



**FEMA**

DEC 05 2011

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Nuclear Regulatory Commission  
Washington, DC 20555-0001

To Whom It May Concern:

Attached is the After Action Report for the Limerick Generating Station (LGS)/Abington Hospital 2011 Medical Services (MS-1) Drill that was evaluated on September 21, 2011. There were no "Deficiencies" or "Areas Requiring Corrective Action" identified during the drill.

Based on the review of the offsite radiological emergency response plans and procedures submitted, FEMA Region III has determined they are adequate and there is reasonable assurance they can be implemented, as demonstrated during the LGS MS-1 Drill.

If you have any further questions, please contact Darrell Hammons at (215) 931-5546.

Sincerely,

A handwritten signature in black ink, appearing to read "MaryAnn Tierney".

MaryAnn Tierney  
Regional Administrator

Attachment

AYYS  
NRR



Limerick Generating Station

# After Action Report/ Improvement Plan

Drill Date - September 21, 2011

Radiological Emergency Preparedness (REP) Program



**FEMA**

*Published November 21, 2011*

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# Limerick Generating Station After Action Report/Improvement Plan

*Published November 21, 2011*

## Contents

Executive Summary	3
Section 1: Exercise Overview	7
1.1 Exercise Details	7
1.2 Exercise Planning Team Leadership	7
1.3 Participating Organizations	8
Section 2: Exercise Design Summary	9
2.1 Exercise Purpose and Design	9
2.2 Exercise Objectives, Capabilities and Activities	9
2.3 Scenario Summary	10
Section 3: Analysis of Capabilities	11
3.1 Drill Evaluation and Results	11
3.2 Summary Results of Drill Evaluation	11
3.3 Criteria Evaluation Summaries	13
3.3.1 Risk Jurisdictions	13
3.3.1.1 Montgomery County, Abington Memorial Hospital	13
3.3.1.2 Montgomery County, Lower Providence Community Center Ambulance	13
Section 4: Conclusion	14
Appendix A: Drill Evaluators and Team Leaders	15
Appendix B: Acronyms and Abbreviations	16
Appendix C: Exercise Plan	17
Appendix D: Exercise Scenario	45

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## EXECUTIVE SUMMARY

### Authorities

On December 7, 1979, the President directed FEMA to assume the lead responsibility for all offsite nuclear planning and response. FEMA's activities are 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 Program (REPP) that was established following the Three Mile Island Nuclear Station accident in March 1979. In October 2005, the REP Program was moved to the Department of Homeland Security/Federal Emergency Management Agency/Radiological Emergency Preparedness Program (DHS/FEMA/REPP). FEMA Rule 44 CFR 350 establishes the policies and procedures for FEMA's (now DHS/FEMA/REP's) initial and continued approval of tribal, 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.

### Responsibilities

DHS/FEMA/REP's responsibilities in radiological emergency planning for fixed nuclear facilities include the following:

- The review and evaluation of Radiological Emergency Response Plans (RERPs) developed by State and local governments;
- The evaluation of exercises conducted by State and local governments to determine whether such plans can be implemented;
- Responding to requests by the U.S. Nuclear Regulatory Commission (NRC) pursuant to the Memorandum of Understanding between the NRC and FEMA dated June 17, 1993 (44 CFR Part 354, Appendix A, September 14, 1993), now under revision to reflect DHS responsibilities;

### Coordinating Elements

- Coordinating the activities of the following Federal agencies with responsibilities in the radiological emergency planning process:
  - U.S. Department of Agriculture
  - U.S. Department of Commerce
  - U.S. Department of Defense

Unclassified

Radiological Emergency Preparedness Program (REP)

After Action Report/Improvement Plan Limerick Generating Station

- U.S. Department of Energy
- U.S. Department of Health and Human Services
- Food and Drug Administration
- Center for Disease Control
- U.S. Department of Housing and Urban Development
- U.S. Department of the Interior
- U.S. Department of Justice
- U.S. Department of State
- U.S. Department of Transportation
- U.S. Department of Veterans Affairs
- U.S. Environmental Protection Agency
- General Services Administration
- National Aeronautics and Space Administration
- Nuclear Regulatory Commission
- Providing regulatory oversight, rule-making and guidance, as necessary.

#### Purpose

A REP Medical Services Drill was evaluated on September 21, 2011, by FEMA, Region III, REPP to assess the capabilities of State and local emergency preparedness organizations in implementing their RERPs and procedures to protect the public health and safety during a radiological emergency involving the LGS. The purpose of this report is to present the drill results and findings on the performance of the offsite response organizations (OROs) during a simulated radiological emergency involving a radiologically contaminated, injured individual. Please note that throughout this report the terms Drill and Exercise may be used synonymously. The findings presented in this report are based on the evaluations of the Federal evaluator team, with final determinations made by the Regional Assistance Committee Chairperson from FEMA, Region III, and approved by DHS/FEMA/REPP Headquarters. There were no Deficiencies, Areas Requiring Corrective Action, or Planning Issues identified as a result of this exercise/drill.

#### Criteria

The criteria utilized in the DHS/FEMA/REPP evaluation process are contained in the following:

- NUREG-0654/FEMA-REP-1, Rev. 1, "Criteria for Preparation and Evaluation of Radiological
- Unclassified
- Radiological Emergency Preparedness Program (REP)

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After Action Report/Improvement Plan Limerick Generating Station

Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980;

- FEMA Guidance Memoranda MS-1, "Medical Services," November 1986;
  - FEMA-REP-14, "Radiological Emergency Preparedness Exercise Manual," September 1991;
- and
- 67 FR 20580, "FEMA Radiological Emergency Preparedness: Exercise Evaluation Methodology," April 25, 2002.

Section 1 of this report, entitled "Exercise Overview," contains basic details of the exercise/drill, the exercise planning team, and participating agencies. Section 2 is titled "Exercise Design Summary" and includes the Purpose and Design, a description of the Objectives, Capabilities and Activities, and the Scenario Summary. Section 3 is the "Analysis of Capabilities. It describes the overall Evaluation and Results and the Summary Results of Evaluation. It identifies the specific participants, the criteria that were evaluated, and indicates if the criteria were or were not met. Section 4 expresses the "Conclusion" resulting from the exercise. Appendix A identifies the Drill Evaluators and Team Leaders. Appendix B catalogs the Acronyms and Abbreviations used in this report. Appendix C is the Exercise Plan and contains the Exercise Plan, Extent of Play, and Controllers Handbook. Appendix D is titled Improvement Plan. However, because there were no "Deficiencies," "Areas Requiring Corrective Action," or "Planning Issues" assessed in this drill, the Improvement Plan is not applicable.

#### Emergency Planning Zone Description

LGS is located in southeastern Pennsylvania on the Schuylkill River about 1.7 miles southeast of Pottstown Borough. The river passes through the site, separating the western portion, which is in East Coventry Township in Chester County, from the eastern portion, which is in Limerick and Lower Pottsgrove Townships in Montgomery County. The plant is owned and operated by Exelon Nuclear. Two boiling water reactors each generate an electrical output of 1,050 megawatts (MW). Unit 1 was issued a full-power license in August 1985; commercial operations began in February 1986. Unit 2 was issued a full-power license in August 1989 with commercial operations beginning in January 1990.

The site encompasses 595 acres and is divided into three (3) parts. The principal portion, where the major operating equipment and buildings are located, is on the east bank of the Schuylkill River. This portion is separated from the second segment, where the cooling water intake is

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located, near the main line of the Reading Railroad. The third portion lies on the west bank of the river, adjacent to Conrail railroad tracks. The site coordinates are approximately 40°13'27"N and 75°35'15"W.

The minimum exclusion distance for the LGS is 2,500 feet from the center of each reactor. The utility owns all the land within the exclusion area. No private residences are located within the exclusion area; however, some farming may be permitted.

