

# Point Beach Nuclear Power Plant

Exercise Report - 2008-12-09

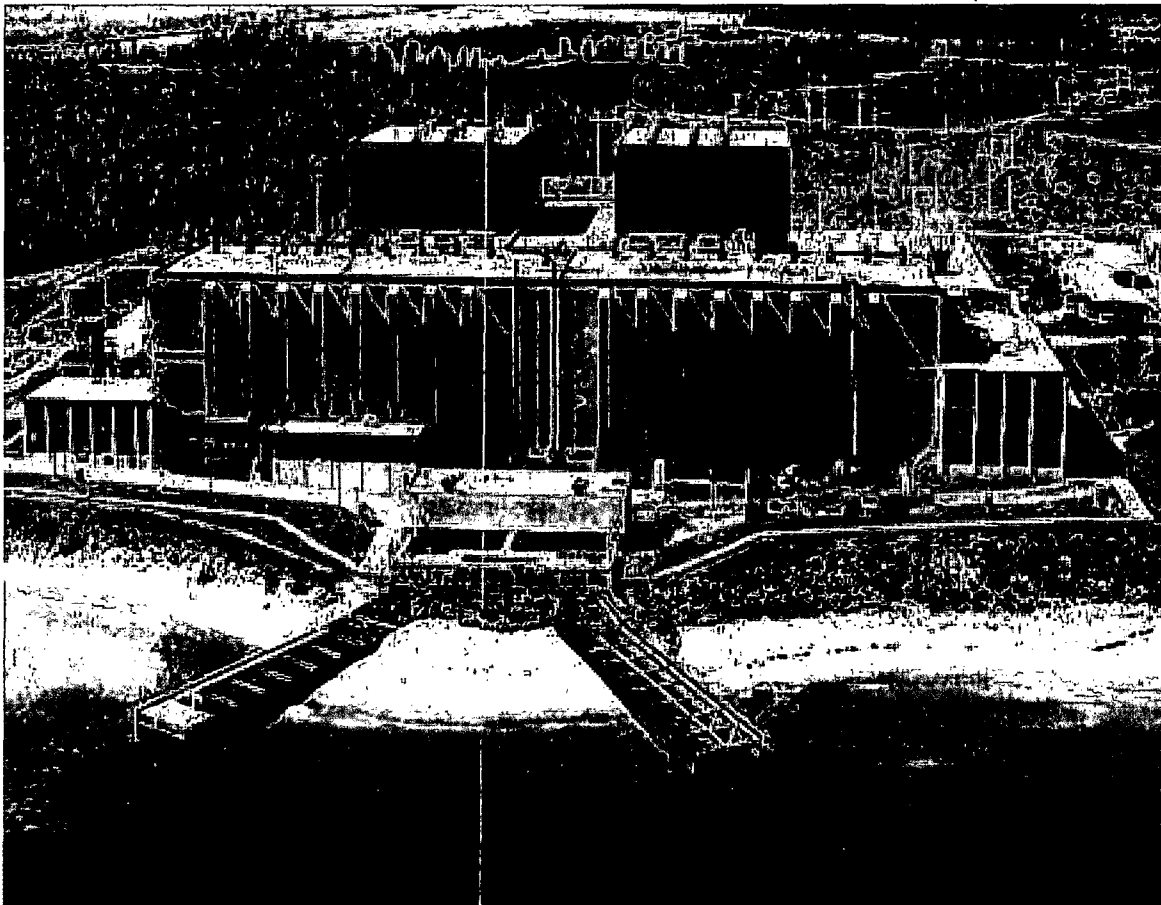
Final Report - Radiological Emergency

Preparedness (REP) Program

2009-03-09



# FEMA





# FEMA

## Exercise Report

Point Beach Nuclear Power Plant

Exercise Date: 2008-12-09

Report Date: 2009-03-09

U.S. DEPARTMENT OF HOMELAND SECURITY

Federal Emergency Management Agency

REP Program

536 S. Clark St. 6th floor

Chicago, IL 60605

**This Page**

**Intentionally**

**Left Blank**

# Table of Contents

Chapter 1 Executive Summary

Chapter 2 Introduction

Chapter 3 Exercise Overview

Section 3.1 EPZ Description

Section 3.2 Exercise Participants

Section 3.3 Exercise Timeline

Chapter 4 Exercise Evaluation and Results

Section 4.1 Summary Results of Exercise Evaluation

Section 4.2 Status of Jurisdictions Evaluated

4.2.1 Wisconsin Jurisdictions

4.2.1.1 Wisconsin - Evacuee/Emergency Worker

Monitoring/Decontamination - Kewaunee County Reception Center - Algoma High School

4.2.1.2 Wisconsin - Evacuee Vehicle Monitoring/Decontamination -

Kewaunee County Reception Center - Algoma High School

4.2.1.3 Wisconsin - Emergency Worker Vehicle/Equipment

Monitoring/Decontamination - Kewaunee County Reception Center - Algoma High School

4.2.1.4 Wisconsin - Medical Services Drill - Facility - Aurora BayCare Medical Center

4.2.2 Risk Jurisdictions

4.2.2.1 Kewaunee County - Dosimetry Distribution Point - Kewaunee County Reception Center - Algoma High School

4.2.2.2 Kewaunee County - Evacuee/Emergency Worker Registration -

Kewaunee County Reception Center - Algoma High School

4.2.2.3 Kewaunee County - Congregate Care Center - Algoma High School

4.2.2.4 Kewaunee County - Medical Services Drill - Transportation - Algoma Rescue Squad - Kewaunee County Reception Center - Algoma High School

Appendices

Appendix 1 - Acronyms and Abbreviations

Appendix 2 - Exercise Evaluators and Team Leaders

Appendix 3 - Exercise Criteria and Extent of Play Agreements

Appendix 4 - Exercise Scenario

**This Page**

**Intentionally**

**Left Blank**

# 1. Executive Summary

On December 9 and 10, 2008, a Radiological Emergency Preparedness (REP) Full Participation Plume and Ingestion Exposure Pathway Exercise was scheduled for the 10-mile Emergency Planning Zone (EPZ) around the Point Beach Nuclear Power Plant (PBNPP) by the U.S. Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA) Region V. The purpose of this exercise was to assess the level of State and local preparedness in responding to a radiological emergency. The exercise was terminated early by the State of Wisconsin due to a real-world weather emergency. The termination occurred prior to notification to the State by the PBNPP that the site had declared a General Emergency (GE) Emergency Classification Level (ECL). The early termination precluded the completion of virtually all activities for both the plume and ingestion phases of the exercise that were scheduled for December 9 and 10, 2008.

A determination was made by DHS/FEMA that credit would be given only for the out-of-sequence activities completed on December 8, 2008, and for prior issues corrected during exercise play up until the time the State terminated play in the exercise. The exercise activities for which credit was given were held in accordance with DHS/FEMA's policies and guidance concerning the exercise of State and local radiological emergency response plans (RERPs) and procedures.

The most recent exercise at this site was conducted on December 5 2006. The qualifying emergency preparedness exercise was conducted on March 9, 1982.

DHS/FEMA wishes to acknowledge the efforts of the many individuals who participated in this exercise. In the State of Wisconsin the risk counties of Kewaunee and Manitowoc participated along with the State Government.

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 on the part of all the participants was evident during this exercise.

This Final Report contains the evaluation of the biennial exercise and the following out of sequence activities:

State of Wisconsin

Evacuee / Emergency Worker Monitoring / Decontamination (Kewaunee County)

Evacuee Vehicle Monitoring / Decontamination (Kewaunee County)

Emergency Worker Vehicle Monitoring / Decontamination (Kewaunee County)

Medical Services (MS-1) – Facility

Manitowoc County

There were no out-of-sequence activities.

