHealth Medical Center	Alexander Hazard	FEMA Region 3
Calvert County Emergency Medical Service	Taylor Griffiths	FEMA Region 3

Appendix B: Extent-of-Play Agreement

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

The Exercise Plan was created as an overall tool for facilitation and implementation of the Calvert Cliffs Nuclear Power Plant 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.

General Information for Method of Operations and Extent of Play (EOP)

1. MDEM and Constellation Energy will participate as Controllers in this exercise. Controllers are not players and will provide information to initiate and stimulate drill play.
2. FEMA Radiological Emergency Preparedness Program (REPP) Regional Personnel will be the Evaluators.
3. Exercise activities are scheduled to commence on or about 0800hrs on Friday December 1, 2023, at CHMH Classroom where the MDEM Controller will provide a player briefing to the EMS crew. The Hospital FEMA Evaluator will provide the same player briefing to the hospital staff at the same time prior to the exercise start.
4. The exercise will continue until the participants have completed the exercise objectives and demonstrated the Exercise Evaluation Criteria.
5. Participants and agencies will "Stand Down" when the Controllers have confirmed with the Evaluators that all evaluation criteria have been demonstrated and when the State and County Observers are satisfied that the Objectives have been met.
6. During the exercise, any activity that is not satisfactorily demonstrated may be re-demonstrated by the participants during the exercise. The Exercise team are requesting that any deficiencies be re-demonstrated for the Evaluators during the exercise to prevent taking up an extra day of the hospital staff away from caring for their patients. Refresher training may be provided by the players, observers, and/or Controllers.
7. The Calvert Cliffs Nuclear Power Plant (CCNP) and its personnel will not play a role in this exercise.
8. MDEM and the State Emergency Operations Center (SEOC) along with the Calvert County Division of Emergency Management EOC will not be activated as part of this drill.

- **Objectives**
  - Demonstrate the ability to respond to a radiation medical emergency by following the procedures of the Calvert County Division of Emergency Management and CHMC.
  - Demonstrate timely and accurate communications between the hospital and offsite response agencies. (Telephones will be used in lieu of radios

whenever possible to limit the potential misinterpretation of the exercise as an actual event).

- Demonstrate correct priorities and appropriate techniques in EMS, transportation of patients and pre-hospital and hospital emergency care of radioactively contaminated patients.
- Demonstrate inter-agency cooperation between EMS and the hospital.

Extent of Play

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 Environmental Protection Agency Protective Action Guidelines (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.

Assessment – Demonstration and Evaluation Guidance

By observing the OROs' capability to address the appropriate bullet points below and while considering the overall capability being assessed, the following key points of review and associated questions should be considered and will support an evaluation of this capability target.

OROs demonstrate the capability to:

- Maintain an appropriate inventory of Direct Reading Dosimeters (DRDs) that are leak-tested or current in calibration.
- Maintain an appropriate inventory of Permanent Record Dosimetry (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.
- 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.
    - Who briefed emergency workers?

Capability Target 2.2 Calvert County EMS Crew Extent of Play

Table 1 Calvert County EMS Crew Extent of Play

Calvert County EMS Crew Extent of Play
• All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, except as noted below. • The Calvert County EMS crew will be operating within the 10-mile Emergency Planning Zone (EPZ). • The EMS crew will receive their Emergency Worker Brief prior to the start of the Drill. • The Calvert County Department of Environmental Health (DEH) will not participate in the Emergency Worker Brief portion of the Drill. • The Calvert County EMS unit personnel will receive Emergency Worker training kits. • Calvert County Division of Emergency Management will provide a sample Emergency Worker kit and allow the Evaluator to view the Emergency Worker brief.

Capability 2.2 CHMC Extent of Play

Table 2 Capability Target 2.2 CHMC Extent of Play

CHMC Extent of Play
• All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, except as noted below. • The Hospital Staff will demonstrate an operability check on **one** of their survey meters and dosimetry for FEMA that will be used in their treatment procedures. • Radiological contamination will be read in Counts per Minute (CPM).