There are 165 sirens installed to cover the 10-mile plume exposure pathway EPZ. These sirens are activated three (3) minutes before the Emergency Alert System (EAS) messages issued by the Commonwealth of Pennsylvania are broadcast.

Soils in this area are of the Reaville-Penn-Klinesville Association and are characteristic of rolling uplands. They are underlain by sedimentary rocks of the Brunswick Formation, consisting mostly of red shale with some fine-grained sandstone interbedding.

The normal pool elevation of the Schuylkill River in this area is 200 feet above mean sea level (msl). The topography of the area is hilly, with elevations ranging from 100-300 feet above msl within five (5) miles of the site. The plant is approximately 217 feet above msl. The climate in this area is dominated by prevailing westerly winds that produce humid, continental-type weather characterized by warm summers and moderately cold winters. Montgomery County is the warmest part of Pennsylvania, with an average annual temperature of 57°F. Annual precipitation is approximately 42 inches.

The area in the immediate vicinity of the plant is made up mostly of agricultural and other open land. The Pottstown Borough in Montgomery County is the nearest community and has a population of 21,859 based on the 2000 Census. The nearest major population center (more than 25,000 people) is Philadelphia that lies 25 miles to the southeast of the site. Two major industries employ a total of 850 persons within two (2) miles of the plant. Two small airfields are also located nearby. A small private airfield is about one (1) mile to the northeast, but its runway is oriented so that the flight path does not pass over the plant. The Pottstown Municipal Airport is 4.3 miles northwest of the site. The LGS does not lie in the approach pattern for this airport. No major thoroughfares are located in the immediate vicinity of the plant. The main line of the Reading Railroad runs along the north bank of the Schuylkill River and traverses the site about 500 feet from the plant.

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## SECTION 1: EXERCISE OVERVIEW

### 1.1 Exercise Details

**Exercise Name**

Limerick Generating Station

**Type of Exercise**

Drill

**Exercise Date**

September 21, 2011

**Program**

Department of Homeland Security/FEMA Radiological Emergency Preparedness Program

**Scenario Type**

Radiological Emergency

### 1.2 Exercise Planning Team Leadership

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Exercise Planner

Exelon Corporation

Offsite EP Coordinator

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### **1.3 Participating Organizations**

Agencies and organizations of the following jurisdictions participated in the Limerick Generating Station drill:

**State Jurisdictions**

· Pennsylvania Emergency Management Agency

**Risk Jurisdictions**

Abington Memorial Hospital

Lower Providence Community Center Ambulance

**Federal Jurisdictions**

Federal Emergency Management Agency

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## **SECTION 2: EXERCISE DESIGN SUMMARY**

### **2.1 Exercise Purpose and Design**

On September 21, 2011, the Federal Emergency Management Agency (FEMA), Region III, conducted a medical services (MS-1) drill in relation to the Limerick Generating Station (LGS). The purpose of the drill was to assess the level of State and local preparedness in responding to a radiological medical emergency. This drill was held in accordance with FEMA's policies and guidance concerning the exercise of State and local Radiological Emergency Preparedness Response Plans (RERP). The most recent evaluated medical drill at this site was conducted on June 10, 2009.

FEMA, Region III, wishes to acknowledge the efforts of the many individuals in the Commonwealth of Pennsylvania, Montgomery County, PA, as well as the Lower Providence Community Center Ambulance and the Abington Memorial Hospital, who participated in this drill.

Protecting the public health and safety is the full-time job of some of the exercise participants and an additional assigned responsibility for others. Still others have willingly sought this responsibility by volunteering to provide vital emergency services to their communities. Cooperation and teamwork of all the participants were evident during this drill.

### **2.2 Exercise Objectives, Capabilities and Activities**

The objective of the LGS Medical Services MS-1 Drill was to demonstrate that the response organizations have the personnel, equipment, training, and knowledge to effectively assess the condition of a potentially radioactively contaminated patient, protect against cross contamination, transport, and transfer the patient to a hospital where the patient can then be decontaminated and treated. The hospital personnel are responsible for preparing a receiving and treatment area, operating radiological detection equipment, and implementing proper emergency worker protective procedures.

All activities were evaluated in accordance with current FEMA directives and guidance and were performed in accordance with current hospital plans and procedures.

## 2.3 Scenario Summary

The exercise scenario for this Medical Services Drill consisted of simulated notifications of escalating emergency classification levels at LGS from Site Area Emergency to General Emergency. Subsequent to being notified of the General Emergency, Abington Hospital is notified that an incident had occurred resulting in the injury and possible radiological contamination of an evacuee. The Hospital implemented its plan to prepare a Radiation Emergency Area to receive and treat the patient and activated its radiation emergency medical team.

The patient was struck by a vehicle and was knocked to the pavement which resulted in a fractured wrist and abrasions on both knees and hands. Detectable radioactive contamination was found on both hands and the outer front part of the neck.

## **SECTION 3: ANALYSIS OF CAPABILITIES**

### **3.1 Drill Evaluation and Results**

Contained in this section are the results and findings of the evaluations of all jurisdictions and locations that participated in the September 21, 2011, Medical Services (MS-1) Drill.

Each jurisdiction and functional entity was evaluated on the basis of its demonstration of the Exercise Evaluation Area Criteria contained in the REP Exercise Evaluation Methodology. Detailed information on the Exercise Evaluation Area Criteria and the Extent-of-Play Agreement used in this exercise are found in the Exercise Plan, Appendix C.

### **3.2 Summary Results of Drill Evaluation**

The 2011 LGS Medical Services Drill evaluation included two participating locations. Two evaluators provided analyses of three exercise criteria each. These analyses resulted in a determination that all criteria were successfully demonstrated and there were no Deficiencies, Areas Requiring Corrective Action or Planning Issues.

**Table 3.1 - Summary of Drill Evaluation**

DATE: 2011-09-21 SITE: Limerick Generating Station, PA M: Met, A: ARCA, D: Deficiency, P: Plan Issue, N: Not Demonstrated		MC AMH	MC LPCCA
Emergency Operations Management			
Mobilization	1a1		
Facilities	1b1		
Direction and Control	1c1		
Communications Equipment	1d1		
Equip & Supplies to support operations	1e1	M	M
Protective Action Decision Making			
Emergency Worker Exposure Control	2a1		
Radiological Assessment and Protective Action Recommendations for the Plume Phase Emergency	2b1		
Protective Action Decisions for the General Public for the Plume Phase Emergency	2b2		
Protective Action Decisions for protection of special populations	2c1		
Rad Assessment and Decision making for the Ingestion Exposure Pathway	2d1		
Rad Assessment and Decision making concerning Relocation, Reentry, and Return	2e1		
Protective Action Implementation			
Implementation of emergency worker exposure control	3a1	M	M
Implementation of KI decision	3b1		
Implementation of protective actions for special populations	3c1		
Implementation of protective actions for Schools	3c2		
Implementation of traffic and access control	3d1		
Impediments to evacuation	3d2		
Implementation of ingestion pathway decisions - availability/use of info	3e1		
Materials for Ingestion Pathway PADs are available	3e2		
Implementation of relocation, re-entry, and return decisions.	3f1		
Field Measurement and Analysis			
Adequate Equipment for Plume Phase Field Measurements	4a1		
Field Teams obtain sufficient information	4a2		
Field Teams Manage Sample Collection Appropriately	4a3		
Post plume phase field measurements and sampling	4b1		
Laboratory operations	4c1		
Alert and Notification	5.a.4		
Emergency Notification and Public Info			
Activation of the prompt alert and notification system	5a1		
Activation of the prompt alert and notification system - Fast Breaker	5a2		
Backup Route Alerting	5a3		
Emergency information and instructions for the public and the media	5b1		
Support Operations/Facilities			
Monitoring, decontamination, and registration of evacuees	6a1		
Monitoring and decontamination of emergency workers and their equipment	6b1		
Temporary care of evacuees	6c1		
Transportation and treatment of contaminated injured individuals	6d1	M	M

### **3.3 Criteria Evaluation Summaries**

#### **3.3.1 Risk Jurisdictions**

##### **3.3.1.1 Montgomery County, Abington Memorial Hospital**

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 1.e.1, 3.a.1, 6.d.1.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

##### **3.3.1.2 Montgomery County, Lower Providence Community Center Ambulance**

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 1.e.1, 3.a.1, 6.d.1.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

## **SECTION 4: CONCLUSION**

Based on the review of the offsite radiological emergency response plans and procedures submitted, FEMA Region III has determined they are adequate and there is a reasonable assurance they can be implemented, as demonstrated during the LGS 2011 MS-1 Drill.

