



Salem/Hope Creek Nuclear Generating Stations

After Action Report/ Improvement Plan

Drill Date - April 27, 2011

Radiological Emergency Preparedness (REP) Program



FEMA

Published June 28, 2011

Unclassified

Radiological Emergency Preparedness Program (REP)

After Action Report/Improvement Plan

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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	10
2.1 Exercise Purpose and Design	10
2.2 Exercise Objectives, Capabilities and Activities	10
2.3 Scenario Summary	11
Section 3: Analysis of Capabilities	13
3.1 Drill Evaluation and Results	13
3.2 Summary Results of Drill Evaluation	13
3.3 Criteria Evaluation Summaries	15
3.3.1 Risk Jurisdictions	15
3.3.1.1 Christiana Health Care Services, Christiana Hospital	15
3.3.1.2 New Castle County, Odessa Fire Company/Emergency Medical Services	15
Section 4: Conclusion	16
Appendix A: Drill Evaluators and Team Leaders	17
Appendix B: Acronyms and Abbreviations	18
Appendix C: Exercise Plan	19
Appendix D: Improvement Plan	74

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EXECUTIVE SUMMARY

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) 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 Nuclear Power Station accident in March 1979.

The FEMA rule, 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.

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 the activities of Federal agencies with responsibilities in the radiological emergency planning process:
 - U.S. Department of Agriculture,
 - U.S. Department of Commerce,
 - U.S. Department of Energy,
 - U.S. Department of Health and Human Services,
 - U.S. Department of Interior,
 - U.S. Department of Transportation,

-
- U.S. Environmental Protection Agency,
 - U.S. Food and Drug Administration,
 - U.S. Nuclear Regulatory Commission

- Providing regulatory oversight, rule-making and guidance, as necessary. The State of Delaware and local jurisdictions submitted their RERPs for the S/HCNGS to FEMA Region III and were granted formal approval of the RERPs on August 24, 1998, under 44 CFR 350.

A REP Medical Services Drill was evaluated on April 27, 2011, by FEMA Region III REPP to assess the capabilities of State and local offsite emergency preparedness organizations in implementing their RERPs and procedures to protect the public health and safety during a radiological emergency involving the Salem/Hope Creek Nuclear Generating Stations (S/HCNGS). 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.

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

- NUREG-0654/FEMA-REP-1, Rev. 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980;
- Guidance Memorandum (GM) MS-1, Medical Services, (November 1986), and
- FEMA Interim Radiological Emergency Preparedness Program Manual, August 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, 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 Extent of Play and Scenario.

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

The S/HCNGS site is located on the east bank of the Delaware River in Lower Alloways Creek Township, Salem County, New Jersey, about 18 miles south of Wilmington, Delaware. The 700-acre site is on the southern end of Artificial Island, a 3-mile-long, 1-mile-wide, man-made peninsula. The peninsula is connected to the mainland by a strip of tideland formed by hydraulic fill from dredging operations on the Delaware River. The tideland was constructed by the U.S. Army Corps of Engineers. The coordinates of the site are latitude 39°27'46" north and longitude 75°32'08" west. Two pressurized water reactors (Salem) and one boiling water reactor (Hope Creek) are located on the island. Each Salem unit generates a maximum output of 1,106 megawatts (MW); Unit 1 commenced commercial operations in June 1977 and Unit 2 in October 1981. The Hope Creek Unit, which generates a maximum output of 1,031 MW, became operational in December 1986.

The site lies on the low coastal plain of New Jersey, surrounded by extensive marshlands and

meadowlands. The land within the two Delaware counties (New Castle and Kent) near the site is either undeveloped (48 percent) or used for agricultural purposes (42 percent). Major farm products within a 25-mile radius of the site include vegetables, poultry, dairy products, and indigenous field crops.

The nearest major population center (more than 25,000 people) is Wilmington, Delaware, which has a population of 71,529 and lies 20 miles north of S/HCNGS. The maximum population distribution in Delaware, including residents and transients, is 0 within the 2-mile EPZ, 850 within the 5-mile EPZ, and 24,976 within the 10-mile EPZ. There are 37 early warning sirens in the Delaware portion of the EPZ.

The Ingestion Planning Zone (IPZ) is approximately 7,850 square miles in area, which is equivalent to a 50-mile radius around the plant site. The States of Delaware, Maryland, and New Jersey, and the Commonwealth of Pennsylvania have jurisdictions within the IPZ. The largest city within the IPZ is Philadelphia, Pennsylvania, with a population of 1,526,006, about 46 miles from the plant site.

SECTION 1: EXERCISE OVERVIEW

1.1 Exercise Details

Exercise Name

Salem/Hope Creek Nuclear Generating Stations

Type of Exercise

Drill

Exercise Date

April 27, 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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1.3 Participating Organizations

Agencies and organizations of the following jurisdictions participated in the Salem/Hope Creek Nuclear Generating Stations drill:

State Jurisdictions

Delaware Emergency Management Agency

Risk Jurisdictions

Christiana Care Health Services, Christiana Hospital

New Castle County Paramedics, Odessa Fire Company/Emergency Medical Services (EMS)

Private Organizations

PSEG Nuclear - Emergency Preparedness
Federal Jurisdictions
Federal Emergency Management Agency

SECTION 2: EXERCISE DESIGN SUMMARY

2.1 Exercise Purpose and Design

On April 27, 2011, a Medical Services (MS-1) drill was evaluated by the Federal Emergency Management Agency (FEMA), Department of Homeland Security (DHS) in relation to the Salem/Hope Creek Nuclear Generating Stations (S/HCNGS). 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 response plans (RERP).