Kewaunee County

Dosimetry Distribution – Reception Center

Reception Center – Registration

Congregate Care Center

Medical Services (MS-1) – Transportation

The State and local organizations, except where noted in this report, demonstrated knowledge of their emergency response plans and procedures and adequately implemented them.

There were no Deficiencies identified during this exercise for the State of Wisconsin or the Counties of Kewaunee and Manitowoc. There were no Areas Requiring Corrective Action (ARCAs) identified for the State of Wisconsin and Kewaunee and Manitowoc Counties during this exercise.

There was one ARCA from a previous exercise for the State of Wisconsin under Criterion 1.e.1 – Equipment and Supplies to Support Operations, whereby expired dosimetry was issued to the MS-1 hospital staff. This ARCA was corrected during this exercise.

There was one ARCA from a previous exercise for the State of Wisconsin under Criterion 6.a.1 – Monitoring and Decontamination of Evacuees and Emergency Workers, whereby appropriate steps were not taken to address possible cross-contamination of reception center personnel who responded to an injured and potentially contaminated evacuee. This ARCA was not corrected during this exercise.

There was one ARCA from a previous exercise identified for Kewaunee County under Criterion 5.b.1 – Emergency Information and Instructions for the Public and the Media, whereby conflicting Livestock Advisory instructions were given to the media during a briefing at the Joint Information Center. Criterion 5.b.1 was not demonstrated due to early termination of the exercise on December 9, 2008. Consequently, this ARCA was not corrected.

There was one ARCA from a previous exercise identified for Manitowoc County under Criterion 5.b.1 – Emergency Information and Instructions for the Public and the Media, whereby conflicting Livestock Advisory instructions were given to the media during a briefing at the Joint Information Center. Criterion 5.b.1 was not demonstrated due to early termination of the exercise on December 9, 2008. Consequently, this ARCA was not corrected.

**This Page**

**Intentionally**

**Left Blank**

## 2. Introduction

On December 7, 1979, the President directed FEMA to assume the lead responsibility for all off-site nuclear planning and response. DHS/FEMA 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 (REP) Program that was established following the Three Mile Island Nuclear Station accident in March 1979.

FEMA Rule 44 CFR 350 establishes the policies and procedures for DHS/FEMA 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 governments' participation in joint exercises with licensees.

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

- Taking the lead in off-site emergency planning and in the review and evaluation of RERPs and procedures developed by State and local governments;
- Determining whether such plans and procedures can be implemented on the basis of observation and evaluation of exercises of the plans and procedures conducted by State and local governments;
- 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 (Federal Register, Vol. 58, No. 176, dated September 14, 1993); and
- Coordinating the activities of Federal agencies with responsibilities in the radiological emergency planning process:
  - U.S. Department of Agriculture;
  - U.S. Department of Energy;
  - U.S. Department of Health and Human Services;
  - U.S. Department of the Interior;
  - U.S. Department of Transportation;

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

Representatives of these agencies serve on the DHS/FEMA Regional Assistance Committee (RAC), which is chaired by DHS/FEMA.

Formal submission of the RERPs for the PBNPP to FEMA Region V by the State of Wisconsin and involved local jurisdictions occurred on April 4, 1984. Formal approval of these RERPs was granted by FEMA on June 14, 1985, under 44 CFR 350.

A REP Plume Pathway Exercise scheduled for December 9, 2008, with evaluated out-of-sequence activities on December 8, 2008, was conducted by DHS/FEMA 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 PBNPP. The purpose of this exercise report is to present the exercise results and findings on the performance of the offsite response organizations (ORO) during a simulated radiological emergency.

The findings presented in this report are based on the evaluations of the Federal evaluator team, with final determinations made by the DHS/FEMA RAC Chairman, and approved by the DHS/FEMA Headquarters.

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

- 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;
- FEMA-REP-14, Radiological Emergency Preparedness Exercise Manual, September 1991; and
- FEMA "Radiological Emergency Preparedness: Exercise Evaluation Methodology; Notice" as published in the Federal Register Notice, Vol. 67, No. 80, dated April 25, 2002.

Section III of this report, entitled "Exercise Overview", presents basic information and data relevant to the exercise. This section of the report contains a description of the

plume pathway EPZ, a listing of all participating jurisdictions and functional entities, which were evaluated and a tabular presentation of the time of actual occurrence of key exercise events and activities.

Section IV of this report, entitled "Exercise Evaluation and Results," presents detailed information on the demonstration of applicable exercise criteria at each jurisdiction or functional entity evaluated in a jurisdiction-based, issues-only format. This section also contains: (1) descriptions of all Deficiencies and ARCAs assessed during this exercise, recommended corrective actions and the State and local governments' schedule of corrective actions, if applicable, for each identified exercise issue and (2) descriptions of unresolved ARCAs assessed during previous exercises, if applicable and the status of the OROs' efforts to resolve them.

**This Page**

**Intentionally**

**Left Blank**

### 3. Exercise Overview

Contained in this section are data and basic information relevant to the December 9, 2008, REP Plume Exposure Pathway Exercise to test the offsite emergency response capabilities in the area surrounding the PBNPP. This section of the exercise report includes a description of the 10-mile Emergency Planning Zone, a listing of all participating jurisdictions and functional entities that were evaluated and a tabular presentation of the time of the actual occurrence of key exercise events and activities.

#### 3.1. EPZ Description

The PBNPP is owned and operated by FPL Energy, LLC. The plant consists of two-loop pressurized water reactors (Units 1 and 2) supplied by Westinghouse Electric Company, rated at 512 and 514 megawatts (MW), respectively. The operating licenses for the facility were granted in August 1973 (Unit 1) and October 1974 (Unit 2). Commercial operations began at the site during December 1973 (Unit 1) and December 1974 (Unit 2).

The plant site is located about 30 miles southeast of the city of Green Bay in Two Rivers, Wisconsin. Population centers within 50 miles of the site with more than 25,000 people include: Manitowoc (2000 census population: 32,547), located 13 miles southwest of the site; Green Bay (2000 census population: 87,899), located 30 miles northwest of the site; Appleton (2000 census population: 59,032), located 43 miles southwest of the site; and Sheboygan (2000 census population: 48,085), located 36 miles southwest of the site. The town of Two Rivers, which is located 10 miles south of the site, had a 2000 census population of 13,354.

The total population located within the 10-mile plume pathway EPZ was 22,700. The protective action sub-areas located within the 10-mile EPZ are as follows: 5, 10N, 10NW, 10W, 10SW and 10S.

#### 3.2. Exercise Participants

Agencies and organizations of the following jurisdictions participated in the Point Beach Nuclear Power Plant exercise:

State Jurisdictions

Wisconsin Department of Health Services - Radiation Protection Section

Risk Jurisdictions

Kewaunee County Emergency Management

Algoma Fire and Rescue

Brown County HAZ-MAT Team

Luxemburg Fire and Rescue EMS

Private Jurisdictions

American Red Cross

FPL Energy, LLC

### 3.3. Exercise Timeline

The REP Plume Exposure Pathway Exercise, for the PBNPP consisted of only the out-of-sequence reception center and MS-1 Drill activities conducted on December 8, 2008. Consequently, no timeline is required.

## 4. Exercise Evaluation and Results

Contained in this section are the results and findings of the evaluation of all jurisdictions and functional entities that participated in the December 9, 2008, REP Plume Exposure Pathway Exercise to test the off-site emergency response capabilities of State and local governments in the 10-mile EPZ surrounding the PBNPP.