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## APPENDIX A: DRILL EVALUATORS AND TEAM LEADERS

DATE: 2011-09-21, SITE: Limerick Generating Station, PA

LOCATION	EVALUATOR	AGENCY
Montgomery County, Abington Memorial Hospital	*Daniel Lerch	FEMA RIII
Montgomery County, Lower Providence Community Center Ambulance	*Barton Freeman	FEMA RIII
* Team Leader		

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## APPENDIX B: ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
EAS	Emergency Alert System
LGS	Limerick Generating Station
NRC	Nuclear Regulatory Commission
REPP	Radiological Emergency Preparedness Program

NATIONAL EXERCISE PROGRAM

# Exercise Plan

2011 LIMERICK GENERATING STATION  
FEMA EVALUATED MS-1 DRILL

U.S. DEPARTMENT OF HOMELAND SECURITY



Exercise Date: September 21, 2011



FEMA

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## PREFACE

The 2011 Limerick Generating Station Evaluated Medical Services Drill (MS-1) is sponsored by Pennsylvania Emergency Management Agency (PEMA) and the Federal Emergency Management Agency (FEMA). This Exercise Plan (ExPlan) was produced with input, advice, and assistance from the Exercise Planning Team (EPT), which followed the guidance set forth in the Federal Emergency Management Agency (FEMA), Homeland Security Exercise and Evaluation Program (HSEEP).

The ExPlan gives officials, observers, media personnel, and players from participating organizations the information necessary to observe or participate in a nuclear power plant accident response exercise focusing on participants' emergency response plans, policies, and procedures as they pertain to this type of event. The information in this document is current as of the date of publication and is subject to change as dictated by the EPT.

The 2011 Limerick Generating Station MS-1 Drill] is an *unclassified exercise*. The control of information is based more on public sensitivity regarding the nature of the exercise than on the actual exercise content. Some exercise material is intended for the exclusive use of exercise planners, Controllers, and Evaluators, but Players may view other materials deemed necessary to their performance. The ExPlan may be viewed by all exercise participants, *but the Controller and Evaluator (C/E) Handbook is a restricted document intended for Controllers and Evaluators only.*

All exercise participants should use appropriate guidelines to ensure the proper control of information within their areas of expertise and to protect this material in accordance with current jurisdictional directives. Public release of exercise materials to third parties is at the discretion of DHS and the EPT.

## HANDLING INSTRUCTIONS

1. The title of this document is 2011 Limerick Generating Station MS-1 *Exercise Plan* (*ExPlan*).
2. The information gathered in this ExPlan should be handled as sensitive information not to be disclosed. This document should be safeguarded, handled, transmitted, and stored in accordance with appropriate directives.
3. At a minimum, the attached materials will be disseminated only on a need-to-know basis and when unattended, will be stored in a locked container or area offering sufficient protection against theft, compromise, inadvertent access, and unauthorized disclosure.
4. For more information, please consult the following points of contact (POCs):

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# TABLE OF CONTENTS

**Exercise Plan** ..... iii

**LIMERICK GENERATING STATION FEMA EVALUATED REP EXERCISE**..... iii

**U.S. DEPARTMENT OF HOMELAND SECURITY**..... iii

**Preface**..... i

**Handling Instructions**..... iii

**Chapter 1: General Information** .....1

    Introduction.....1

    Confidentiality .....1

    Purpose.....1

    Target Capabilities.....2

    Exercise Objectives.....2

**Chapter 2: Exercise Logistics** .....1

    Exercise Summary .....1

        General.....1

        Assumptions.....1

        Constructs and Constraints .....1

        Controller and Evaluator Handbook .....2

        Master Scenario Events List .....3

    Exercise Implementation .....3

        Exercise Play.....3

        Exercise Rules.....3

        General.....3

        Exercise Setup.....4

    Accident Reporting and Real Emergencies .....4

    Site Access .....4

        Security .....4

        Observer Coordination.....5

        Parking and Directions.....5

        Restroom Facilities .....5

    Exercise Identification .....5

    Communications Plan.....5

        Exercise Start, Suspension, and Termination Instructions.....5

        Player Communication.....5

        Player Briefing.....6

        Public Affairs.....6

**Chapter 3: Player Guidelines.....1**

- Exercise Staff.....1
  - Lead Controller ..... 1
  - Controllers.....1
  - Evaluators ..... 1
- Player Instructions .....2
  - Before the Exercise ..... 2
  - Following the Exercise ..... 3
- Simulation Guidelines.....3

**Chapter 4: Evaluation and Post-Exercise Activities.....1**

- Exercise Documentation .....1
- After Action Report .....1
- After Action Conference and Improvement Plan .....1
  - After Action Conference..... 1
  - Improvement Plan..... 1

**Appendix A: Exercise Schedule.....1**

**Appendix B: Extent of Play.....8**

# CHAPTER 1: GENERAL INFORMATION

## Introduction

The 2011 Limerick Generating Station Medical Services Drill is a Functional Exercise (FE) designed to establish a learning environment for players to exercise emergency response plans, policies, and procedures as they pertain to Nuclear Power Plant accidents. A Functional Exercise is a complex event that requires detailed planning. To conduct an effective exercise, subject matter experts (SMEs) and local representatives from numerous agencies have taken part in the planning process and will take part in exercise conduct and evaluation.

This Exercise Plan (ExPlan) was produced at the direction of the Federal Emergency Management Agency with the input, advice, and assistance of the Commonwealth of Pennsylvania. The 2011 Limerick Generating Station Medical Services Drill is evidence of the growing partnership between State and local jurisdictions for response to the threats our Nation and communities face.

## Confidentiality

The 2011 Limerick Generating Station Medical Services Drill is an *unclassified exercise*. The control of information is based more on public sensitivity regarding the nature of the exercise than on the actual exercise content. Some exercise material is intended for the exclusive use of exercise planners, controllers, and evaluators, but players may view other materials deemed necessary to their performance. This Exercise Plan may be viewed by all exercise participants, *but the Controller and Evaluator (C/E) Handbook is a restricted document intended for controllers and evaluators only.*

All exercise participants should use appropriate guidelines to ensure the proper control of information within their areas of expertise and protect this material in accordance with current Federal, State and Local directives.

Public release of exercise materials to third parties is at the discretion of the Federal Emergency Management Agency (FEMA) and the Exercise Planning Team.

## Purpose

The purpose of this exercise is to evaluate player actions against current response plans and capabilities for a nuclear power plant-related incident, and to comply with the requirements of 44 CFR 350 and the guidelines of NUREG 0654/FEMA-REP-1. Exercise planners utilized the elements described in the 67 FR 20580 (April 25, 2002) and Interim Radiological Emergency Preparedness (REP) Program Manual (August 2002) to develop this exercise.

The objective of the Federal Emergency Management Agency, the Pennsylvania Emergency Management Agency and local jurisdictions is to demonstrate reasonable assurance that the public can be protected during a nuclear power plant emergency.