The most recent evaluated medical drill associated with this site was conducted on May 13, 2009.

FEMA wishes to acknowledge the efforts of the many individuals in the State of Delaware, the risk county of New Castle: Odessa Fire Company/Emergency Medical Services, and the Christiana Health Care Services, Christiana 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.

This report contains the evaluation of the drill.

The State and local organizations demonstrated knowledge of their emergency response plans and adequately implemented them. No Deficiencies and no Areas Requiring Corrective Action (ARCA) were identified as a result of this drill.

2.2 Exercise Objectives, Capabilities and Activities

A. Demonstrate the ability to respond to a radiation medical emergency following the procedures of Odessa Fire Company/EMS and the Christiana Health Care Services, Christiana Hospital.

B. Demonstrate timely and accurate communications between the hospital and off-site 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 the assessment and documentation of radiological conditions during the simulated accident.

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

E. Demonstrate inter-agency cooperation between Odessa Fire Company and the Hospital.

2.3 Scenario Summary

A field monitoring team member has been in PC's for approximately one hour, and has been taking field monitoring samples at the Field Monitoring Station adjacent to The Hearth, 3147 DuPont Parkway, Odessa, Delaware during a General Emergency, which has occurred at the Salem Nuclear Plant in Salem, New Jersey, with a release of radioactive materials. She becomes dizzy and lightheaded, falls to the ground in a near syncopal episode, and sustains abrasions to her hands, and knees. The fall causes her PC's to rip at the knees. Her team member calls for assistance, describes what happened, and requests an ambulance.

The New Castle County (NCC) 911 Communications Center dispatches an Odessa Fire/EMS squad and NCC Paramedics to the scene. As part of their normal procedures, the 911 Communications Center also notifies Christiana Hospital to alert them about the arrival of an injured person with possible radiological contamination.

Immediately after the EMS arrives at the accident scene, the team member tells the EMS team what has happened. The EMS team performs medical assessment. The EMS team may perform radiation surveillance. During the trip to the Christiana Health Care Services, Christiana Hospital, the EMS team checks the patient's vital signs.

Upon arrival at the Christiana Health Care Services, Christiana Hospital, the medical team will meet the EMS team at the exterior entrance to the decontamination unit. The hospital medical team will assess the patient's condition.

The medical team surveys the victim for radiological contamination.

The hospital medical team re-surveys the victim after the first decontamination procedure on the patient.

The hospital medical team re-surveys the victim after the second decontamination procedure on the patient.

After the third decontamination procedure on the patient, the medical team will have successfully removed surface contamination.

Post contamination monitoring of vital signs.

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 April 27, 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 Salem/Hope Creek Nuclear Generating Stations (S/HCNGS) 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: 2011-04-27 SITE: Salem/Hope Creek Nuclear Generating Stations, NJ M: Met, A: ARCA, D: Deficiency, P: Plan Issue, N: Not Demonstrated			
		CHCS CH	NCC OFCEMS
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 PARs	2b1		
Decisions for the Plume Phase -PADs	2b2		
PADs 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 - EOCs	3c1		
Implementation of protective actions for Schools	3c2		
Implementation of traffic and access control	3d1		
Impediments to evacuation are identified and resolved	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		
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		
Activation of prompt alert and notification system-Excptn Areas/Bkup RA	5a3		
Emergency information and instructions for the public and the media	5b1		
Support Operations/Facilities			
Mon/decon of evacuees and emergency workers, and registration of evacuees	6a1		
Mon/decon of emergency worker 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 Christiana Health Care Services, Christiana Hospital

- 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 New Castle County, Odessa Fire Company/Emergency Medical Services

- 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 reasonable assurance they can be implemented, as demonstrated during the Salem/Hope Creek Nuclear Generating Stations MS-1 Drill.

APPENDIX A: DRILL EVALUATORS AND TEAM LEADERS

DATE: 2011-04-27, SITE: Salem/Hope Creek Nuclear Generating Stations, NJ

LOCATION	EVALUATOR	AGENCY
Christiana Health Care Services, Christiana Hospital	*Richard Kinard	FEMA RIII
New Castle County, Odessa Fire Company/Emergency Medical Services	Tina Lai Thomas	FEMA RIII
* Team Leader		

APPENDIX B: ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
AAC	After Action Conference
AAR	After Action Report
ALARA	As Low As Reasonably Achievable
ARCA	Area Requiring Corrective Action
CFR	Code of Federal Regulations
CPM	Counts Per Minute
DEMA	Delaware Emergency Management Agency
DHS	Department of Homeland Security
DRD	Direct Reading Dosimeter
EEG	Exercise Evaluation Guides
EMS	Emergency Medical Services
EOC	Emergency Operations Center
EPT	Exercise Planning Team
ExPlan	Exercise Plan
FEMA	Federal Emergency Management Agency
GM	Guidance Memorandum
HSEEP	Homeland Security Exercise Evaluation Program
IP	Improvement Plan
IPZ	Ingestion Planning Zone
KI	Potassium Iodide
MSEL	Master Scenario Events List
NCC	New Castle County
NRC	Nuclear Regulatory Commission
ORO	Offsite Response Organization
PRD	Permanent Record Dosimeter
RAC	Regional Assistance Committee
REA	Radiation Emergency Area
REP	Radiological Emergency Preparedness
RSO	Radiation Safety Officer
TCL	Target Capabilities List
TEP	Training and Exercise Plan
UTL	Universal Task List

APPENDIX C: EXERCISE PLAN

The enclosed Exercise Plan was created as an overall tool for facilitation and implementation of the 2011 Christiana Hospital and Odessa Fire Company/Emergency 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. The Exercise Plan was originally drafted and published for the Delaware Emergency Management Agency (DEMA) as an independent document and is annexed here.