Each jurisdiction and functional entity was evaluated based on its demonstration of exercise criteria delineated in Federal Register Notice/Vol. 67, No. 80, dated April 25, 2002. Detailed information on the exercise criteria and the extent-of-play agreement used in this exercise are found in Appendix 3 of this report.

### 4.1. Summary Results of Exercise Evaluation

The matrix presented in Table 2, on the following page(s), presents the status of all exercise criteria from Federal Register Notice/Vol. 67, No. 80, dated April 25, 2002, which were scheduled for demonstration during this exercise by all participating jurisdictions and functional entities. Exercise criteria are listed by number and the demonstration status of those criteria are indicated by the use of the following letters:

M – Met (No Deficiency or ARCAs assessed and no unresolved ARCAs from prior exercises)

D – Deficiency/(ies) assessed

A – ARCA(s) assessed or unresolved ARCA(s) from prior exercise(s)

N – Not Demonstrated (Reason explained in Section IV.B.)

Blank – Not scheduled for demonstration

Table 2 - Summary of Exercise Evaluation

DATE: 2008-12-09 SITE: Point Beach Nuclear Power Plant, WI A: ARCA, D: Deficiency, M: Met		WI-EVAC/EW M/D K-Co RC AlgHS	WI-EVAC Veh M/D K-Co RC AlgHS	WI-EW V/E M/D K-Co RC AlgomaHS	WI-MSI-F AuroraBayCare	K-Co-DDP - K-Co RC - Algoma HS	K-Co-EVAC/EW Reg - RC-Algoma HS	K-Co-CCC - Algoma HS	K-Co-MSI-T - AlgomaResSqd
Emergency Operations Management									
Mobilization	1a1								
Facilities	1b1								
Direction and Control	1c1								
Communications Equipment	1d1	M	M	M	M	M	M	M	M
Equip & Supplies to support operations	1e1	M	M	M	M	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	M	M	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 the prompt alert and notification system - Exception areas	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	A	M				M		
Mon / decon of emergency worker equipment	6b1			M					
Temporary care of evacuees	6c1							M	
Transportation and treatment of contaminated injured individuals	6d1				M				M

## 4.2. Status of Jurisdictions Evaluated

This subsection provides information on the evaluation of each participating jurisdiction and functional entity in a jurisdiction-based, issues-only format. Presented below are definitions of the terms used in this subsection relative to criteria demonstration status.

- Met – Listing of the demonstrated exercise criteria under which no Deficiencies or ARCAs were assessed during this exercise and under which no ARCAs assessed during prior exercises remain unresolved.
- Deficiency – Listing of the demonstrated exercise criteria under which one or more Deficiencies were assessed during this exercise. Included is a description of each Deficiency and recommended corrective actions.
- Area Requiring Corrective Actions – Listing of the demonstrated exercise criteria under which one or more ARCAs was assessed during the current exercise or ARCAs assessed during prior exercises remain unresolved. Included is a description of the ARCAs assessed during this exercise and the recommended corrective action to be demonstrated before or during the next biennial exercise.
- Not Demonstrated – Listing of the exercise criteria that were not demonstrated as scheduled during this exercise and the reason(s) they were not demonstrated.
- Prior Issues – Resolved – Descriptions of ARCAs assessed during previous exercises that were resolved in this exercise and the corrective actions demonstrated.
- Prior Issues – Unresolved – Descriptions of ARCAs assessed during prior exercises that were not resolved in this exercise. Included is the reason the ARCA remains unresolved and recommended corrective actions to be demonstrated before or during the next biennial exercise.

The following are definitions of the two types of exercise issues that are discussed in this report.

- A Deficiency is defined in FEMA-REP-14 as "...an observed or identified inadequacy of organizational performance in an exercise that could cause a finding that offsite emergency preparedness is not adequate to provide reasonable assurance that

appropriate protective measures can be taken in the event of a radiological emergency to protect the health and safety of the public living in the vicinity of a nuclear power plant."

- An ARCA is defined in FEMA-REP-14 as "...an observed or identified inadequacy of organizational performance in an exercise that is not considered, by itself, to adversely impact public health and safety."

DHS/FEMA has developed a standardized system for numbering exercise issues (Deficiencies and ARCAs). This system is used to achieve consistency in numbering exercise issues among DHS/FEMA Regions and site-specific exercise reports within each Regional Office. It is also used to expedite tracking of exercise issues on a nationwide basis.

The identifying number of Deficiencies and ARCAs includes the following elements, with each element separated by a hyphen (-).

- Plant Site Identifier – A two-digit number, corresponding to the Utility Billable Plant Site Code.
- Exercise Year – The last two digits of the year the exercise was conducted.
- Criterion Number – An alpha and two-digit number corresponding to the criteria numbers in the six Exercise Evaluation Areas described in Federal Register Notice/Vol. 67, No. 80 dated April 25, 2002, which amends FEMA-REP 14, Radiological Emergency Preparedness Exercise Manual.
- Issue Classification Identifier – (D = Deficiency, A = ARCA). Only Deficiencies and ARCAs are included in exercise reports. Plan Issues are reported to the State(s) via a letter from the Regional Administrator. Therefore, standardized issue numbers are not assigned to Plan Issues.
- Exercise Identification Number – A separate two- (or three-) digit indexing number assigned to each issue identified in the exercise.

## 4.2.1. Wisconsin Jurisdictions

### 4.2.1.1. Wisconsin - Evacuee/Emergency Worker Monitoring/Decontamination - Kewaunee County Reception Center - Algoma High School

#### **Criterion 1.d.1:**

Successfully demonstrated – This associated criterion requires no narrative.

#### **Criterion 1.e.1:**

The evaluation for the Algoma Reception Center, located at Algoma High School, was an out-of sequence demonstration. The facility has sufficient equipment and supplies to support their mission.

The radiological monitoring equipment was inventoried operationally checked with a CS-137 source to ensure proper operation. The equipment included portal monitors, hand held survey meters, and personal direct reading dosimetry issued to each operational staff member.

There were two TSA TPM-903A Portal Monitors with a calibration due date of June 25, 2009. Portal monitors were tested with a 1.1 micro curie Cesium 137 check source. Four Ludlum Model 12 survey meters with Ludlum Model 44-9 Pancake G-M probes were located at the Reception Center monitoring and decontamination area. The Kewaunee Power Station calibrates all Kewaunee County dosimetry. The calibration date of all instruments was verified during an out-of sequence evaluation in June and July of 2008. The personal dosimetry were issued to each member responding to the Algoma Reception Center. The personal dosimetry packet included a Dosimeter Record with a Model 862 DRD, a simulated TLD, and pencil.

Potassium iodide (KI) is not stored, issued or used at the Algoma Reception Center. If required KI is stored and available at the Kewaunee County Highway Department.

An Emergency Worker Briefing Checklist was provided for the briefer, which contained information on dosimetry zeroing, wearing, reading, and reporting times. Additionally, the checklist identified the radiation exposure limits, and instructions for equipment turn

in.

Barricade cones, yellow rope, yellow tape, red and blue directional arrows, and signage were provided on site, sufficient for traffic flow and access control. The decontamination shower area had sufficient cleaning materials to decontaminate general public and emergency workers (EWs). The Algoma High School facility did not provide a men's and woman's shower area for decontamination. There were plastic curtains surrounding each individual shower.

The communications equipment at the Algoma High School Reception Center included 800 MHZ multi-channel radios (8 channels, one for scan and seven for transmission and reception), internal use walkie-talkie radios, commercial telephone service and personal cellular telephones. The facility has RACES capability.

