Limerick Generating Station
Limerick, PA
Holy Redeemer Hospital
After Action Report/Improvement Plan
Exercise Date – October 25, 2022
Radiological Emergency Preparedness (REP) Program

Published November 8, 2022

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Limerick Generating Station
Medical Services Drill
After Action Report/Improvement Plan

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EXECUTIVE SUMMARY

On October 25, 2022, a Medical Services Drill was conducted for the 10-mile Plume Exposure Pathway, Emergency Planning Zone (EPZ) around the Limerick Generating Station (LGS) 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 October 29, 2020.

The purpose of the LGS 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 Commonwealth of Pennsylvania, the Holy Redeemer Hospital, and the Volunteer Medical Services Corps of Lansdale 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 Commonwealth of Pennsylvania, the Holy Redeemer Hospital, and the Volunteer Medical Services Corps of Lansdale, 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
Holy Redeemer Hospital 2022 Medical Services Drill

Type of Drill
Medical Services

Drill Date
October 25, 2022

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 LGS 2022 Medical Services Drill:

State Jurisdiction

Commonwealth of Pennsylvania

- Pennsylvania Emergency Management Agency

Support Jurisdiction

- Montgomery County Department of Public Safety

Private Organizations

- Holy Redeemer Hospital
- Volunteer Medical Services Corps of Lansdale

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 October 25, 2022, 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 Limerick Generating 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 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 Objectives, Capabilities and Activities

The Limerick Generating 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 Montgomery County Department of Public Safety, and Holy Redeemer Hospital 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 Montgomery County Department of Public Safety, and the Holy Redeemer Hospital.

2.3 Scenario Summary

The scenario began at 0903 with a notification to the Holy Redeemer Hospital, and the Volunteer Medical Services Corps of Lansdale via an exercise controller, that a Site Area Emergency (SAE) was declared at the Limerick Generating Station (LGS).

At 0910 Holy Redeemer Hospital was notified that a General Emergency was declared at LGS and that during evacuation from the Emergency Planning Zone, a person needing transportation assistance slipped and fell injuring herself while disembarking from the bus at the reception center suffering a six- inch laceration to the front of her left shin and could possibly be contaminated. EMS was called to the accident's location to transport the injured person to the hospital.

At 0918 the Volunteer Medical Services Corps of Lansdale were directed to pick-up the patient for transport to the hospital. At 0928 the hospital was notified that the EMS were enroute with a potentially contaminated patient and provided an estimated arrival of 0935.

At 0933 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 0955.

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 October 25, 2022, Limerick Generating 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 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 by the use of the following letters:

- (L1) Level 1 Finding: An observed or identified inadequacy of organizational performance in an exercise that could cause a determination that offsite emergency preparedness is not adequate to provide reasonable assurance that appropriate protective measures can be taken in 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 exercise 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: 2022 October 25 Site: Limerick Generating Station (M) Met, (1) Level 1 Finding, (2) Level 2 Finding, (P) Planning Issue	Capability Targets	Holy Redeemer Hospital	Volunteer Medical Services Corps of Lansdale
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. Criteria Evaluation Summaries

3.3.1 Private Organizations

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

3.3.1.1 Holy Redeemer Hospital

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 Volunteer Medical Services Corps of Lansdale

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 Commonwealth of Pennsylvania and private sector organizations demonstrated knowledge of their radiological emergency response plans and procedures and they were successfully implemented during the Limerick Generating Station Medical Services Drill evaluated on October 25, 2022.

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 Volunteer Medical Services Corps of Lansdale 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 Holy Redeemer Health Hospital.

The Holy Redeemer Health Hospital 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 Volunteer Medical Services Corps of Lansdale, 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: EVALUATORS AND TEAM LEADERS

The following is the list of Evaluators for the Limerick Generating Station 2022 Medical Services Drill evaluated on October 25, 2022. The following constitutes the managing staff for the evaluation:

- Kathy Duran, DHS/FEMA, Senior Emergency Management Specialist
- Taylor Griffiths, DHS/FEMA, Emergency Management Specialist

DATE: October 25, 2022
SITE: Limerick Generating Station

LOCATION	EVALUATORS	AGENCY
Holy Redeemer Hospital	Kathy Duran	FEMA R3
Volunteer Medical Services Corps of Lansdale	Taylor Griffiths	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
LGS	Limerick Generating 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 Pennsylvania Emergency Management Agency, and is included in this report as an Appendix. The Extent-of-Play was negotiated and agreed upon by FEMA Region 3, and the Pennsylvania Emergency Management Agency.