The "Christiana Hospital and Odessa Fire Company/Emergency Medical Services Drill Extent of Play" was agreed upon by FEMA Region III, DEMA, and the participating emergency management agencies. It is included as an Appendix of the Exercise Plan.

For the purposes of this report, the terms exercise and drill are synonymous.

NATIONAL EXERCISE PROGRAM

Exercise Plan

2011 SALEM/HOPE CREEK NUCLEAR GENERATING STATIONS
FEMA EVALUATED MS-1 DRILL

U.S. DEPARTMENT OF HOMELAND SECURITY



PREFACE

The 2011 Salem/Hope Creek Nuclear Generating Stations MS-1 Drill is sponsored by the Delaware Emergency Management Agency (DEMA) 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, 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 Salem/Hope Creek Nuclear Generating Stations 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. This ExPlan may be viewed by all exercise participants, *but the Controller and Evaluator (C/E) Handbooks are restricted documents 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 Department of Homeland Security (DHS) and the EPT.

HANDLING INSTRUCTIONS

1. The title of this document is the *2011 Salem/Hope Creek Nuclear Generating Stations MS-1 Drill Exercise Plan (ExPlan)*.
2. The 2011 Salem/Hope Creek Nuclear Generating Stations 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. This ExPlan may be viewed by all exercise participants, *but the Controller and Evaluator (C/E) Handbooks are restricted documents intended for controllers and evaluators only*.
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 applicable point of contact (POC):

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TABLE OF CONTENTS

Exercise Plan

Salem/Hope Creek Nuclear Generating Stations FEMA Evaluated MS-1 Drill

U.S. Department of Homeland Security

Preface	21
Handling Instructions	22
Chapter 1: General Information.....	26
Introduction	26
Confidentiality	26
Purpose	26
Target Capabilities.....	27
Exercise Objectives	27
Chapter 2: Exercise Logistics	29
Exercise Summary.....	29
General.....	29
Assumptions.....	29
Constructs and Constraints	29
Controller and Evaluator Handbook	31
Master Scenario Events List	31
Exercise Implementation	31
Exercise Play.....	31
Exercise Rules.....	32
Safety Requirements - General	32
Exercise Setup.....	33
Accident Reporting and Real Emergencies	33
Site Access.....	33
Security	33
Observer Coordination.....	33
Parking and Directions.....	34
Restroom Facilities	34
Exercise Identification.....	34
Communications Plan.....	34
Exercise Start, Suspension, and Termination Instructions.....	34
Player Communication.....	35

Player Briefing 35

Public Affairs 35

Chapter 3: Player Guidelines 36

Exercise Staff..... 36

 Exercise Director 36

 Trusted Agents 36

 Lead Controllers..... 36

 Controllers..... 36

 Lead Evaluator 37

 Evaluators 37

Player Instructions 37

 Before the Exercise 37

 During the Exercise..... 37

 Following the Exercise 38

Simulation Guidelines 38

Chapter 4: Evaluation and Post-Exercise Activities 40

Exercise Documentation..... 40

 Exercise Evaluation Guides 40

Debriefing..... 40

Hotwash..... 40

Participants and Public/Media Briefings 41

After Action Report..... 41

After Action Conference and Improvement Plan 41

 After Action Conference..... 41

 Improvement Plan..... 41

Appendix A: Exercise Schedule 42

Appendix B: Extent of Play Information 43

CHAPTER 1: GENERAL INFORMATION

Introduction

The 2011 Salem/Hope Creek Nuclear Generating Stations MS-1 Drill is a full-scale exercise (FSE) designed to establish a learning environment for players to exercise emergency response plans, policies, and procedures as they pertain to nuclear power plant accidents. An FSE 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 and the Delaware Emergency Management Agency with the input, advice, and assistance of the Exercise Planning Team. The 2011 Salem/Hope Creek Nuclear Generating Stations MS-1 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 Salem/Hope Creek Nuclear Generating Stations 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. This ExPlan may be viewed by all exercise participants, *but the Controller and Evaluator (C/E) Handbooks are restricted documents 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 Emergency Management Agency and the Delaware Emergency Management Agency 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 and the Delaware Emergency Management Agency 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.

The capabilities listed below have been selected by the Exercise Planning Team (EPT) from the priority capabilities identified in the Delaware 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 exercise are those that are required to be demonstrated in every MS-1 Drill, per 67 FR 20580 (April 25, 2002) and the *Interim REP Program Manual (August 2002)*. Appendix B, Extent of Play, shows the emergency preparedness elements that are required to be demonstrated in the

2011 Salem/Hope Creek Nuclear Generating Stations MS-1 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 the previous FEMA-evaluated MS-1 Drill.

CHAPTER 2: EXERCISE LOGISTICS

Exercise Summary

General

The 2011 Salem/Hope Creek Nuclear Generating Stations MS-1 Drill is designed to establish a learning environment for players to exercise their plans and procedures for responding to an incident at a nuclear power plant. The 2011 Salem/Hope Creek Nuclear Generating Stations MS-1 Drill will be conducted on April 27, 2011.

Exercise play is scheduled to begin at 0900. The exercise may conclude when the Lead Controller, in consultation with FEMA, determine that the exercise objectives have been met at each venue.