All activities described in the demonstration criterion were carried out in accordance with the plan, procedures and extent of play agreement.

**Criterion 3.a.1:**

Successfully demonstrated – This associated criterion requires no narrative.

**Criterion 6.a.1:**

The State of Wisconsin demonstrated the capability to establish adequate facilities, resources and trained personnel for monitoring and, if necessary, decontaminating evacuees and emergency workers during an out of sequence activity beginning at 1900 hours on December 8, 2008. The demonstration was conducted at the Kewaunee County Reception Center, Algoma High School, located at 1715 Division Street, Algoma, Wisconsin, by members of the Brown County HAZ-MAT Team who were trained to perform monitoring and decontamination of the general public and emergency workers under State direction.

Volunteer citizens served as the evacuees who were monitored for the demonstration. Algoma Fire Department and Community Service Officers served as the emergency workers who were monitored for the demonstration. The evaluation was conducted by interview and walk-through inspection of the facility.

Hallways, walkways and the facility entrances were controlled and monitored by Community Service Officers (a volunteer group that works for the County Sheriff). Each of the staff wore personal protective equipment consisting of their turn-out clothing,

plastic shoe covers and two pair of rubber gloves to minimize the spread of contamination.

This facility does not have separate showers for male and female evacuees and emergency workers. Evacuees and emergency workers use the same showers in the decontamination area. Males and females would be segregated, guided by gender-appropriate escorts and processed separately.

In accordance with the extent of play agreement, Algoma Fire Department and Community Service Officers were prepositioned at the Reception Center. Normally, they would report to at the Reception Center for monitoring and, if required, decontamination upon completion of their mission assignment. Hand held survey instruments were used to monitor evacuees and emergency workers at the facility. The action level for determining whether an evacuee or emergency worker was required to be decontaminated was a survey instrument reading greater than 100 counts per minute (cpm) over background.

Potentially contaminated emergency workers were directed to the monitoring area to be monitored using hand-held survey instruments. Individual staff escorts were used to guide emergency workers through the monitoring and decontamination areas. If an emergency worker was found to be contaminated they were directed to the shower area by gender-specific escorts, where their clothing was bagged and stored for later decontamination or disposal. Tyvek coveralls were used to replace contaminated clothing, and individuals who were decontaminated donned the Tyvek coveralls before being re-monitored upon exiting the shower area. Decontamination evaluation activities were conducted by interview and walk through inspection.

A contaminated emergency worker (a fireman) was directed to remove his bunker gear the sent to the shower area to be decontaminated. The emergency worker simulated showering and was determined to be clean when re-monitored. Emergency workers who could not be decontaminated after two attempts would be sent to a medical facility for further evaluation and decontamination.

As each emergency worker processed through the monitoring/decontamination facility, individual records were kept covering identification, contact information, monitoring results, and decontamination success and or failure.

Evacuees were monitored using portal monitors. Operability of the monitors was

checked in accordance the manufacturer's specifications using a 1 micro-Curie Cesium-137 source. Separate passes were made though the monitor at ankle, waist and shoulder height. The source tripped the monitor on each pass.

To demonstrate evacuee monitoring and decontamination, several evacuees were run through the evacuee monitoring station to establish flow. Six evacuees were then processed to establish flow rate. Monitoring of the six evacuees required about 71 seconds, or about 12 seconds per evacuee. The total population of the PBNP 10-mile EPZ is approximately 11,586 people (based on the 2000 Census). The evacuation population that would be expected at the Algoma Reception Center is approximately 2,317 individuals (20% of 11,586 persons). The Reception Center had two portal monitors, which can monitor 180 persons each (360 persons, total) per hour. The maximum population that could be monitored in a 12-hour period is 4,320 individuals. This number substantially exceeds the 20% (2,317 individuals) required by FEMA guidance to be monitored within 12 hours.

During this demonstration, both of the portal monitors worked negating the requirement for the use of the hand held monitoring equipment. The portal monitors were operationally verified with a CS-137 source. Approximately 15 personnel are trained at this facility to operate survey instruments and portal monitors.

Six evacuees from the 10-mile EPZ were monitored. The first three evacuees who walked through a portal monitor did so without activating its alarm (per Controller inject). The fourth evacuee was determined by Controller inject to be mildly contaminated. The fifth and sixth persons to be processed passed through the portal monitor did so without activating the alarm (per Controller inject). An "Individual Survey and Decontamination Record" was completed by monitoring/decontamination staff for each of the five evacuees who were determined not to be contaminated. The form recorded that they were free of contamination. Each of the five un-contaminated evacuees was then directed to the American Red Cross (ARC) Registration Station, where they would be registered as arriving at the reception center.

The person who was determined to be contaminated using the portal monitor was re-monitored using a hand-held survey instrument to confirm the location of the contamination (by Controller inject). He was then directed to the shower room for decontamination. After being decontaminated (simulated), he was monitored a second time using a hand-held survey instrument and was found (by Controller inject) to be free from contamination. An "Individual Survey and Decontamination Record" was

completed by facility staff, and the evacuee was directed to the ARC Registration Station.

To minimize the potential for spreading contamination, shoe covers and double rubber gloves were worn by all "hot side" Reception Center personnel.

In a separate demonstration, a potentially contaminated member of the public collapsed just inside the "Hot-Side" of the Reception Center. The patient was attended-to by "Hot-Side" personnel. The patient prepared for transfer to an ambulance and transport to the Aurora BayCare Medical Center. While the patient was passed from the "Hot-Side" to the "Clean-Side" demarcation, two of the "Hot Side" back board handlers' outer clothing came in contact with patient's wrap and clothing. There was a potential for cross-contamination of Reception Center personnel, and the personnel were not subsequently monitored to determine whether they were contaminated.

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

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

ISSUE NO.: 33-07-6a1-A-07

ISSUE: A member of the general public with a simulated injury and radiological contamination arrived at the entrance to the Algoma Reception Center (RC). Two members of the RC Monitoring/Decontamination staff assisted the victim to a simulated "HotZone" (marked by tape on the RC's gymnasium floor) and placed him on a backboard. The RC staff wore Personal Protective Equipment (PPE) consisting of booties and two pairs of latex gloves. While the two reception center staff moved the patient from the entranceway of RC to the HotZone, their outer clothing came in contact with the patient's clothing, which, according to the scenario, was contaminated. The possibility of cross-contamination was not recognized, and neither HotZone reception center staff was monitored for contamination.

REASON UNRESOLVED: When an injured and potentially contaminated

member of the public was passed from the "hot side" of the Reception Center to the "clean side", two of the clean-side handlers' outer clothing came in contact with patient's wrap and clothing. The potential for cross-contamination was not recognized and the workers were not monitored for contamination. This unsuccessful demonstration replicated the issues that resulted in the original ARCA.

#### 4.2.1.2. Wisconsin - Evacuee Vehicle Monitoring/Decontamination - Kewaunee County Reception Center - Algoma High School

**Criterion 1.d.1:**

Primary and secondary communications systems in support of radiological incidents at the Point Beach Nuclear Power Plant (PBNPP) were successfully demonstrated out of sequence on December 8, 2008, by the Algoma Volunteer Fire and Rescue Department (AVFRD). The demonstration was conducted at the Kewaunee County Reception Center, located at Algoma High School, 1715 Division Street, Algoma, Wisconsin.

While performing monitoring and decontamination of evacuee vehicles, the AVFRD used two-way UHF handheld and vehicle mounted radios as their primary system for communicating with other agencies. Cellular telephones were used as their secondary communications system. Both systems were operationally checked and no communications equipment failures were noted during the out-of-sequence event.