## Target Capabilities

The establishment of the National Preparedness Priorities have steered the focus of homeland security toward a capabilities-based planning approach. Capabilities-based planning focuses on planning under uncertainty, since the next danger or disaster can never be forecast with complete accuracy. Therefore, capabilities-based planning takes an all-hazards approach to planning and preparation which builds capabilities that can be applied to a wide variety of incidents. States and Urban Areas use capabilities-based planning to identify a baseline assessment of their homeland security efforts by comparing their current capabilities against the Target Capabilities List (TCL) and the critical tasks of the Universal Task List (UTL). This approach identifies gaps in current capabilities and focuses efforts on identifying and developing priority capabilities and tasks for the jurisdiction. These priority capabilities are articulated in the jurisdiction's homeland security strategy and Multi-Year Training and Exercise Plan (TEP), of which this exercise is a component of.

The capabilities listed below have been selected by the Exercise Planning Team from the priority capabilities identified in Commonwealth of Pennsylvania Multi-Year TEP and the FEMA Interim Radiological Emergency Preparedness Program Manual (August 2002), Exercise Evaluation Criteria. These capabilities provide the foundation for development of the exercise objectives and scenario, as the purpose of this exercise is to measure and validate performance of these capabilities and their associated critical tasks.

- Planning
- Communications
- Community Preparedness and Participation
- WMD/HazMat Response and Decontamination
- Emergency Triage and Pre-Hospital Treatment
- Medical Supplies Management and Distribution

## Exercise Objectives

The Emergency Preparedness Evaluation Areas – the elements and sub elements – for this drill are those that are required to be demonstrated in every MS-1 Drill, per 67 FR 20580 (April 25, 2002) and the Interim Radiological Exercise Preparedness (REP) Program manual (August 2001). Appendix B, Extent of Play, Shows the emergency preparedness elements that are required to be demonstrated in the 2011 Limerick Generating Station Medical Services Drill, along with the level of demonstration that will be displayed in the exercise (i.e, fully demonstrated limited demonstration, simulated, Out Of Sequence interviews, not demonstrated).

The objective of this exercise is to demonstrate reasonable assurance that the health and safety of the public can be protected, through successful demonstration of tasks identified in Appendix B.

## Outstanding Issues

There were no deficiencies, Areas Requiring Corrective Action (ARCAs), or planning issues as a result of past FEMA evaluated MS-1 drills at the Limerick Generating Station.

## CHAPTER 2: EXERCISE LOGISTICS

### Exercise Summary

#### General

The 2011 Limerick Generating Station Medical Services Drill is designed to establish a learning environment for players to exercise their plans and procedures for responding to a nuclear incident. The 2011 Limerick Generating Station Medical Services Drill will be conducted on September 21, 2011. Exercise play is scheduled for four (4) hours or until the Lead Controller after consulting with the FEMA Site Specialist determines that the exercise objectives have been met at each venue.

#### Assumptions

Assumptions constitute the implied factual foundation for the exercise and, hence, are assumed to be present before the start of the exercise. The following general assumptions apply to the 2011 Limerick Generating Station Medical Services Drill:

- The exercise will be graded against the REP criteria. Elements outside the scope of the REP criteria will not be graded.
- This exercise will be conducted in a no-fault learning environment wherein systems and processes, not individuals, will be evaluated.
- Exercise simulation will be realistic and plausible, containing sufficient detail from which to respond.
- Exercise players will react to the information and situations as they are presented, in the same manner as if this had been a real event.

#### Constructs and Constraints

Constructs are exercise devices designed to enhance or improve exercise realism. Alternatively, constraints are exercise limitations that may detract from exercise realism. Constraints may be the inadvertent result of a faulty construct or may pertain to financial and staffing issues. Although there are a number of constructs and constraints (also known as exercise artificialities) for any exercise, the EPT recognizes and accepts the following as necessary:

- Exercise communication and coordination will be limited to the participating exercise venues.
- Communication methods may include Telephone, Mobile Telephone, radio, and other method made available for players to use during the exercise.
- Out-of-Sequence play is allowed.
- Certain simulations are allowed.

The participating agencies may need to balance exercise play with real-world emergencies. It is understood that real-world emergencies will take priority.

## Exercise Participants

The following are the categories of participants involved in this exercise; note that the term “participant” refers to all categories listed below, not just those playing in the exercise:

- *Players.* Players are agency personnel who have an active role in responding to the simulated emergency and perform their regular roles and responsibilities during the exercise. Players initiate actions that will respond to and mitigate the simulated emergency.
- *Controllers.* Controllers set up and operate the exercise site; plan and manage exercise play; act in the roles of response individuals and agencies not playing in the exercise. Controllers direct the pace of exercise play and routinely include members from the exercise planning team. They provide key data to players and may prompt or initiate certain player actions to ensure exercise continuity.
- *Evaluators.* Evaluators are chosen to evaluate and provide feedback on a designated functional area of the exercise. They are chosen based on their expertise in the functional area(s) they have been assigned to review during the exercise and their familiarity with local emergency response procedures. Evaluators assess and document participants’ performance against established emergency plans and exercise evaluation criteria, in accordance with HSEEP standards and within the bounds of REP Program guidance and regulations. They are typically chosen from amongst planning committee members or the agencies/organizations that are participating in the exercise. FEMA Evaluators will not serve as Controllers.
- *Actors.* Actors are exercise participants who act or simulate specific roles during exercise play. They are typically volunteers who have been recruited to play the role of victims or other bystanders.
- *Observers.* Observers visit or view selected segments of the exercise. Local Observers do not play in the exercise, and do not perform any control or evaluation functions. Local Observers will view the exercise from a designated observation area and will be asked to remain within the observation area during the exercise. PEMA Observers may be present at selected locations as assigned by the Lead Controller. VIPs or other visitors will be handled by each agency or location (Municipal EOC, County EOC, etc.) according to those agencies’ policies and procedures.
- *Media Personnel.* Some media personnel may be present as observers pending approval by the Pennsylvania Emergency Management Agency (PEMA).
- *Support Staff.* Exercise support staff includes individuals who are assigned administrative and logistical support tasks during the exercise (i.e. registration, catering, etc).

## Exercise Tools

### Controller and Evaluator Handbook

The 2011 Limerick Generating Station Medical Services Drill C/E Handbook is designed to help exercise Controllers and evaluators conduct and evaluate an effective exercise. This Handbook

also enables Controllers and Evaluators to understand their roles and responsibilities in exercise execution and evaluation.

### **Master Scenario Events List**

The MSEL outlines benchmarks, as well as injects that drive exercise play. It also details realistic input to the exercise players as well as information expected to emanate from simulated organizations (i.e., those nonparticipating organizations, agencies, and individuals who would usually respond to the situation). An inject will include several items of information, such as inject time, intended recipient, responsible controller, inject type, a short description of the event, and the expected player action.

For the 2011 Limerick Generating Station Medical Services Drill the MSEL will not be used.

## **Exercise Implementation**

### **Exercise Play**

Exercise play will begin at approximately 0800 with a situation update going to each participating venue. Play will proceed according to the events outlined in the scenario, in accordance with established plans and procedures. The exercise will conclude upon the completion of operations and attainment of the exercise objectives, as determined by the Lead Controller after consultation with Lead FEMA Evaluator.

### **Exercise Rules**

The following are the general rules that govern exercise play:

- Real-world emergency actions take priority over exercise actions.
- Exercise participants will comply with real-world response procedures, unless otherwise directed by control staff.
- All communications (written, radio, telephone, etc.) made during the exercise will begin and end with the phrase, *"This is a drill."*

Exercise participants placing telephone calls or initiating radio communication must identify the organization, agency, office, and/or individual with whom they wish to speak.

## **Safety Requirements**

### **General**

Exercise participant safety takes priority over exercise events. Although the organizations involved in the 2011 Limerick Generating Station Medical Services Drill come from various response agencies, they share the basic responsibility for ensuring a safe environment for all personnel involved in the exercise. In addition, aspects of an emergency response are dangerous. Professional health and safety ethics should guide all participants to operate in their assigned roles in the safest manner possible. The following general requirements apply to the exercise:

- An exercise Safety Controller will be identified and be responsible for participant safety.