Assumptions

Assumptions constitute the implied factual foundation for the exercise and, hence, are present before the start of the exercise. The following general assumptions apply to the 2011 Salem/Hope Creek Nuclear Generating Stations Exercise:

- The exercise will be graded against the REPP criteria. Elements outside the scope of the REPP 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:

- Players will utilize normal, everyday communications methods, channels, and equipment.
- 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 players’ 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 are members of the Region III REP Program staff, representatives of the Radiological Assistance Committee, and contractors. 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. Observers do not play in the exercise, and do not perform any control or evaluation functions. Observers will view the exercise from a designated observation area and will be asked to remain within the observation area during the exercise. DEMA observers will be present at selected locations as assigned by the Lead Controller. DEMA observers will receive an observer briefing prior to the day of the exercise. Any V.I.P.s or other visitors will be handled by each agency or location (Municipal EOC, County EOC, etc.) according to that agencies’ policies and procedures.

- *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 Handbooks

Due to the brevity of this drill, the controller handbook is an integral part of the Extent of Play and is designed to help exercise Controllers conduct an effective exercise. The Handbooks 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 Salem/Hope Creek Nuclear Generating Stations MS-1 Drill the MSEL will be used primarily for out of sequence exercise play. During the plume phase the exercise will be driven by the simulator at the utility. Notifications will go out from the utility in the same manner as they would in a real event with all communications being preceded and terminated by the phrase “This is a Drill”. Additionally, PSEG Nuclear, LLC field teams will be utilizing “exercise measuring instruments” that receive input from the Virtual Plume software. The Virtual Plume software will be programmed to reflect expected conditions at any given time during the exercise.

Exercise Implementation

Exercise Play

Exercise play will begin at approximately 0900, April 27, 2011, with a situation update going to each participating venue. Play will proceed according to the events outlined in the MSEL, 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 FEMA.

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 Salem/Hope Creek Nuclear Generating Stations MS-1 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 provide aid within their training, call the County 911 Center for additional aid or enlist the aid of another person to call, and advise the nearest controller. Anyone calling County 911 will use the phrase “this is not a drill” prior to explaining the injury or illness.
- The controller who is made aware of a real emergency will contact the County 911 center (if this call has not already been made) and request the appropriate aid. The controller will use the phrase “this is not a drill” prior to explaining the injury or illness.
- The controller will then contact the Lead Controller and Exercise Director with the following information:
 - Venue/function
 - Location within the venue/function
 - Condition of injured parties
 - Requirements for medical aid, fire suppression, rescue, or security resources.
- 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 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. The notification will be made from the State Emergency Operations Center. The Lead Controller will notify the SimCell by phone.

Site Access

Security

Exercise play for the 2011 Salem/Hope Creek Nuclear Generating Stations MS-1 Drill will be conducted at two sites with varying degrees of security requirements. Individual Site Controllers will be in charge of entry into their respective exercise sites. To prevent confusion and interruption of the exercise, access to the exercise sites will be limited to exercise participants and approved Observers 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.

DEMA Observers and Liaison Officers

DEMA will assign Observers and Liaison Officers to each site that is being evaluated in the 2011 Salem/Hope Creek Nuclear Generating Stations MS-1 Drill. The Lead Controller will provide a list of Observers and Liaison Officers to the appropriate Off-Site Response Organizations prior to the day of the exercise. All Observers and Liaison Officers will receive a pre-exercise briefing.

DEMA Observers are not intended to be players and should excuse themselves from any active participation in the exercise. If an Observer is engaged in any way by one of the exercise players he/she should refer the player to the DEMA Liaison Officer.

DEMA Liaison Officers are players and are assigned specific responsibilities for the exercise. Liaison Officers are instructed to inform the Lead Controller upon arrival at the exercise venue. Liaison Officers are allowed to interact in the exercise as a DEMA representative and are sometimes required to provide injects to facilitate exercise play.

Parking and Directions

Directions to each venue area are available from the Lead Controller. Parking will be controlled according to existing policy at each individual location.

Restroom Facilities

Restroom facilities will be available at each venue.

Exercise Identification

Exercise participants will display their existing organizational identification badges.

Communications Plan

Exercise Start, Suspension, and Termination Instructions

The exercise is scheduled to run for 4 hours or until the Lead Controller, after consultation with FEMA and the Utility, determines that the exercise objectives have been met. The exercise is scheduled to end by 1200. The Lead Controller will announce the exercise suspension or termination.

**All spoken and written communication will start and end with the statement,
“THIS IS A DRILL.”**

Player Communication

Players will use routine, in-place agency communication systems. All exercise communication over primary dispatch channels will cease immediately if a real world emergency is announced. Communications concerning a real world emergency will be preceded by the phrase “This is not a drill”. In no instance will exercise communication interfere with real-world emergency communications. Exercise communication over these channels will recommence when authorized by the Exercise Director after he is advised by County 911 that it is safe to do so. 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 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 the actual media shall be coordinated through the FEMA External Affairs Office.

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 Salem/Hope Creek Nuclear Generating Stations MS-1 Drill is the Delaware Emergency Management Agency Lead Controller.

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 Salem/Hope Creek Nuclear Generating Stations MS-1 Drill include the Exercise Director, Lead Controller, PSEG Nuclear, LLC Representative, FEMA Emergency Management Program Specialist.

Lead Controller

The Lead Controller also functions as a Trusted Agent. As such he is involved in developing the Master Scenario Events List and is privy to the scenario used at the Utility to generate exercise play. The Lead Controller is responsible for scheduling controllers at the “Out of Sequence” components of the exercise and the 2011 Salem/Hope Creek Nuclear Generating Stations 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 will be the DEMA REP Training Program Manager and is stationed at the Christiania Hospital Emergency Room during the Drill.