All activities described in the demonstration criterion were carried out in accordance with the plan, procedures and extent-of-play agreement.

**Criterion 1.e.1:**

Successfully demonstrated - This associated criterion requires no narrative.

**Criterion 3.a.1:**

The implementation of Emergency Worker (EW) exposure control was successfully demonstrated during an out of sequence activity conducted on December 8, 2008, at the Kewaunee County Reception Center located at Algoma High School, 1715 Division Street, Algoma, Wisconsin.

The 14-member Algoma Volunteer Fire and Rescue Department (AVFRD) vehicle monitoring and decontamination team received a radiological briefing. Each member was issued a dosimetry kit prior to reporting to their work stations at the facility. The kits contained a 0-200 milliRoentgen (mR) Direct Reading Dosimeter (DRD) and a Thermoluminescent Dosimeter (TLD). As directed by the Kewanee County Reception Center Radiological Officer (RO), both items were worn above the waist by the monitoring and decontamination team members for the duration of the activity.

The AVFRD Safety Officer acted as the Communications Liaison, coordinating between the RO and the monitoring and decontamination team. When the RO directed all emergency workers at the reception center to read their DRDs (approximately every 30 minutes during the exercise), the Safety Officer conveyed the instruction to those working in the outside vehicle monitoring and decontamination area.

When members of the monitoring and decontamination team were interviewed, they accurately re-stated their total exposure limit as 3 R and understood they were to immediately report any exposure reading of 20 mR or more and were to return all dosimetry to the Reception Center at the end of the exercise.

All activities described in the demonstration criterion were carried out in accordance with the plan, procedures and extent of play.

**Criterion 6.a.1:**

Upon activation of the monitoring/decontamination facility, personnel were assigned to each process station, with the first station being the screening point where vehicles would be monitored and evacuees would be screened for medical emergencies and escorted to the reception center for monitoring and decontamination. Vehicle monitoring included performing a survey of the tire and wheel-well areas, front grill, top, door-handle areas and rear of vehicle, including bumper and any door handle areas. At that point, AVFRD personnel took control of each vehicle, moving it through the appropriate station(s).

If the vehicle was determined to be clean, it was moved to the Clean Area, parked and secured. If the vehicle was found to be contaminated, it would be washed using only a water rinse, as outlined in the Reception Center Plan. Following the initial washing, it was surveyed a second time. If it was determined to be clean (i.e., instrument readings were below the 103 cpm decontamination threshold), it was moved to the Clean Area; if

not, the vehicle was cleaned a second time with a more thorough soap scrub and water rinse. Vehicles that did not pass the third survey attempt were moved to a holding area and left for more advanced cleaning at another time.

The AVFRD personnel used two-way radios to communicate between each station and the Reception Center inside the gymnasium. During the out of sequence event, the AVFRD Safety Officer (identifiable by the colored reflective vest he wore) called-out every 30 minutes for personnel to read their DRDs and record their readings.

Two evacuee vehicles were properly surveyed, with one simulating levels of 900 cpm of contamination. The vehicle was successfully decontaminated (simulated), meaning that instrument readings were below the decontamination threshold of 103 cpm.

All activities described in the demonstration criterion were carried out in accordance with the plan, procedures and extent of play agreement.

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

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

#### 4.2.1.3. Wisconsin - Emergency Worker Vehicle/Equipment Monitoring/Decontamination - Kewaunee County Reception Center - Algoma High School

**Criterion 1.d.1:**

Successfully demonstrated - This associated criterion requires no narrative.

**Criterion 1.e.1:**

During an out-of-sequence activity conducted on December 8, 2008, sufficient equipment, displays, dosimetry and other supplies were available to support emergency

worker vehicle monitoring and decontamination at the Kewanee County Reception Center, which is located at Algoma High School, 1715 Division Street in Algoma, Wisconsin. The State of Wisconsin Department of Health Services Radiation Protection Section (DHS/RPS) and the Algoma Volunteer Fire and Rescue Department (AVFRD) provided the equipment and supplies.

The DHS/RPS provided dosimetry kits for the 14 members of the AVFRD. Each kit contained a Dosimeter Corporation of America Model 862 Direct Reading Dosimeter (DRD), with a range of 0-200 milliRoentgen (mR), a Landauer Thermoluminescent Dosimeter (TLD), a Personnel Dosimeter Record form and a pencil for recording dosimeter readings. Additionally, there were 23 Dosimeter Corporation of America Model 909 dosimeter chargers available to re-zero the DRDs, if necessary. The DRDs were last leak-checked on May 13, 2008, with the next testing due by May 13, 2009.

Two hand-held survey instruments were issued to AVFRD members by the DHS/RPS for the monitoring of emergency worker vehicles. The first instrument was a Ludlum Model 12 coupled with a Model 44-9 Geiger-Mueller (GM) pancake probe; the second instrument was a Ludlum Model 3, which also had a Model 44-9 GM probe attached. The calibration of the Model 12 meter was completed on October 10, 2008; calibration of the Model 3 was completed on June 25, 2008. With The instruments had calibration due dates of October 10, 2009, and June 25, 2009, respectively.

Personal protective equipment (PPE) and equipment and supplies used during the decontamination of emergency worker vehicles were supplied by the AVFRD. The equipment consisted of water hoses and nozzles, colored ropes, traffic cones, and lighting stands. The PPE available included anti-contamination coveralls, rubber gloves and cotton liners, disposable gloves, and shoe covers. Miscellaneous supplies provided for use included laundry soap and a soft brush for scrubbing vehicles, plastic bags, forms, pens and pencils, clipboards, duct tape, and signage.

All activities described in the demonstration criterion were carried out in accordance with the plan, procedures, and extent of play agreement.

**Criterion 3.a.1:**

Successfully demonstrated - This associated criterion requires no narrative.

**Criterion 6.b.1:**

Monitoring and decontamination of evacuee vehicles was successfully demonstrated by members of the Algoma Volunteer Fire and Rescue Department (AVFRD) during an out of sequence activity on December 8, 2008, at the Kewaunee County Reception Center located at Algoma High School, 1715 Division Street, Algoma, Wisconsin. The Algoma Volunteer Fire and Rescue Department (AVFRD) has 40 personnel, all of whom are trained to perform vehicle monitoring and decontamination. Additionally, the AVFRD can be supplemented by 16 fully trained Algoma Emergency Medical Technicians.

The AVFRD would be notified and directed by the County EOC to establish a vehicle monitoring and decontamination capability at the Reception Center once the County was notified that the PBNPP had declared a Site Area Emergency (SAE) Emergency Classification Level (ECL).

The Algoma High School location afforded adequate space and appropriate facility characteristics to accommodate the monitoring and decontamination of large numbers of vehicles. Because the high school property has a large open field, the parking area for both clean and contaminated vehicles could be expanded as necessary.

Equipment and supplies for vehicle monitoring and decontamination were stored in a single secured room at the high school. Upon arrival at the Reception Center, the 14 member AVFRD team signed-in to ensure accountability and control of all personnel. The AVFRD Team members were then given a radiological briefing and issued dosimetry and monitoring equipment by the Wisconsin Department of Health Services Radiation Protection Division (DHS/RPS).

The dosimetry kits contained a 0-200 milliRoentgen (mR) Direct Reading Dosimeter (DRD) and a Thermoluminescent Dosimeter (TLD). As directed by the Radiological Officer, both items were worn above the waist by the monitoring and decontamination team members for the duration of the activity.

The monitoring equipment included two hand-held Ludlum survey instruments fitted with Model 44-9 Geiger-Mueller (GM) pancake probes. The first Ludlum hand-held instrument was a Model 12; the second instrument was a Ludlum Model 3.