- All exercise controllers, evaluators, and staff will serve as safety observers while the exercise activities are underway. Any safety concerns must be immediately reported to the Safety Controller.
- Participants will be responsible for their own and each other's safety during the exercise. It is the responsibility of all persons associated with the exercise to stop play if, in their opinion, a real safety problem exists. Once the problem is corrected, exercise play can be restarted.
- All organizations will comply with their respective environmental, health, and safety plans and procedures, as well as the appropriate Federal, State, and local environmental health and safety regulations.

### Exercise Setup

Exercise setup involves the pre-staging and dispersal of exercise materials; including registration materials, documentation, signage, and other equipment as appropriate.

### Accident Reporting and Real Emergencies

- Anyone observing a participant who is seriously ill or injured will first advise the nearest controller to call 911, and state "***This is not a Drill***" prior to explaining the injury or illness then if possible, renders aid, provided the aid does not exceed his or her training.
- The controller who is made aware of a real emergency will initiate the broadcast "***This Is Not A Drill***" on the controller radio network or telephone, providing the following information to the Lead Controller and Exercise Director:
  - Venue/function
  - Location within the venue/function
  - Condition
  - Requirements
- If the nature of the emergency requires a suspension of the exercise at the venue/function, all exercise activities at that facility will immediately cease. Exercise play may resume at that venue/function once the "Real-World Emergency" situation has been addressed.
- Exercise play at other venue/functions should not cease if one venue/function has declared a "Real-World Emergency" unless they are reliant on the affected venue.
- If a real emergency occurs that affects the entire exercise, the exercise may be suspended or terminated at the discretion of the Exercise Director and Lead Controller.

### Site Access

#### Security

The Lead Controller or Exercise Director will control entry to the exercise venues. To prevent confusion and interruption of the exercise, access to the exercise sites will be limited to exercise participants only. Players should advise their venue's controller or evaluator if an unauthorized

person is present. Each organization should follow its internal security procedures, augmented as necessary to comply with exercise requirements.

### **Observer Coordination**

Each organization with observers will coordinate with the Lead Controller or Exercise Director for access to the exercise site. Observers will be escorted to an observation area for orientation and conduct of the exercise. All observers will be asked to remain within the designated observation area during the exercise. Exercise Director and/or the Observer Controller will be present to explain the exercise program and answer questions for the observers during the exercise.

### **Parking and Directions**

Parking information and directions to each venue area are available from the Lead Controller.

### **Restroom Facilities**

Restroom facilities will be available at each venue.

### **Exercise Identification**

Players, Controllers and Evaluators will display the agency issued Identification badges while the exercise is in play.

### **Communications Plan**

#### **Exercise Start, Suspension, and Termination Instructions**

The exercise is scheduled to run for four (4) hours or until the Lead Controller after consultation with the Lead Evaluator determines that the exercise objectives have been met. The Lead Controller will announce the exercise suspension or termination.

**All spoken and written communication will start and end with the statement, "THIS IS AN EXERCISE."**

#### **Player Communication**

Players will use routine, in-place agency communication systems. Additional communication assets may be made available as the exercise progresses. The need to maintain capability for a real-world response may preclude the use of certain communication channels or systems that would usually be available for an actual emergency incident. In no instance will exercise communication interfere with real-world emergency communications. Each venue will coordinate its own internal communication networks and channels.

The primary means of communication among, Controllers, and the venues will be telephone.

**Player Briefing**

Controllers/Evaluators may be required to read specific scenario details to the participants to begin exercise play. They may also have technical handouts or other materials to give to players in order to better orient them to the exercise environment.

**External Affairs**

Any participation by actual media shall be coordinated through the FEMA Office of External Affairs.

## CHAPTER 3: PLAYER GUIDELINES

### Exercise Staff

#### Exercise Director

The Exercise Director has the overall responsibility for planning, coordinating, and overseeing all exercise functions. The Exercise Director for the 2011 Limerick Generating Station Medical Services Drill is the Lead Controller who will manage the exercise activities and maintain a close dialogue with the Controllers regarding the status of play and the achievement of the exercise design objectives.

#### Trusted Agents

Trusted agents are exercise planners and participants who are responsible for developing the Scenario and the Master Scenario Events List (MSEL). These documents are restricted and are not available to other members of the Exercise Planning Team, Players, or other Participants. The trusted agents for the 2011 Limerick Generating Station MS-1 Drill include the Exercise Director, Lead Controller, Exelon Nuclear, Chester County Office of Emergency Management, and the FEMA Site Specialist.

#### Lead Controller

The Lead Controller is responsible for the overall organization of the 2011 Limerick Generating Station MS-1 Drill. The Lead Controller monitors exercise progress and coordinates decisions regarding deviations or significant changes to the scenario caused by unexpected developments during play. The Lead Controller monitors actions by individual Controllers and ensures they implement all designated and modified actions at the appropriate time. The Lead Controller debriefs the Controllers after the exercise and oversees the setup and takedown of the exercise.

#### Controllers

At least one controller will be onsite with every facility participating in the drill. The Lead Facility Controller at each location will coordinate any changes that impact the scenario or affect other areas of play through the Lead Controller. The individual controllers issue exercise materials to players as required and monitor the exercise timeline. Controllers also provide injects to the players as described in the scenario.

#### Lead Evaluator

The Lead Evaluator is responsible for the overall evaluation of the 2011 Limerick Generating Station MS-1 Drill. The Lead Evaluator monitors exercise progress and stays in contact with the Lead Controller regarding changes to the exercise during play. The Lead Evaluator monitors actions of individual Evaluators and ensures they are tracking progress of the players in accordance with the Overview of Play. The Lead Evaluator debriefs the evaluators after the exercise and oversees the entire evaluation and After Action process. The Lead Evaluator will be the FEMA Region III Site Specialist for Limerick Generating Station.

## Evaluators

Evaluators work under the direction of the Lead Evaluator, and as a team with Controllers. Evaluators are SMEs who record events that take place during the exercise and assess/submit documentation for review and inclusion in the After Action Report (AAR). Evaluators should refrain from any direct interaction with the players during exercise play except with the facilitation of a Controller for clarification of issues or during scheduled interviews.

## Player Instructions

### Before the Exercise

- Review the appropriate emergency plans, procedures, and exercise support documents.
- Be at the appropriate site at least 30 minutes before the start of the exercise. Wear appropriate uniform/identification badge.
- If you gain knowledge of the scenario before the exercise, notify a controller so that appropriate actions can be taken to ensure a valid evaluation.
- Read your Player Information Handout, which includes information on exercise safety.
- Please sign in.

### During the Exercise

- Respond to the exercise events and information as if the emergency were real, unless otherwise directed by an exercise controller.
- Controllers will only give you information they are specifically directed to disseminate. You are expected to obtain other necessary information through existing emergency information channels.
- Do not engage in personal conversations with controllers, evaluators, observers, or media personnel while the exercise is in progress. If you are asked an exercise-related question, give a short, concise answer. If you are busy and cannot immediately respond, indicate so, but report back with an answer at the earliest time possible.
- If you do not understand the scope of the exercise or if you are uncertain about an organization's or agency's participation in an exercise, ask a controller.
- Parts of the scenario may seem implausible. Recognize that the exercise has objectives to satisfy and may require the incorporation of unrealistic aspects. Note that every effort has been made by the trusted agents to balance realism with safety and the creation of an effective learning and evaluation environment.
- All exercise communication will begin and end with the phrase "This is an exercise." This is a precaution taken so anyone overhearing the conversation will not mistake the exercise play for a real-world emergency.
- When communicating with any venue, identify the organization, agency, office, and/or individual with which you want to speak.

- Verbalize out loud when taking an action. This will ensure that evaluators are made aware of critical actions as they occur.
- Maintain a log of your activities. Many times, this log may include documentation of activities missed by a controller or evaluator.