Controllers

At least one controller will be onsite with every facility participating in the exercise. The 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 MSEL. The Trusted Agent from the Utility will act as the Controller

at the Utility Site during the exercise and the PSEG Trusted Agent will act as Controller for the PSEG Field Teams.

Lead Evaluator

The Lead Evaluator is responsible for the overall evaluation of the 2011 Salem/Hope Creek Nuclear Generating Stations 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 REP Site Specialist.

Evaluators

Evaluators work under the direction of the Lead Evaluator, and as a team with Controllers. Evaluators are Subject Matter Experts 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.
- Arrive at the exercise location as instructed. 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 a drill". This is a precaution taken so anyone overhearing the conversation will not mistake the exercise play for a real-world emergency.
- When communicating with the SimCell, 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 a debriefing with the controllers and evaluators.
- 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 AAR.

Simulation Guidelines

Because the 2011 Salem/Hope Creek Nuclear Generating Stations 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, provide assistance up to the level of your training, call 911 and use the phrase “This is not a drill” and ask for the appropriate assistance, and notify the nearest Controller and Evaluator.

CHAPTER 4: EVALUATION AND POST-EXERCISE ACTIVITIES

Exercise Documentation

The goal of the 2011 Salem/Hope Creek Nuclear Generating Stations 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 debriefing with Players from their assigned location. The debriefing 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 debriefing should not last more than 30 minutes.

Exercise Evaluation Hotwash

Controllers, Evaluators, and selected exercise participants will attend a facilitated Controller / Evaluator/Player Hotwash on April 27 at 1200 at the Christiania Hospital. During the Hotwash these individuals will discuss their observations of the exercise in an open environment to clarify actions taken during the exercise.

Participants and Public/Media Briefings

Participants and Public/Media Briefings are not routinely facilitated subsequent to MS-1 Drills. Questions about drill activities and results will be referred to the DEMA PIO or FEMA External Affairs Office.

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 the lead Federal Evaluator.

After Action Conference and Improvement Plan

The improvement process represents the comprehensive, continuing preparedness effort of which the 2011 Salem/Hope Creek Nuclear Generating Stations MS-1 Drill is a part. The lessons learned and recommendations from the AAR will be incorporated into the Improvement Plan (IP), if required.

After Action Conference

The After Action Conference will be conducted via conference call, if necessary.

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 Salem/Hope Creek Nuclear Generating Stations MS-1 Drill participating agency officials during the AAC scheduled for April 27, 2011, if required.

APPENDIX A: EXERCISE SCHEDULE

SALEM/HOPE CREEK NUCLEAR GENERATING STATIONS CHRISTIANIA HOSPITAL MEDICAL SERVICES DRILL

Time (Tentative)	Personnel	Activity
April 27, 2011		
0800	Exercise Staff Assembly	Exercise Briefing
0830	Hospital Maintenance Staff	Setup REA
0900	Exercise Participants	Begin Exercise
1200	Exercise Staff Assembly	Exercise Debriefing/Hotwash

APPENDIX B: EXTENT OF PLAY INFORMATION

SALEM/HOPE CREEK NUCLEAR GENERATING STATIONS **CHRISTIANIA HOSPITAL MEDICAL SERVICES DRILL**

April 27, 2011

Method of Operation

1. Salem/Hope Creek Nuclear Generating Stations (S/HCNGS):
The power station and its personnel will not play an 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 preapproved scenario will be used.
2. PSEG Nuclear, LLC:
The PSEG Nuclear, LLC will participate in this drill.
3. Delaware Emergency Management Agency (DEMA) Emergency Operations Center (EOC):
DEMA EOC will not participate in this drill.
4. Counties Designated to Participate:
New Castle County will provide pre-drill coordination and observe drill activities.
5. Controllers:
Controllers will be supplied by DEMA. 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. DEMA Observers:
DEMA 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 Schedule:
Drill activities are scheduled to commence on or about 0800, April 27 2011, and continue until the participants have completed the drill objectives and demonstrated the Exercise Evaluation Criteria.
9. Stand Down:
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. General concepts
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. Re-demonstration
During the drill 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. 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.

SALEM/HOPE CREEK NUCLEAR GENERATING STATIONS
CHRISTIANIA HOSPITAL MEDICAL SERVICES DRILL

April 27, 2011

Extent of Play Agreement

Evaluation Area 1

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, including air sampling flow meters (field teams only), 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 the calibration frequency may be verified by other means. Additionally, instruments being used to measure activity should have a range of reading sticker affixed to the side of the

Appendix B: Extent of Play Information

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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 dosimeters 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 (*Direct Reading Dosimeters*) 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 and distribute 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 locations(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.

DEMA Negotiated Extent of Play:

Appendix B: Extent of Play Information

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Ambulance crews are not trained or equipped to operate or carry radiological monitoring equipment. In accordance with DEMA 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 DEMA 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.

Evaluation Area 3

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.

B)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

Appendix B: Extent of Play Information

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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. ORO's 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 affected 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

Appendix B: Extent of Play Information

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play agreement.

DEMA Negotiated Extent of Play:

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 Delaware, 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. In order to demonstrate an understanding of the use of the dosimetry equipment, KI and associated forms; the location need only remove and distribute / issue a maximum of six (6) units of dosimetry from their inventory. Simulation PRDs with mock serial numbers may be used.

Evaluation Area 6

Sub-element 6.d.1 – Transportation and Treatment of Contaminated Injured Individuals

INTENT

This sub-element is derived from NUREG-0654, which provides that Offsite Response Organizations (ORO) provide that arrangements are made for medical services for contaminated injured individuals.