Once dosimetry and monitoring equipment was issued, the AVFRD personnel established the vehicle monitoring and decontamination facility using the equipment stored at the high school in accordance with the Kewaunee County Reception Center Plan. To establish the facility, colored ropes and highly visible traffic cones were used

to create traffic flow lanes, establish the various stations, and to create separation between clean and contaminated vehicles.

Once the site was established, the AVFRD personnel used the hand-held survey instruments to establish background readings of the area and monitor evacuee vehicles.

The background readings were determined to be three counts per minute (cpm). A value of 100 cpm was added to establish an action level of 103 cpm. This information was posted on large signs in conspicuous areas visible to all team members.

Upon site activation, personnel were assigned to each process station. The first station was the screening point where vehicles would be monitored and evacuees would be screened for medical emergencies and escorted to the Reception Center for monitoring and decontamination. Vehicle monitoring included surveying the tires, wheel-well areas, grill, top, door-handle areas and rear of vehicle, including bumper and any handles. At that point, AVFRD personnel took control of each vehicle, moving it through the appropriate station(s).

If the vehicle was clean, it was moved to the Clean Area, parked and secured. If the vehicle was found to be contaminated, it would be washed using only water, as outlined in the Reception Center Plan. Once the vehicle was cleaned, it was surveyed a second time. If it was determined to be clean, it was moved to the Clean Area; if still contaminated, the vehicle was cleaned a second time with a more thorough soap scrub and water rinse. Vehicles that did not pass the second decontamination attempt were moved to a holding area and left for more advanced cleaning at another time.

Personnel used two-way radios to communicate between each station and the reception center inside the gymnasium. During the out-of-sequence event, the AVFRD Safety Officer, identified by a colored reflective vest, called out every 30 minutes for personnel to read and record their dosimeters.

Two evacuee vehicles were properly surveyed, with one simulating levels of 900 cpm of contamination as identified in the extent of play agreement. The vehicle was successfully decontaminated, with final (simulated) instrument readings falling below the 103 cpm decontamination threshold.

All activities described in the demonstration criterion were carried out in accordance with the plan, procedures and extent of play agreement.

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

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

#### 4.2.1.4. Wisconsin - Medical Services Drill - Facility - Aurora BayCare Medical Center

**Criterion 1.d.1:**

The Aurora BayCare Medical Center successfully demonstrated its communications systems during an out of sequence MS-1 Medical Facilities Drill held on December 8, 2008. Communications capabilities were demonstrated between the Medical Center and a Luxemburg Rescue Squad EMS ambulance.

The hospital has two systems of communication with ambulances: cellular telephone and UHF/VHF radio. Cellular telephone is the primary means of communication, and UHF/VHF radio is the back-up system. Two EMS cellular telephones, a UHF radio receiver (131.8 MHz) and a VHF radio receiver (155.345 MHz) were located at the medical center's Emergency Department (ED) Nurses Station. The ED Nurses Station is staffed 24-hours a day, seven days a week. At 2014 hours, a cellular telephone call was received at the ED Nurses Station from the Luxemburg Rescue Squad EMS ambulance, advising that a contaminated injured member of the public was being transported to the medical center from the Algoma High School Reception Center. The ED nurse who received the call recorded details of the injury, patient information and other vital signs on a standard "EMS Radio Report Sheet".

At 2020 hours, the ED nurse contacted the lead ED physician, who then immediately contacted the Radiation Contamination Accident Team using pagers, telephone and face-to-face communication. The Team consisted of the Radiation Safety Officer, Assistant Radiation Safety Officer, Nuclear Medicine On-Call Physician, Emergency Department Physician, Safety, Loss Protection, and other nurses.

No communications problems occurred during the medical drill and there were no

malfunctions of communications equipment.

All activities described in the demonstration criterion were carried out in accordance with the plan, procedures and extent of play agreement.

**Criterion 1.e.1:**

An out of sequence MS-1 Medical Drill was conducted on December 8, 2008, with the Aurora BayCare Medical Center and the Luxemburg Ambulance Service. Sufficient equipment and supplies were available at the hospital to support patient radiological monitoring and decontamination, and to support the conduct of radiological, transfer and treatment operations by hospital.

A large portable storage cabinet at the medical center contained a sufficient inventory of equipment and materials to support the set up and operation of the Radiological Emergency Area (REA), including the ambulance bay and adjacent restricted ingress/egress areas, during the simulated medical radiation emergency. The storage cabinet contained a copy of the hospital Radiological Disaster Plan (updated 7/2007), a job reference book with job-aids and task lists, a Model 750-5 dosimeter charger, approximately forty protective clothing packs, seventy-five comfort hoods, face shields, disposable booties, caps and gloves, personal decontamination kits, biological sampling kits, decontamination detergent, masking tape and barrier tape. Other materials included a pre-cut plastic REA floor covering, extra rolls of large plastic sheeting, a waste water drum, a portable lead container and tongs, stationery supplies and forms. A decontamination gurney was also provided to allow patient decontamination and waste water collection.

Radiation monitoring equipment included a Ludlum Model 14C radiation meter with side window beta/gamma probe (calibration date of 1/6/2008) and a Ludlum Model 14C meter with pancake probe (calibration date of 9/12/2008). An additional Ludlum Model 14C and pancake probe was being calibrated and not available for use. Each meter had an attached one microcurie Cs-137 check source for radiation response verification.

Radiation dosimetry included 12 ArrowTech Model 138 (0-200 mR) Direct Reading Dosimeters (DRDs) that were calibrated and leak-tested on 12/1/2008. In addition, there were twenty-five Landauer Luxel Plus Thermoluminescent Dosimeters (TLDs). The TLDs were all within their expiration date of 12/31/2008, and were under a vendor replacement schedule to ensure that the TLD expiration dates will not be exceeded. This successfully resolved Prior ARCA 49-06-1e1-A-01.

Potassium iodide (KI) is not stored in the emergency supply cabinet. The hospital is located approximately 30 miles from the Point Beach Nuclear Power Plant and KI would not be recommended for hospital emergency response personnel.

The Radiological Emergency Area (REA) is normally used for admitting emergency cases from the Ambulance Bay and examining patients (Treatment Room) and has a tiled floor. Clear, marked plastic sheeting was used to cover the floor, and radiation barrier tape was used to designate a pathway to the treatment room from the Ambulance Bay. A special decontamination gurney with a drain tub to channel water to a plastic container was available and used during wound decontamination. Supplies for obtaining blood, swipes and other biological samples were passed inside and outside the REA by a nurse controlling the REA Entrance. A sheet of plastic extended the floor covering to just outside the door to the Decontamination and Treatment Room, providing delineation between the contaminated area and the clean area.

All activities described in the demonstration criterion were carried out in accordance with the plan, procedures, and extent of play agreement.

**Criterion 3.a.1:**

The Aurora BayCare Medical Center successfully demonstrated the capability to issue appropriate dosimetry and manage radiological exposure to emergency workers in accordance with plans and procedures during an out of sequence activity conducted on December 8, 2008.

Upon notification of the impending arrival of a contaminated injured patient, the hospital Radiation Emergency Area (REA) response team donned their protective clothing. They wore protective coveralls, disposable booties, disposable gloves (two pair), and a face shield. They taped the openings at their ankles and wrists. The Radiation Safety Officer (RSO) issued each individual a 0-200 mR Arrow-Tech Model 138 Direct-Reading Dosimeter (DRD) and a Landauer Thermoluminescent Dosimeter (TLD). The DRDs had been leak-tested on December 1, 2008, and were not due for retesting until December 1, 2009.