### **Following the Exercise**

- At the end of the exercise at your facility, participate in the Hotwash with the controllers and evaluators.
- Complete the Participant Feedback Form as required. This form allows you to comment candidly on emergency response activities and effectiveness of the exercise. Please provide the completed form to a controller or evaluator.
- Provide all rosters, sign in sheets, logs, messages, notes or materials generated from the exercise to your controller or evaluator for review and inclusion in the After Action Report (AAR).

### **Simulation Guidelines**

Because the 2011 Limerick Generating Station MS-1 Drill is of limited duration and scope, the physical description of what would fully occur at the incident sites and surrounding areas will be relayed to the Players by Simulators or Controllers.

If a real emergency occurs during the exercise, the exercise at your respective venue may be suspended or terminated at the discretion of the controller(s) at each venue. If a real emergency occurs, say "Real-World Emergency" and notify the nearest Controller and Evaluator.

## **CHAPTER 4: EVALUATION AND POST-EXERCISE ACTIVITIES**

### **Exercise Documentation**

The goal of the 2011 Limerick Generating Station MS-1 Drill is to comprehensively exercise and evaluate the OROs' plans and capabilities as they pertain to a potential nuclear power plant incident. After the exercise, data collected by Controllers, Evaluators, and Players will be used to identify strengths and areas for improvement in the context of the exercise design objectives.

### **Debriefing**

Immediately following the completion of exercise play, Controllers will facilitate a debrief with Players from their assigned location. The debrief is an opportunity for Players to voice their opinions on the exercise and their own performance. At this time, Evaluators can also seek clarification on certain actions and what prompted Players to take them. The debrief should not last more than 30 minutes. Evaluators should take notes during the debrief and include these observations in their analysis.

### **After Action Report**

The AAR is the culmination of the exercise. It is a written report outlining the strengths and areas for improvement identified during the exercise. The AAR will include the timeline, executive summary, scenario description, mission outcomes, and capability analysis. The AAR will be drafted by a core group of individuals from the exercise planning team.

### **After Action Conference and Improvement Plan**

The improvement process represents the comprehensive, continuing preparedness effort of which the 2011 Limerick Generating Station MS-1 Drill is a part. The lessons learned and recommendations from the AAR will be incorporated into the Improvement Plan (IP).

### **After Action Conference**

The After Action Conference (AAC), scheduled within 60 days of the drill to allow jurisdiction officials to hear the results of the evaluation analysis, validate the findings and recommendations in the draft AAR, and begin development of the IP.

### **Improvement Plan**

The IP identifies how recommendations will be addressed, including what actions will be taken, who is responsible, and the timeline for completion. It is created by key stakeholders from the 2011 Limerick Generating Station MS-1 Drill participating agency officials during the AAC scheduled within 60 days of the drill.

**APPENDIX A: EXERCISE SCHEDULE****Table A.1**2011 Limerick Generating Station MS-1 Drill *Schedule*

Time (Tentative)	Personnel	Activity
<b>August 10, 2011</b>		
0900	Ambulance Company Abington Hospital	Exercise Begins
1030	Ambulance Company	Exercise Ends
1145	Abington Hospital	Exercise Ends
1200	Drill Participants	Critique and Debrief

## **APPENDIX B: EXTENT OF PLAY INFORMATION**

### **LIMERICK GENERATING STATION ABINGTON MEMORIAL HOSPITAL MEDICAL SERVICES DRILL September 21, 2011**

#### **Method of Operation**

1. The power station and its personnel will not play as active role in the facilitation of this drill. The plant's simulated events, radiation releases, and emergency classifications will be injected by off-site controllers. A pre-approved scenario will be used.
2. The Pennsylvania Emergency Management Agency (PEMA), Area Offices (Harrisburg Central Area and Hamburg Eastern Area) will not be activated as part of this drill. The Exercise Coordinator will provide pre-drill coordination and observe drill activities.
3. Exelon Nuclear will participate as a Controller in this drill.
4. Chester County Office of Emergency Management will participate in this drill
5. Controllers will be supplied by PEMA. Controllers are not players and will provide injects and information to initiate and stimulate drill 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), Federal Emergency Management Agency (FEMA), Radiological Emergency Preparedness Program (REPP) Evaluators: FEMA Evaluators will be present at designated demonstration locations.
8. Drill activities are scheduled to commence on or about 0900, September 21, 2011, and continue until the participants have completed the drill objectives and demonstrated the Exercise Evaluation Criteria.
9. 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.

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 and the appropriate negative assessment corrected.
11. During the drill any activity that is not satisfactorily demonstrated may be redemonstrated 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. Redemonstrations will be negotiated between the players, observers, controllers, and evaluators. DEMA may advise the RAC 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 Chester County Division of Emergency Medical Services Paramedics, Lower Providence Community Center Ambulance /EMS and Abington Memorial 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 drill 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.

### Extent of Play

#### **Evaluation Area 1—Emergency Operations Management**

##### ***Sub-Element 1.e—Equipment and Supplies To Support Operations***

#### **Intent**

This sub-element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) have emergency equipment and supplies adequate to support the emergency response.

**Criterion 1.e.1: Equipment, maps, displays, dosimetry, potassium iodide (KI), and other supplies are sufficient to support emergency operations. (NUREG-0654, H.7,10; J.10.a, b, e, J.11; K.3.a).**

#### **Extent of Play**

Equipment within the facility (facilities) should be sufficient and consistent with the role assigned to that facility in the ORO's plans and/or procedures in support of emergency operations. Use of maps and displays is encouraged. All instruments should be inspected, inventoried, and operationally checked before each use. Instruments should be calibrated in accordance with the manufacturer's recommendations. Unmodified CDV-700 series instruments and other instruments without a manufacturer's recommendation should be calibrated annually. Modified CDV-700 instruments should be calibrated in accordance with the recommendation of the modification manufacturer. A label indicating such calibration should be on each instrument, or calibrated frequency can be verified by other means. Additionally, instruments being used to measure activity should have a range of readings sticker affixed to the side of the instrument. The above considerations should be included in 4.a.1 for field team equipment; 4.c.1 for radiological laboratory equipment (does not apply to analytical equipment); reception center and emergency worker facilities' equipment under 6.a.1; and ambulance and medical facilities' equipment under 6.d.1.

Sufficient quantities of appropriate direct-reading and permanent record dosimetry and dosimeter chargers should be available for issuance to all categories of emergency workers that could be deployed from that facility. Appropriate direct-reading dosimetry should allow individual(s) to read the administrative reporting limits and maximum exposure limits contained in the ORO's plans and procedures.

Dosimetry should be inspected for electrical leakage at least annually and replaced, if necessary. CDV-138s, due to their documented history of electrical leakage problems, should be inspected for electrical leakage at least quarterly and replaced if necessary. This leakage testing will be verified during the exercise, through documentation submitted in the Annual Letter of

Certification, and/or through a staff assistance visit.

Responsible OROs should demonstrate the capability to maintain inventories of KI sufficient for use by emergency workers, as indicated on rosters; institutionalized individuals, as indicated in capacity lists for facilities; and, where stipulated by the plan and/ or procedures, members of the general public (including transients) within the plume pathway EPZ.

Quantities of dosimetry and KI available and storage location(s) will be confirmed by physical inspection at storage location(s) or through documentation of current inventory submitted during the exercise, provided in the Annual Letter of Certification submission, and/or verified during a Staff Assistance Visit. Available supplies of KI should be within the expiration date indicated on KI bottles or blister packs. As an alternative, the ORO may produce a letter from a certified private or State laboratory indicating that the KI supply remains potent, in accordance with U.S. Pharmacopoeia standards.

At locations where traffic and access control personnel are deployed, appropriate equipment (for example, vehicles, barriers, traffic cones and signs, etc.) should be available or their availability described.