Objective 5: Operate

Capability Target 5.3: Transportation and Treatment of Contaminated, Injured 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

Assessment – Demonstration and Evaluation Guidance

By observing the OROs' capability to address the appropriate bullet points below and while considering the overall capability being assessed, the following key points of review and associated questions should be considered and will support an evaluation of this capability target.

OROs demonstrate the capability to:

TRANSPORTATION

- **Transport contaminated, injured individuals to medical facilities.**
    - Who dispatched the medical transport provider and what information was provided?
    - Did the appropriate briefings occur? What was contained in the briefings?
    - Which agency or agencies demonstrated the transportation of contaminated, injured individuals to appropriate medical facilities?
    - What type of vehicle was used for the transportation of the contaminated, injured individuals?
    - Was the site of pick-up in a potentially contaminated area? If so, what precautions were taken?
    - How did the medical transport provider know to take radiological precautions with the contaminated, injured individual?
    - Was the contaminated, injured individual monitored for radiological contamination before arrival or during initial evaluation by the transport provider?
    - Who did the monitoring?
    - What survey instruments were used?

  - Were the instruments current in calibration?
  - Did medical care take priority over monitoring?
  - Were instruments and equipment operationally checked using an appropriate check source against a known range of reading to verify proper operation?
  - What contamination control measures were taken by the medical transport crew?
  - How was the patient transferred from the medical transport vehicle to the medical facility?
  - Were accident scene survey records transferred to the medical facility staff? Was the transfer made taking care not to spread contamination?
  - Was the medical transport crew knowledgeable about where the medical transport vehicle (or other transport vehicle) and crew would be monitored and decontaminated?
  - Where and by whom will the medical transport crew and medical transport vehicle (or other transport vehicle) be monitored and decontaminated, if required?
- **Maintain communications between the medical transportation provider and the receiving medical facility.**
  - What communications occurred between the medical transport crew and the receiving hospital? How?

MEDICAL FACILITY

- **Operationally check instruments and equipment.**
  - How were background measurements obtained on a continuous basis?
  - What survey instruments were used?
  - Were the instruments current in calibration?
  - Were instruments and equipment operationally checked using an appropriate check source against a known range of reading to verify proper operation?
  - Was an appropriate radioactive check source used to verify proper operational response for each low-range radiation measurement instrument?
  - Did the receiving facility personnel don the appropriate PPE in accordance with procedures and in a manner to prevent the spread of contamination?
- **Set up, activate, and operate a Radiation Emergency Area (REA).**
  - How was the hospital notified to establish a REA? With regard to the REA, what information was provided to the medical facility by the medical transport crew?

  - Were staff, equipment, and supplies readily available for monitoring and decontamination, and setting up the REA?
  - How was access into the REA controlled?
  - Did urgent medical care take precedence over monitoring, decontamination, and contamination control efforts by facility medical staff?
  - Who performed and/or supervised treatment of contaminated, injured individuals?
  - What equipment and supplies were available for the treatment of contaminated, injured individuals?
  - How were items assured to be free of contamination before they were transferred out of the REA to the clean area?
  - After treatment and decontamination, how was the individual transferred out of the REA?
  - How did the staff exit the REA?
  - Was a doffing procedure correctly implemented?
  - Was the REA, and equipment within, monitored for contamination prior to returning it to normal operations?
- **Monitor and decontaminate the individual, equipment, and other items.**
  - How were monitoring (i.e., survey measurements and samples) results documented and recorded?
  - Did the medical staff make decisions on the need for decontamination of the individual and follow appropriate decontamination procedures?
  - What contamination threshold triggers the need for decontamination of the individual?
  - What methods were used to decontaminate the potentially contaminated individual (once that person is medically stabilized)? Were decontamination methods progressive (e.g., mild decontamination used prior to scrubbing)?
  - What procedure was used if decontamination was not successful?
  - What methods were used to collect and analyze samples, including swabs and skin wipes?
  - Who did the monitoring? What equipment was used?
  - What records were maintained with regard to survey and decontamination?
  - What was the procedure for handling, decontaminating, and storage of contaminated items?
  - What was the action level to determine if equipment was contaminated or not?
  - Who decontaminated the equipment and other items?