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.

Appendix B: Extent of Play Information

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EXTENT OF PLAY

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

OROs should demonstrate the capability to transport contaminated injured individuals to medical facilities. An ambulance should be used for response to the victim. However, to avoid taking an ambulance out of service for an extended time, OROs may use any vehicle (e.g., car, truck, or van) 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 should occur before releasing the ambulance from the drill. This communication would include reporting radiation monitoring results, if available. In addition, 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 or en route, or may be 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 treatment of contaminated injured individuals.

The medical facility should demonstrate the capability to make decisions on the need for decontamination of the individual, follow appropriate decontamination procedures, and maintain records of all survey measurements and samples taken. All procedures for collection and analysis of samples and decontamination of the individual should be demonstrated or described to the evaluator. Waste water from decontamination operations does not need to be collected.

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

CHRISTIANIA HOSPITAL MEDICAL SERVICES DRILL APRIL 27, 2011

EXERCISE SUMMARY

The purpose of this drill is to demonstrate the capabilities of the emergency response organizations in New Castle 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."

CONTROLLERS

Delaware Emergency Management Agency

EVALUATORS

Federal Emergency Management Agency

OBSERVERS

Delaware Emergency Management Agency
PSEG Nuclear, LLC

RADIOLOGICAL EMERGENCY MS-1 EXERCISE SCENARIO

- I. Date: April 27, 2011
- Time: 0900 Start time
- Responder Location: The Hearth
 3147 DuPont Parkway
 Odessa, DE 19730
- Hospital Location: Christiana Health Care Services, Christiana Hospital
 Emergency Department
- Injury /Illness: Abrasions, bilateral knees and hands, heat exhaustion
- II. Purpose
- A. To exercise the emergency medical response of New Castle Division of
 Emergency Medical Services Paramedics, Odessa Fire Company/EMS and the
 Christiana Health Care Services, Christiana Hospital
- B. To comply with FEMA Guidance Memorandum MS-1.
- III. Objectives
- A. Demonstrate the ability to respond to a radiation medical emergency following
 the procedures of New Castle County Division of Emergency Medical Services
 Paramedics, Odessa Fire Company/EMS and the Christiana Health Care Services,
 Christiana Hospital.
- B. Demonstrate timely and accurate communications between the hospital and off-
 site 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 the assessment and documentation of radiological conditions during
 the simulated accident.

Appendix B: Extent of Play Information

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

RADIATION EMERGENCY MS-1 EXERCISE SCENARIO

IV. Scenario

A field monitoring team member has been in PC's for approximately one hour, and has been taking field monitoring samples at the Field Monitoring Station adjacent to The Hearth 3147 DuPont Parkway, Odessa, DE during a General Emergency which has occurred at the Salem Nuclear Plant in Salem, NJ, with a release of radioactive materials. She becomes dizzy and lightheaded, falls to the ground in a near syncopal episode, and sustains abrasions to her hands, and knees. The fall causes her PC's to rip at the knees. Her team member calls for assistance, **(INSERT MESSAGE 1)** describes what happened, and requests an ambulance.

The NCC 911 Communications Center dispatches an Odessa Fire/EMS squad and NCC Paramedics to the scene. As part of their normal procedures, the 911 Communications Center also notifies Christiana Hospital to alert them about the arrival of an injured person with possible radiological contamination **(INSERT MESSAGE 2)**.

Immediately after the EMS arrives at the accident scene, the team member tells the EMS team what has happened. The EMS team performs medical assessment **(INSERT MESSAGE 3)**. The EMS team may perform radiation surveillance **(INSERT MESSAGE 4)**. During the trip to the Christiana Health Care Services, Christiana Hospital, the EMS team checks the patient's vital signs **(INSERT MESSAGE 5)**.

Upon arrival at the Christiana Health Care Services, Christiana Hospital, the medical team will meet the EMS team at the exterior entrance to the decontamination unit. The hospital medical team will assess the patient's condition **(INSERT MESSAGE 6)**.

The medical team surveys the victim for radiological contamination **(INSERT MESSAGE 7)**.

The hospital medical team re-surveys the victim after the first decontamination procedure on the patient (**INSERT MESSAGE 8**).

The hospital medical team re-surveys the victim after the second decontamination procedure on the patient (**INSERT MESSAGE 9**).

After the third decontamination procedure on the patient, the medical team will have successfully removed surface contamination (**INSERT MESSAGE 10**).

Post-medical treatment of vital signs (**INSERT MESSAGE 11**).

RADIATION EMERGENCY MS-1 EXERCISE SCENARIO

V. Participants

- A. Victim: A volunteer will act as the injured accident victim, and will make the calls for assistance.
- B. Transport: Odessa Fire/ EMS and NCC Paramedics
- C. Hospital: Christiana Health Care Services, Christiana Hospital, Radiation Decontamination Team.