All activities must be based on the ORO's plans and procedures and completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

**State Negotiated Extent of Play:**

*Ambulance crews are not trained or equipped to operate or carry radiological monitoring equipment. In accordance with PEMA standard operating procedures 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.*

*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; however, an Area Kit will be established in the Radiation Emergency Area (REA). Individual PRDs will be issued by the hospital. Radiological Survey Instruments are calibrated per manufactures recommendations.*

**Outstanding Issues:**

None

**Evaluation Area 3—Protective Action Implementation*****Sub-Element 3.a—Implementation of Emergency Worker Exposure Control*****Intent**

This sub-element derives from NUREG-0654, which provides that OROs should have the capability to provide for the following: distribution, use, collection, and processing of direct-reading dosimetry and permanent record dosimetry; the reading of direct-reading dosimetry by emergency workers at appropriate frequencies; maintaining a radiation dose record for each emergency worker; and establishing a decision chain or authorization procedure for emergency workers to incur radiation exposures in excess of protective action guides, always applying the ALARA (As Low As is Reasonably Achievable) principle as appropriate.

**Criterion 3.a.1: The OROs issue appropriate dosimetry and procedures, and manage radiological exposure to emergency workers in accordance with the plans and procedures. Emergency workers periodically and at the end of each mission read their dosimeters and record the readings on the appropriate exposure record or chart. (NUREG-0654, K.3.a, b).**

**Extent of Play**

ORO's should demonstrate the capability to provide appropriate direct-reading and permanent record dosimetry, dosimeter chargers, and instructions on the use of dosimetry to emergency workers. For evaluation purposes, appropriate direct-reading dosimetry is defined as dosimetry that allows individual(s) to read the administrative reporting limits (that are pre-established at a level low enough to consider subsequent calculation of Total Effective Dose Equivalent) and maximum exposure limits (for those emergency workers involved in life saving activities) contained in the ORO's plans and procedures.

Each emergency worker should have the basic knowledge of radiation exposure limits as specified in the ORO's plan and/or procedures. Procedures to monitor and record dosimeter readings and to manage radiological exposure control should be demonstrated.

During a plume phase exercise, emergency workers should demonstrate the procedures to be followed when administrative exposure limits and turn-back values are reached. The emergency worker should report accumulated exposures during the exercise as indicated in the plans and procedures. OROs should demonstrate the actions described in the plan and/or procedures by determining whether to replace the worker, to authorize the worker to incur additional exposures or to take other actions. If scenario events do not require emergency workers to seek authorizations for additional exposure, evaluators should interview at least two emergency workers, to determine their knowledge of whom to contact in the event authorization is needed and at what exposure levels. Emergency workers may use any available resources (for example, written procedures and/or co-workers) in providing responses.

Although it is desirable for all emergency workers to each have a direct-reading dosimeter, there may be situations where team members will be in close proximity to each other during the entire mission and adequate control of exposure can be effected for all members of the team by one dosimeter worn by the team leader. Emergency workers who are assigned to low exposure rate areas, for example, at reception centers, counting laboratories, emergency operations centers, and communications centers, may have individual direct-reading dosimeters or they may be monitored by dosimeters strategically placed in the work area. It should be noted that, even in these situations, each team member must still have their own permanent record dosimetry. Individuals without specific radiological response missions, such as farmers for animal care, essential utility service personnel, or other members of the public who must re-enter an evacuated area following or during the plume passage, should be limited to the lowest radiological exposure commensurate with completing their missions.

All activities must be based on the ORO's plans and procedures and completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

**State 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*

*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.*

**Outstanding Issues:**

None

**Evaluation Area 6—Support Operation/ Facilities*****Sub-Element 6.d—Transportation and Treatment of Contaminated Injured Individuals*****Intent**

This sub-element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) should have the capability to transport contaminated injured individuals to medical facilities with the capability to provide medical services.

**Criterion 6.d.1: The facility/ORO has the appropriate space, adequate resources, and trained personnel to provide transport, monitoring, decontamination, and medical services to contaminated injured individuals. (NUREG-0654, F.2; H.10; K.5.a, b; L.1, 4).**

**Extent of Play**

Monitoring, decontamination, and contamination control efforts will not delay urgent medical care for the victim.

Offsite Response Organizations (ORO) should demonstrate the capability to transport contaminated injured individuals to medical facilities. An ambulance should be used for the response to the victim. However, to avoid taking an ambulance out of service for an extended time, any vehicle (for example, car, truck, or van) may be used to transport the victim to the medical facility. Normal communications between the ambulance/dispatcher and the receiving medical facility should be demonstrated. If a substitute vehicle is used for transport to the medical facility, this communication must occur before releasing the ambulance from the drill. This communication would include reporting radiation monitoring results, if available. Additionally, the ambulance crew should demonstrate, by interview, knowledge of where the ambulance and crew would be monitored and decontaminated, if required, or whom to contact for such information.

Monitoring of the victim may be performed before transport, done en route, or deferred to the medical facility. Before using a monitoring instrument(s), the monitor(s) should demonstrate the process of checking the instrument(s) for proper operation. All monitoring activities should be completed as they would be in an actual emergency. Appropriate contamination control measures should be demonstrated before and during transport and at the receiving medical facility.

The medical facility should demonstrate the capability to activate and set up a radiological emergency area for treatment. Equipment and supplies should be available for the treatment of contaminated injured individuals.

The medical facility should demonstrate the capability to make decisions on the need for decontamination of the individual, to follow appropriate decontamination procedures, and to maintain records of all survey measurements and samples taken. All procedures for the collection and analysis of samples and the decontamination of the individual should be

demonstrated or described to the evaluator.

**State 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.*

*The Lower Providence Community Center Ambulance will simulate picking up a pre-staged contaminated/injured victim.*

**Outstanding Issues:**

None

**All activities associated with this criterion must be based on the ORO's plans and procedures and completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.**

# Abington Memorial Hospital

## **MEDICAL SERVICES EXERCISE (MS-1)**

**September 21, 2011**

### EXERCISE SUMMARY

The purpose of this exercise is to demonstrate the capabilities of the emergency response organizations in Montgomery County in handling contaminated/injured persons and to satisfy both the hospital's requirement for an emergency/drill and the "Medical Services Guidance Memorandum MS-1."

### PARTICIPANTS

Abington Memorial Hospital  
Lower Providence Community Center Ambulance  
Montgomery County Emergency Management Agency

### CONTROLLERS

Pennsylvania Emergency Management Agency  
Exelon

### EVALUATORS

Federal Emergency Management Agency

SCHEDULE OF EVENTS

Abington Memorial Hospital

- 9:00 AM Exercise begins.
- 9:00 AM Hospital is notified that the emergency at the Limerick Generating Station (LGS) has escalated to a Site Area Emergency.
- 9:10 AM The hospital is notified that the emergency at LGS has escalated to a General Emergency.
- 9:20 AM Hospital is notified that there is a victim injured and potentially contaminated.
- 10:00 AM The victim arrives at the hospital.
- 11:30 AM Exercise ends.

Lower Providence Community Center Ambulance

- 9:00 AM Exercise begins.
  - 9:00 AM Ambulance company is notified that the emergency at the Limerick Generating Station (LGS) has escalated to a **Site Area** Emergency.
  - 9:10 AM Ambulance company is notified that the emergency at LGS has escalated to a General Emergency.
  - 9:15 AM An ambulance is requested to report to the accident site to pick up an injured and potentially contaminated individual.  
(Simulated - Staging will be at EMS)
  - 9:45 AM Ambulance leaves for hospital.
  - 10:00 AM Ambulance arrives at the hospital.
  - 10:15 AM Exercise ends for ambulance crew.
- NOTE: Ambulance Company will respond without siren and lights.
- 11:30 AM Critique at hospital immediately following the drill.