- How was wastewater from decontamination operations handled?
- What contamination control measures were taken?

Capability Target 5.3: Calvert County EMS Crew Extent of Play

Table 3 Capability Target 5.3 Calvert County EMS Crew Extent of Play

Solomons Island Volunteer Fire Department EMS Crew Extent of Play
Pre-Exercise • All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, except as noted below. • The EMS crew will view the Emergency Worker Briefing Video before the start of the Exercise. • The Calvert County EMS unit personnel will receive Emergency Worker training kits. • After viewing the Emergency Worker video, the Calvert County EMS Unit will pre-stage at the CHMH parking lot and await the Calvert County Fire Dispatch notification to appear on scene. • If possible, The EMS unit personnel will wear the appropriate Personal Protective Equipment (PPE). If this is not possible due to concerns of depleting PPE supplies, one EMS provider will dress out in full PPE

Exercise Extent of Play
• All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, except as noted below.
• The State of Maryland EMS Protocols effective 2023; 7.4 Hazardous Materials Exposure under Section III Treatment Protocols states the following:
  ○ Personnel must be trained and appropriately equipped with proper PPE prior to entering a hazardous materials scene.
  • Decontaminate patient(s) as indicated.
  • If multiple patients are on-scene, triage using START/Jump START Algorithm.
  • Protect patient from hypothermia and treat for any signs or symptoms of hypothermia.
  • Notify EMRC and receiving hospital(s) with the following information:
  • Number of patients and ETA.
  • Type of hazardous material(s) involved.

Solomons Island Volunteer Fire Department EMS Crew Extent of Play
• Decontamination performed on-scene. • The Solomons Island Volunteer Fire Department EMS unit personnel will assume that the patient is contaminated and demonstrate appropriate contamination controls. • The Solomons Island Volunteer Fire Department EMS unit personnel will not perform radiological monitoring of the victim. • The Solomons Island Volunteer Fire Department EMS Unit will transport the simulated player/victim following all transportation laws. This transport will be non-emergency. • The Solomons Island Volunteer Fire Department EMS unit will wait until the Emergency Department (ED) staff are ready to receive the victim/player before moving the patient from the EMS unit.
Post Decontamination Extent of Play • All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, except as noted below. • Procedures for surveying and clearing the EMS crew and EMS unit will be demonstrated by the Calvert County Health Department and EMS crew.

Capability Target 5.3 CHMC Extent of Play

Table 4 Capability Target 5.3 CHMC Extent of Play

CHMC Extent of Play
Pre-Exercise • All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, except as noted below. • CHMH personnel will provide the operational checks on one survey meter with the FEMA evaluator prior to the start of the exercise. • The MDEM Controller will read the Exercise Player Brief prior to the start of the Exercise.
Exercise • All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, except as noted below.

CHMC Extent of Play
• The Solomons Island Volunteer Fire Department EMS Crew and unit will wait and not move the victim/player from the EMS unit until the Emergency Department (ED) staff are ready to receive the victim/player. • MDEM Controller will read simulated patient survey meter results after the entire survey is completed. • The simulation of nasal swabs will be demonstrated (swabs to be taken outside the nose to simulate taking swabs inside the nose) and passed out of the room to demonstrate movement of equipment and supplies into and out of the controlled area. Staff will further explain the sampling process though interviews with the FEMA Evaluator. • Equipment that is needed for life saving interventions will be brought into the patient area only if needed. It will not be pre-placed in the Radiological Emergency Area (REA). • Immediate correction will be allowed if after initially not being able to demonstrate or discuss proper equipment. Supplies, procedures or documentation, the issue will be corrected with further effort/instruction.
Post Decontamination Recovery Extent of Play • All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, except as noted below. • The Hospital staff will discuss with the FEMA Evaluator their Post Decontamination Procedures.