The Exercise Plan was created as an overall tool for facilitation and implementation of the LGS 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.

LIMERICK GENERATING STATION
HOLY REDEEMER HOSPITAL
MEDICAL SERVICES EXERCISE
October 25, 2022

Method of Operation

1. The power station and its personnel will not play an active role in the facilitation of this exercise. The plant's simulated events, radiation releases, and emergency classifications will be injected by offsite Controllers. A pre-approved scenario will be used.

2. PEMA, Eastern Area Office will not be activated as part of this exercise. The Exercise Coordinator will provide pre-exercise coordination and observe exercise activities.

3. PEMA Eastern Area Office and Constellation will participate as Controllers in this exercise.

4. Montgomery County Department of Public Safety will participate in this exercise.

5. Controllers will be supplied by PEMA. Controllers are not players and will provide injects and information to initiate and stimulate exercise play by providing radiological readings during the monitoring of personnel. Live radioactive sources will only be used to perform operational checks of radiological monitoring instruments.

6. PEMA staff and qualified county emergency management personnel will be assigned to key locations for the purpose of observing, noting response actions and conditions, and recording observations for future use. Observers will not take an active part in the proceedings but will interact with staff members to the extent necessary to fulfill their observer responsibilities. Coaching of players is not permitted, except as appropriate to provide training to participants awaiting a re-demonstration.

7. Department of Homeland Security (DHS), FEMA, Radiological Emergency Preparedness Program (REPP) Evaluators: FEMA Evaluators will be present at designated demonstration locations.

8. Exercise activities are scheduled to commence on or about 9:00 am on October 25, 2022 and continue until the participants have completed the exercise objectives and demonstrated the Exercise Capability Targets.

9. Participants and agencies will Stand Down when the Controllers have confirmed with the Evaluators that all evaluation capability targets have been demonstrated and when the State and County Observers are satisfied that the objectives have been met.

10. An emergency plan is drafted to address the generally expected conditions of an emergency. Not everything in the emergency plan may be applicable for a given scenario. The main purpose of an emergency plan is to assemble sufficient expertise and officials so as to properly react to the events as they occur. The responders should not be so tied to a plan that they cannot take actions that are more protective of the public. Therefore, if, by not following the plan, the responders

protect the public equally, as well as provided in the plan, it should be noted for possible modification of the plan, but not classified as a negative incident. Furthermore, if by following the plan there is a failure to protect the public health and safety, it should be noted so that the plan can be modified, documented as a possible planning concern, and the appropriate negative assessment corrected.

11. During the exercise, any activity that is not satisfactorily demonstrated may be re-demonstrated by the participants during the exercise, provided it does not negatively interfere with the exercise. Refresher training may be provided by the players, observers, and/or Controllers. Evaluators are not permitted to provide refresher training. Re-demonstrations will be negotiated between the Players, Observers, Controllers, and Evaluators. PEMA may advise the Regional Assistance Committee Chair prior to initiating any re-demonstrations. It is permissible to extend the demonstration window, within reason, to accommodate the re-demonstration. Activities corrected from a re-demonstration will be so noted.

Objectives

A. Demonstrate the ability to respond to a radiation medical emergency following the procedures of Montgomery County Department of Public Safety, the Volunteer Medical Services Corps of Lansdale, and the Holy Redeemer Hospital.

B. 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.)

C. Demonstrate correct priorities and appropriate techniques in EMS, transportation of patients and pre-hospital and hospital emergency care of radioactively contaminated patients.

D. Demonstrate inter-agency cooperation between the ambulance company/EMS and the hospital.

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: Emergency Medical Services; 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:

1. Conduct briefings in a timely manner.
- Were briefings conducted in a timely manner?
- What information was provided?
- How frequently were briefings held?
- Who gave the briefing?
2. Maintain situational awareness.
- Did the ORO maintain situational awareness? How?
3. Coordinate response activities with other organizations.
- Were response activities coordinated with other organizations? How?
4. Obtain resources to support emergency operations.
    - Were resources obtained to support emergency operations (e.g., through MOUs or other agreements)?
- Was just-in-time training provided, as necessary?
5. Provide and maintain adequate facilities and equipment to support the emergency response.
- Were facilities and equipment adequate to support operations? How so?
    - Was the facility evacuated during the plume? What means of monitoring and decontamination were used?