The TLDs were all within their expiration date of December 31, 2008, thus successfully resolving Prior ARCA 49-06-1e1-A-01. Each REA team member placed the TLD inside their outer protective clothing, and clipped the DRD on the outside to permit periodic reading. All issued dosimetry serial numbers and initial (zero) DRD readings were

properly recorded on the Personal Readings Form. Some team members also wore their normally issued in-hospital TLDs and finger badges.

The RSO verified that REA team members were wearing their dosimetry and were correctly dressed out. The RSO announced to the REA team that DRDs would be read every 30 minutes after the arrival of the incoming patient. The RSO also indicated that staff exposures would be administratively controlled to no more than 100 mR for the duration of the emergency. The RSO stated that if any staff received more than 100 mR, the team member would be rotated out of the REA, if possible.

Team members were instructed to read their DRDs every 30 minutes during the drill. The highest reading noted at the end of the drill was 10 mR (simulated). Emergency workers periodically and at the end of the REA assignment read and recorded their dosimeter reading.

All activities described in the demonstration criterion were carried out in accordance with the plan, procedures and extent of play agreement.

**Criterion 6.d.1:**

The Aurora BayCare Medical Center located in Green Bay, Wisconsin, successfully demonstrated the capability to provide appropriate space, adequate resources, trained personnel and medical services and to monitor, decontaminate and treat contaminated injured individuals during an out of sequence MS-1 Facilities Drill conducted on December 8, 2008.

Participating organizations involved in patient transportation and medical treatment included the Luxemburg Rescue Squad EMS and the Aurora BayCare facility staff. The hospital portion of the drill began at 2014 hours, when the Luxemburg Ambulance Service crew notified the hospital's Emergency Department (ED) Nurses Station that it was transporting an injured member of the public who had potential radiation exposure. The ambulance crew provided medical information concerning the patient's medical condition by cellular telephone and indicated that the patient had experienced a fall, a head injury, a possible fractured ankle and potential radiation exposure. The ED nurse who received the call recorded details of the injury, patient information and vital signs on a standard EMS Radio Report Sheet. The estimated time of arrival provided by the ambulance crew was 50 minutes.

At 2020 hours, the ED nurse contacted the lead ED physician, who then immediately

contacted the Radiation Contamination Accident Team using pagers, telephone and face-to-face communication. The REA Team consisted of the Radiation Safety Officer (RSO), Assistant Radiation Safety Officer, Nuclear Medicine Physician, Emergency Department Physician, Safety, Loss Protection, and other nurses. Written instructions and job aids were available to assist in the REA set up and operation. The hospital team promptly set up the Radiological Emergency Area (REA) and delineated clean and contaminated zones and walkways within the Ambulance Bay and corridor leading to the REA.

A regular examining room was converted to a treatment room during the REA set-up. Pre-cut, clear plastic sheeting was placed over the REA tile floor. The plastic floor covering was marked to expedite correct orientation within the room and at the REA entrance. A four-foot section of plastic sheeting extended into the corridor to serve as a buffer zone. A waste collection barrel, barrel liner and job aid posters were placed in the treatment room. A decontamination gurney was prepared with a backboard and clean sheets and staged near the Ambulance Bay in preparation for the ambulance arrival.

In parallel with the REA set-up, a portable storage supply cabinet was wheeled into the Ambulance Bay. Team members obtained and donned protective coveralls, disposable shoe covers, vinyl gloves and head coverings. At 2045 hours, a team member performed pre-operational checks on the two Ludlum portable survey instruments and verified proper response to the built-in Cs-137 check source attached to each instrument. The check source response criteria were affixed to each instrument. The instruments were both set on the most sensitive scale and the probes were covered with plastic bags. The contamination action level established by hospital procedure was 100 counts per minute above background. Background was determined to be less than 50 cpm.

At 2046 hours, a TLD and 0-200 mR Direct-Reading Dosimeter (DRD) were issued to each REA team member. Each team member placed the TLD inside their outer protective clothing and clipped the DRD on the outside to permit periodic checking. All issued dosimetry serial numbers and initial (zero) DRD readings were properly recorded on the Personal Readings Form. Some team members also wore their normally issued in-hospital TLDs and finger badges.

At 2050 hours, the RSO verified that team members were wearing their dosimetry and were correctly dressed-out. The RSO announced to the team that DRDs would be read

every 30 minutes after the arrival of the patient. The RSO also indicated that staff exposures would be administratively controlled to no more than 100 mR for the radiation medical emergency. Above 100 mR staff would be rotated out of the REA, if possible.

At 2058 hours, the Luxemburg Rescue Squad ambulance arrived in the Ambulance Bay. One of the hospital team members announced the ambulance arrival and that the Hot Zone was now active. At 2102 hours, the ambulance crew members were met by the ED physician and four other hospital team members (all dressed out). The patient gurney was moved out of the ambulance, and the patient was then transferred to the hospital decontamination gurney. The ambulance crew members were instructed to standby for monitoring by the medical center's health physics technicians before they could be released. The monitoring was performed using one of the source-checked instruments, and the ambulance and crew members were released after determining that no reading above 100 cpm above background was found.

At 2105 hours, the patient was moved to the treatment room and a medical assessment was immediately begun by the ED physician and assisting nurses. Priority was placed on the patient's medical condition, while the RSO initiated a parallel contamination survey of the patient. The patient's outer clothing was cut away as needed (simulated) for examination, vital signs were monitored, an intravenous tube was set up (simulated), and blood samples, X-rays using a portable X-ray unit and a CT scan were ordered by the physician. Contamination survey readings were called out to the REA entrance nurse (gate-keeper) who recorded them on the Evacuee Assessment Form. The highest readings (simulated) were 2000 cpm on the patient's right arm (wound) and right palm.

A portable X-ray unit was wheeled into the treatment room for X-raying the suspected ankle fracture. The X-ray unit remained in the REA until it could be surveyed. Good contamination control was exhibited during the handling of the X-ray film container to avoid cross contamination of the film.

At approximately 2115 hours, the patient was stabilized and preparations were made to decontaminate the arm wound area with a saline solution. A swab of the wound was obtained for later analysis. Additional swabs of ears, nose and mouth were also obtained, packaged and labeled.

At 2116 hours, all team members were instructed to read their DRDs. The highest reading noted at that time was 10 mR.

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

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

ISSUE NO.: 49-06-1e1-A-01

ISSUE: The Landauer Thermoluminescent Dosimeters (TLD) used at the Aurora BayCare Medical Center were out of date by four days (expired on December 1, 2006) when the MS-1 drill was held on Dec. 4, 2006

CORRECTIVE ACTION DEMONSTRATED: During the December 8, 2008 MS-1 Medical Drill, all TLDs at the Aurora BayCare Medical Center were verified to be within their expiration date of December 31, 2008. Hospital staff confirmed that that TLD replacement schedule had been changed with the TLD vendor to ensure that TLD use would not exceed replacement dates.

- f. PRIOR ISSUES - UNRESOLVED: None

## 4.2.2. Risk Jurisdictions

### 4.2.2.1. Kewaunee County - Dosimetry Distribution Point - Kewaunee County Reception Center - Algoma High School

#### **Criterion 1.d.1:**

Successfully demonstrated - This associated criterion requires no narrative.

#### **Criterion 1.e.1:**

This criterion was demonstrated out of sequence on December 8, 2008 at Algoma High School, which served as the Kewaunee County Reception Center for Point Beach Nuclear Power Plant (PBNPP).