### SCENARIO

- 9:00 AM Ambulance and the hospital are notified that an emergency at LGS has escalated to a **Site Area Emergency**.
- 9:10 AM Ambulance company and hospital are notified that the LGS emergency has escalated to a **General Emergency**.
- 9:15 AM Ambulance is requested to report to the accident scene to pick up an injured and potentially contaminated victim. (Simulated - Staging will be at EMS)
- 9:20 AM The hospital is notified that an injured potentially contaminated victim will be brought in for treatment.
- 9:45 AM The ambulance leaves for the hospital.
- 10:00 AM The ambulance arrives at the hospital.
- 10:15 AM Hospital staff takes control of the contaminated/injured person. Ambulance and crew are monitored before being released.
- 11:20 AM After the patient is stabilized and decontaminated, cleanup of the area begins.
- 11:30 AM Exercise ends.

### OBJECTIVES

#### Abington Memorial Hospital

1. Prepare the Emergency Room to receive contaminated/injured persons.
2. Prepare the Emergency Room Staff to process contaminated/injured persons.
3. Process contaminated/injured persons.
4. Return the Emergency Room to pre-emergency conditions. (Will not be demonstrated, but explained).

#### Lower Providence Community Center Ambulance

1. Prepare the ambulance for transporting contaminated/injured persons.
2. Prepare the ambulance crews for handling contaminated/injured persons.
3. Process and transport contaminated/injured persons.

CONTROLLER PROMPTS

- 9:00 AM County Controller notifies the ambulance company and the hospital that Limerick Generating Station has declared a **Site Area Emergency**. Instruct the staff to prepare for possible contaminated/injured victim.
- 9:10 AM County Controller notifies the Ambulance company and the hospital that Limerick Generating Station has declared a General Emergency.
- 9:15 AM Controller notifies the ambulance company to pick up a contaminated/injured victim. (Simulated - Staging will be at EMS.)
- 9:30 AM Ambulance company notifies the hospital that a contaminated/injured victim is being brought in. The nature of the injuries and the extent of contamination are unknown at this time.
- 9:45 AM Controller releases the ambulance to leave for the hospital at this time.

CONTROLLER ASSIGNMENTS

Communications

Montgomery County

All other

PEMA

NOTE:

The ambulance is not to utilize siren or emergency lights and should obey all traffic regulations in transit.

All communications will precede and conclude with  
"THIS IS A DRILL"

# **ATTACHMENT 1**

## **INJURED PERSON**

**Situation:** During an incident at Limerick Generating Station, an evacuee was hit by a vehicle while walking across the cross walk at an evacuee monitoring and decontamination station.

**Injuries:** Victim was knocked to the pavement and sustained abrasions on both knees and hands, a possible fracture on the right wrist.

**Contamination:** Initial readings at the hospital are indicated in counts per minute (cpm) below:

- 1) **Left and right hand - (800 cpm) Initial**
- 2) **Outer front part of neck – (300 cpm) Initial**

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**Blood Pressure:** 100/60

**Pulse:** 90

**Breathing:** 22

**Temperature:** Normal

**Nausea:** No

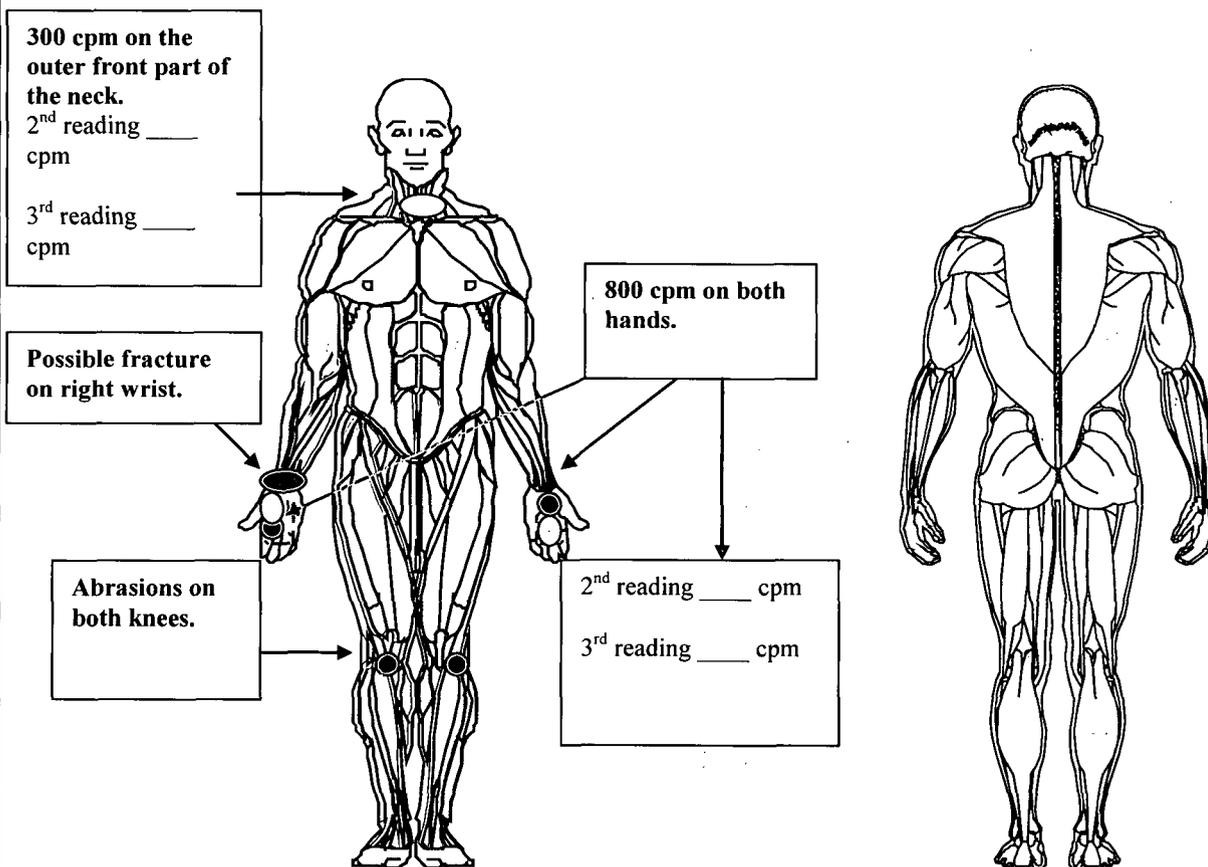
**Vision:** Clear, eyes equal and reactive

**No Allergies.**

**Patient may give own responses to all other queries**

## ATTACHMENT 2

### BODY MAP INDICATES AREAS OF CONTAMINATION/INJURY



A) EMS conducts gross decontamination prior to transport (simulated).

B) Follow on readings will be given by controller inject and based on his/her observance of decontamination efforts.

## MS-1 DRILL EXERCISE NOTES

### Communications

Radio  
Telephone  
Pagers  
Call back (verification)  
Relay and accuracy of patient information  
Inter staff communications

### Contamination Control

Glove changes  
Control of run off & Cross Contamination  
Control of contaminated waste  
Remove blankets and backboard from gurney  
Decontamination of victim/staff  
Set up of REA

### Patient Care

Life threatening injury takes precedence over contamination  
Treatment of injury  
Patient reassurance  
Documentation  
X-Rays  
Swabbing i.e. mouth, eyes, nose, collection of dressings, blood, urine, etc. (evidence and lab)

### Protective clothing

Seal openings gloves, boots, use face shields, and cover exposed skin  
Double glove (Glove Changes)  
Decon posters and (Exiting procedures from the REA – Disrobing)

### Equipment & Supplies

Survey Meters (calibrated)  
Dosimeters – DRD's (Leak Tested)  
PRD's  
Monitoring Procedures  
Decontamination Kit & Supplies – Check for expiration dates

### OTHER

Security  
Documentation of readings (forms)

### NOTES:

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