VI. Controllers

- A. Initiation Scene: Tony Serratore, RN, Haz/Med, PSEG NUCLEAR, LLC & DEMA
- B. NCC 911 EOC: To Be Determined
- C. Hospital: Tony Serratore, RN, Haz/Med, PSEG NUCLEAR, LLC & DEMA

CONTROLLER MESSAGES

#	Initiating Event or Time	Location	Issued By	Issued To
1	Team member calls NCC 911	The Hearth	Controller	Victim
2	After dispatching ambulance	NCC 911/ EOC	Controller	911 Dispatcher
3	Initial patient medical assessment by ambulance team	The Hearth	Haz/Med	EMS
4	Radiation surveillance of patient by ambulance team	The Hearth	Haz/Med	EMS
5	Transportation in ambulance	Ambulance	Haz/Med	EMS
6	Patient's initial medical assessment by hospital	Hospital REA	Haz/Med	Hospital Team
7	Patient's initial radiation survey by hospital team	Hospital REA	Haz/Med	Hospital Team
8	After first decontamination effort	Hospital REA	Haz/Med	Hospital Team
9	After second decontamination effort	Hospital REA	Haz/Med	Hospital Team
10	After third decontamination effort	Hospital REA	Haz/Med	Hospital Team
11	Post-Medical treatment	Hospital REA	Haz/Med	Hospital Team

Appendix B: Extent of Play Information

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RADIATION EMERGENCY MS-1 EXERCISE SCENARIO

MESSAGE 1

DATE: April 27, 2011

EVENT: The Victim calls NCC 911

LOCATION: Field Monitoring Station at The Hearth 3147 DuPont Parkway, Odessa, DE 19730

ISSUED BY: Scene Controller

ISSUED TO: Victim

Dial 395-8203 instead of 911. This is the administrative line to the NCC 911 Section.

READ:

“This message is part of the medical services drill. I repeat, this is a drill. Message follows: My partner has been injured and may be radioactively contaminated. Her hands and knees are abraded, and she nearly passed out. Could you please send an ambulance immediately to The Hearth 3147 DuPont Parkway Odessa, DE 19730? This is a drill.”

RADIATION EMERGENCY MS-1 EXERCISE SCENARIO**MESSAGE 2**

DATE: April 27, 2011

EVENT: Immediately after dispatching an ambulance from the Odessa Fire/ EMS, and NCC Paramedics

LOCATION: NCC 911 Center

ISSUED BY: New Castle County Communications Center Controller

ISSUED TO: 911 Dispatcher
(Telephone call from NCC 911 Communications Center to the Christiana Health Care Services, Christiana Hospital Emergency Department.)

Dial 733-1700 for the Christiana Health Care Services, Christiana Hospital Emergency Department

READ:

“This message is part of the medical services drill. Repeat, this is a drill. Message follows: A field monitoring team member has been injured and may be radioactively contaminated. She has abrasions and possibly heat exhaustion. Odessa Fire/EMS and NCC Paramedics will be transporting this patient to you once her condition is assessed and stabilized. This is a drill.”

RADIATION EMERGENCY MS-1 EXERCISE SCENARIO

MESSAGE 3

DATE: April 27, 2011

EVENT: Upon medical assessment of patient.

LOCATION: Accident Scene

ISSUED BY: Scene Controller, Tony Serratore, RN, Haz/Med

ISSUED TO: EMS Team

CONTROLLER NOTE: DO NOT GIVE THIS SHEET TO THE MEDICAL TEAM. INSTEAD, GIVE THEM THE VITAL SIGNS AS THEY ARE TAKEN.

VITAL SIGNS	PATIENT
	Dizzy, lightheaded , disoriented, and pain in bilateral knees and hands
Pulse	100 and regular
Respirations	20, Clear Bilaterally
Blood Pressure	98/76
Skin	Pale, cool, diaphoretic
Injuries	Patient has abrasions to bilateral hands and knees

Appendix B: Extent of Play Information

FOR OFFICIAL USE ONLY

RADIATION EMERGENCY MS-1 EXERCISE SCENARIO

MESSAGE 4

DATE: April 27, 2011

EVENT: Upon performance of radiation surveillance of the patient and area.

LOCATION: Accident area - Victim is moved to a low background area and surveyed

ISSUED BY: Scene Controller Tony Serratore, RN, Haz/Med

ISSUED TO: EMS Team

CONTROLLER NOTE: DO NOT GIVE THIS SHEET TO THE MEDICAL TEAM. INSTEAD, GIVE THEM THE SURVEY RESULTS AS THEY ARE TAKEN.

RADIATION SURVEY RESULTS:	
Bilateral hands and knees	3,000 cpm
Remainder of Clothes	Background

- NOTES:
- All surveys should be performed with a Count Rate Meter with a GM Pancake probe. (Electronic Ludlum #2241 or equivalent)
 - The only contamination in the parking lot is 5,000 cpm where the victim was laying.

RADIATION EMERGENCY MS-1 EXERCISE SCENARIO

MESSAGE 5

DATE: April 27, 2011
EVENT: During transportation in ambulance
LOCATION: Ambulance
ISSUED BY: Controller, Tony Serratore, RN, Haz/Med
ISSUED TO: EMS Team

CONTROLLER NOTE: DO NOT GIVE THIS SHEET TO THE MEDICAL TEAM. INSTEAD. GIVE THEM THE VITAL SIGNS AS THEY ARE TAKEN.

VITAL SIGNS:	PATIENT
Pt is becoming more coherent and oriented. 6/10 Pain bilateral hands and knees	
Pulse	100
Respirations	20
Blood Pressure	100/70
Skin	Unchanged
Other	Abrasions bilateral hands and knees

NOTE: If not properly wrapped, the victim will spread contamination to the ambulance.
(Max 400 cpm where cross-contamination is observed by controller. Retain this information and communicate the location(s) to the surveyor at the appropriate time.

RADIATION EMERGENCY MS-1 EXERCISE SCENARIO

MESSAGE 6

DATE: April 27, 2011

EVENT: Patient's initial medical assessment by hospital medical team

LOCATION: Hospital designated Radiation Emergency Area (REA)

ISSUED BY: Hospital Controller, Tony Serratore, RN, Haz/Med

ISSUED TO: Hospital Medical Team

CONTROLLER NOTE: DO NOT GIVE THIS SHEET TO THE MEDICAL TEAM. INSTEAD, GIVE THEM THE VITAL SIGNS AS THEY ARE TAKEN.