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.

PEMA Negotiated Extent of Play:

Ambulance crews are not trained or equipped to operate or carry radiological monitoring equipment. In accordance with the PEMA SOP Annex E, Appendix 5 "Radiological Exposure Control" (March 2002), ambulance crews operating outside the 10-mile Emergency Planning Zone are considered "Category C" emergency workers; therefore, they are only required to implement protective measures consistent with protection against blood-borne pathogens; i.e., long sleeved garments, trousers, impermeable gloves, and surgical masks. "Category C" emergency worker dosimetry issue consists of one permanent reading dosimeter per worker. Ambulance crews are provided additional dosimetry if they are tasked with entering the 10-mile EPZ.

Hospital personnel are also considered "Category C" emergency workers and will conform to PEMA SOP protective measures at minimum. Direct Reading Dosimeters may be issued individually, or an Area Kit may be established in the Radiation Emergency Area (REA). Individual PRDs will be issued by the hospital. Radiological Survey Instruments are calibrated per manufactures recommendations.

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:

1. Maintain an appropriate inventory of PRDs.
- What type of PRDs were used?
- Was the inventory of available PRDs sufficient for the number of workers?
- How many PRDs were available?

2. Adequately distribute appropriate DRDs and PRDs.
- Was dosimetry distributed in a timely manner?
- Was dosimetry distributed appropriately to read identified exposure limits?
- Did workers receive personal dosimetry or group dosimetry?

3. Record and report exposures in the field.
- Did workers read and record dosimetry on a regular basis?
- At what frequency were readings recorded?
- To whom were the readings reported?
- Who briefed emergency workers? Did the briefing include the following?
    - Ensuring that dosimetry is zeroed or initial reading is recorded;
    - Frequency to read and record dosimeters;
    - The process of reporting exposures;
    - Proper placement of dosimeters;
    - Proper use of PRDs; and
    - The location to report to for monitoring and decontamination.

4. Report to individual responsible for managing exposure and dose when limits are reached.
- What was the identified exposure limit?
    - What was the dosimeter correction factor and how was it communicated to emergency workers?
- What is the process for receiving approval for exceeding exposure limits and dose limits?
    - Who authorized emergency workers to exceed limits or replace a worker who has reached exposure limits?
- Who coordinated with offsite emergency workers who were performing duties onsite?

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.

PEMA Negotiated Extent of Play:

- *Demonstrate appropriate procedures and equipment to manage radiological exposure to staff.*
- *Demonstrate the ability to transport contaminated/injured individuals while using ALARA principles.*
- *Demonstrate the ability to utilize dosimetry, equipment and procedures to manage radiological exposure to emergency workers as required by plans.*

Radiological briefings will be provided to address exposure limits and procedures to replace personnel approaching limits and how permission to exceed limits is obtained. At any time, players may ask other players or supervisors to clarify radiological information. In Pennsylvania, emergency workers outside the EPZ do not have turn-back values. Standard issue of dosimetry and potassium iodide for each category of emergency worker is as follows:

Category A: 1 PRD, 1 DRD, and 1 unit of KI
Category B: 1 PRD and 1 unit of KI
Category C: 1 PRD

NOTE: *As per Annex E, Appendix 5, page E-5-35, "Emergency responders located outside the EPZ who, due to assigned taskings during a nuclear emergency, have limited potential for radiation exposure (e.g., monitoring/decontamination teams, MEDICAL SERVICES hospital staffs). Transporters of contamination or potentially contaminated individuals outside of the EPZ are not provided dosimetry.*

All locations that have dosimetry equipment indicated within their Radiological Emergency Response Plan (RERP) will make the dosimetry equipment (and KI, as appropriate) available for inspection by the Federal Evaluator. Simulation PRDs with mock serial numbers may be used.

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

1. 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?

2. 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

1. 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?

2. Set-up, activate, and operate an 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 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?

3. 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?

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.

PEMA Negotiated Extent of Play:
Demonstrate that the facility has the appropriate space, adequate resources and trained personnel to provide monitoring, decontamination and Medical Services to contaminated/injured individuals. *Demonstrate the ability to transport contaminated/injured individuals while using ALARA principles.* *Volunteer Medical Services Corps of Lansdale will pick-up a pre-staged simulated contaminated/injured patient.* *EMS Crews do not carry survey equipment therefore do not survey patients.*

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