VITAL SIGNS:	PATIENT
Awake, Alert, & Oriented x3	Patient C/O 4/10 pain bilateral hands and knees
Pulse	100
Respirations	24
Blood Pressure	94/60
Skin	Pale, cool, diaphoretic
Other	Anxious, worried about radiation contamination. Pain abrasions bilateral hands and knees. Positive, regular radial

Appendix B: Extent of Play Information

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pulses. Capillary refill 2 seconds.

RADIATION EMERGENCY MS-1 EXERCISE SCENARIO

MESSAGE 7

DATE: April 27, 2011

EVENT: Monitoring patient for radiation contamination - upon arrival at the hospital Radiation Emergency Area (REA).

LOCATION: Hospital REA Reception Area

ISSUED BY: Hospital Controller, Tony Serratore, RN, Haz/Med

ISSUED TO: Hospital Medical Team

CONTROLLER NOTE: DO NOT GIVE THIS SHEET TO THE MEDICAL TEAM. INSTEAD, GIVE THEM THE SURVEY RESULTS AS THEY ARE TAKEN.

RADIATION SURVEY RESULTS:

Bilateral hands and knees	3,000 cpm
Clothing	Removed
Ambulance	Background*
Stretcher/Feet	Background*

*See notes below

- NOTES:
- All surveys should be performed with a Count Rate Meter with a GM Pancake probe. (Electronic Ludlum #2241 or equivalent)
 - Contamination limited to bilateral hands and knees if proper contamination controls employed by the ambulance crew. If proper contamination controls were not maintained the ambulance, stretcher and other parts of the patient can be reported as 400 cpm.

RADIATION EMERGENCY MS-1 EXERCISE SCENARIO

MESSAGE 8

DATE: April 27, 2011

EVENT: Monitoring patient for radiation contamination - after first decontamination effort.

LOCATION: Hospital REA

ISSUED BY: Hospital Controller, Tony Serratore, RN, Haz/Med

ISSUED TO: Hospital Medical Team

CONTROLLER NOTE: DO NOT GIVE THIS SHEET TO THE MEDICAL TEAM. INSTEAD, GIVE THEM THE SURVEY RESULTS AS THEY ARE TAKEN.

RADIATION SURVEY RESULTS:

Clothing	Removed
Both knees	1,500 cpm
Both hands	1,500 cpm
Remainder of Body	Background*

* See note below

- NOTES:
- All surveys should be performed with a Count Rate Meter with a GM Pancake probe. (Electronic Ludlum #2241 or equivalent)
 - If proper contamination controls were not maintained report cross-contaminated areas as 400 cpm.

RADIATION EMERGENCY MS-1 EXERCISE SCENARIO

MESSAGE 9

DATE: April 27, 2011

EVENT: Monitoring patient for radiation contamination - after second decontamination effort

LOCATION: Hospital REA

ISSUED BY: Hospital Controller, Tony Serratore, RN, Haz/Med

ISSUED TO: Hospital Medical Team

CONTROLLER NOTE: DO NOT GIVE THIS SHEET TO THE MEDICAL TEAM. INSTEAD, GIVE THEM SURVEY RESULTS SIGNS AS THEY ARE TAKEN.

RADIATION SURVEY RESULTS:	
Bilateral knees	600 cpm
Bilateral hands	Background
All Other Areas	Background*

*See note below

- NOTES:
- All surveys should be performed with a Count Rate Meter with a GM Pancake probe. (Electronic Ludlum #2241 or equivalent)
 - If proper contamination controls were not maintained report cross-contaminated areas as 400 cpm.

RADIATION EMERGENCY MS-1 EXERCISE SCENARIO

MESSAGE 10

DATE: April 27, 2011

EVENT: Monitoring patient for radiation contamination - after third decontamination effort.

LOCATION: Hospital REA

ISSUED BY: Hospital Controller, Tony Serratore, RN, Haz/Med

ISSUED TO: Hospital Medical Team

CONTROLLER NOTE: DO NOT GIVE THIS SHEET TO THE MEDICAL TEAM. INSTEAD, GIVE THEM THE SURVEY RESULTS AS THEY ARE TAKEN.

RADIATION SURVEY RESULTS:	
All Areas	Background

- NOTES:
- All surveys should be performed with a Count Rate Meter with a GM Pancake probe. (Electronic Ludlum #2241 or equivalent)

RADIATION EMERGENCY MS-1 EXERCISE SCENARIO

MESSAGE 11

DATE: April 27, 2011
EVENT: Post-Medical Treatment
LOCATION: Hospital REA
ISSUED BY: Hospital Controller, Tony Serratore, RN, Haz/Med Consultants
ISSUED TO: Hospital Medical Team

CONTROLLER NOTE: DO NOT GIVE THIS SHEET TO THE MEDICAL TEAM. INSTEAD, GIVE THEM THE VITAL SIGNS AS THEY ARE TAKEN.

VITAL SIGNS:	PATIENT
AA&O x3	Pain is controlled
Pulse	72, and regular
Respirations	16, CTA
Blood Pressure	112/72
Skin	Warm, dry, normal color

APPENDIX D: IMPROVEMENT PLAN

Because there were no “Deficiencies, Areas Requiring Corrective Action, or Planning Issues,” an Improvement Plan is not applicable to this report.

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