The Dosimetry Distribution Point (DDP) had laminated pictures that displayed proper operation of the Direct-Reading Dosimeters (DRDs) issued to workers at the Reception Center. The equipment included one Dosimeter Corporation of America (DCA) Model 862, with a range of 0-200mR, and one DCA Model 909 DRD Charger. A total of 35 fire fighters, police, HAZMAT and Health Workers were issued dosimeters and Landauer Permanent Record (thermoluminescent) Dosimeters. Additional dosimetry was available from the Kewaunee County Emergency Operations Center (EOC) upon request. The emergency workers were told that their administrative limit was 3 rem for the exercise and to notify their supervisor if they received a dose of 20 mR. Potassium iodide (KI) is not issued to emergency workers staffing the Reception Center.

Documentation verifying leak-testing of the DRDs and the shelf life of the Permanent Record Dosimeters is maintained at the Kewaunee County Emergency Management office. The Permanent Record Dosimeters had a replacement date of July 2009.

A laminated written version of the dosimetry briefing was distributed to the RC emergency workers, and extra briefing handouts were available. The DDP was staffed by five Community Service Officers. They were equipped with Motorola 800 Megahertz (MHz) eight-channel radios that are linked to the emergency networks for Kewaunee County. For internal communication, they were equipped with Family Services two-way radios. The Reception Center Plan was updated in February 2008. There were sufficient supplies of forms and pencils. All 35 emergency workers properly recorded and returned their dosimetry to the dosimetry issue point at the end of the exercise.

All activities described in the demonstration criterion were carried out in accordance with the plan, procedures and extent of play agreement.

**Criterion 3.a.1:**

*This criterion was demonstrated during an out of sequence exercise on December 8, 2008, at the Algoma High School, which serves as the Reception Center for Point Beach Nuclear Power Plant (PBNPP).*

The Kewaunee County Emergency Management Director dispatched the Community Service Officers to staff the Dosimetry Distribution Point at 1845 hours. During a real event, the staff would be dispatched at the Alert Emergency Classification Level. The Dosimetry Distribution Point personnel briefed the Reception Center emergency workers on how to zero their Direct-Reading Dosimeters (DRDs), to read them at least

every thirty minutes, notify their supervisor if they received a dose of 20 mR or more, their exposure limit was 3 rem, and how to record, wear and turn in the dosimetry. All 35 emergency workers in the Reception Center were issued Dosimeter Corporation of America (DCA) DRDs with a range of 0 - 200mR and a Landauer Permanent Record Dosimeter. Several emergency workers were observed to periodically read their dosimeter and record the readings and to read and properly record their exposure during the turn-in procedure.

All activities described in the demonstration criterion were carried out in accordance with the plan, procedures, and extent of play agreement.

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

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

#### 4.2.2.2. Kewaunee County - Evacuee/Emergency Worker Registration - Kewaunee County Reception Center - Algoma High School

**Criterion 1.d.1:**

Successfully demonstrated - This associated criterion requires no narrative

**Criterion 6.a.1:**

The registration criterion was successfully demonstrated at the Algoma Reception Center by representatives from the American Red Cross (ARC). The ARC set up a Registration Station outside the gymnasium and the shower area. Contaminated evacuees/emergency workers exited the shower area following decontamination and went to the Registration Station to be properly documented. Evacuees and emergency workers who were not contaminated exited the gymnasium doors and were documented at the Registration Station.

At the Registration Station, the evacuees displayed a green sticker on their clothing

signifying that they were clean. If they did not have a green sticker, they were not allowed to continue the registration process. Six evacuees were registered at the Registration Station. From the Reception Center Registration Station the evacuees were escorted to the Congregate Care Registration Station, which was set up in the school cafeteria.

At the Reception Center Registration Station, the evacuees were asked to read and acknowledge that they understood the Congregate Care rules before the registration process began. The registration process entailed filling out a form containing information that included name, address, telephone number, total number of family members and their ages, gender, and arrival date. The form also had a place to designate primary language, and some form of identification. The form is retained by the local ARC chapter for a period of ten years.

All activities described in the demonstration criterion were carried out in accordance with the plan, procedures, and extent of play agreement.

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

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

#### 4.2.2.3. Kewaunee County - Congregate Care Center - Algoma High School

**Criterion 1.d.1:**

Successfully demonstrated - This associated criterion requires no narrative.

**Criterion 6.c.1:**

Congregate Care capabilities were successfully demonstrated out-of-sequence on December 8, 2008, at the Algoma High School Reception Center, located in Algoma, Wisconsin. The demonstration was conducted by approximately 20 American Red Cross (ARC) volunteers. The demonstration was conducted by interview of ARC staff and volunteers and a walk-through of the facility.

The ARC set up the Congregate Care Center in the Algoma High School Cafeteria. The set-up was configured to emulate a regular Congregate Care Center. The Stations that were established included: Shelter Registration, Disaster Welfare Inquiry (DWI), Client Case Work (CCW), Health Services, Mental Health Services, Reception Area, Kitchen Area, and Dormitory Area. The ARC displayed samples of cots, blankets, sundries, and food supplies (snacks), representing those items that would normally be present at a full scale congregate care center. According to the ARC Representative, pre-packaged supplies are stored throughout an eight-county area in the ARC Region that serves Algoma, including cities and towns like Green Bay and Algoma. The supplies are packaged for servicing 50 evacuees. The number of packages delivered on demand depended on the number of evacuees expected at any given location.

As each evacuee approached the Registration Station, an ARC Representative at the station looked for a green sticker, signifying that the evacuee had been processed through a monitoring and, if necessary, decontamination process to assure that the evacuee was free of contamination. No one was registered without having the green sticker. During the drill, six evacuees were registered and processed through the Center.

Red Cross representatives assure that ARC Guidelines are met by inspecting any potential facility prior to contracting for its use. The square footage, restroom and shower facilities, and other ARC requirements must be met or the ARC will not agree for it to be used as a Congregate Care Center. The ARC Chapter that served the Algoma area has contracted for enough space at various locations to house approximately 69,000 evacuees.

All activities described in the demonstration criterion were carried out in accordance with the plan, procedures, and extent of play agreement.

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

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

#### 4.2.2.4. Kewaunee County - Medical Services Drill - Transportation - Algoma Rescue Squad - Kewaunee County Reception Center - Algoma High School

**Criterion 1.d.1:**

The Luxemburg Rescue Squad Emergency Medical Service (EMS) successfully demonstrated out of sequence the availability and operation of two communications systems in support of simulated events at the Point Beach Nuclear Power Plant (PBNPP). The demonstration was conducted at the Kewaunee County Reception Center (RC) located at Algoma High School beginning at about 1900 hours on December 08, 2008. The RC is located at 1715 Division Street in Algoma, Wisconsin.

Appropriate communications links were established with the Aurora BayCare Medical Center using the communications systems available in the ambulance. The Luxemburg Rescue Squad EMS ambulance personnel demonstrated their primary and secondary communications systems. They relied on a cellular telephone as their primary communication system, while the Aurora BayCare Medical Center VHF radio EMS emergency and hospital frequencies were available to provide secondary communications capabilities during the exercise. Personnel were trained to transmit and receive exercise messages and use the communications equipment available in the Luxemburg Rescue Squad EMS ambulance.

Prior to deployment from the Reception Center, both the cellular phone and the medical center VHF radio EMS emergency and hospital frequencies were operationally checked with the Aurora BayCare Medical Center. During the exercise, at 2014 hours, the Luxemburg Rescue Squad EMS contacted the Aurora BayCare Medical Center to provide specific patient information and the estimated time of arrival to the medical center.

The specific communications capabilities of the Luxemburg Rescue Squad EMS were commensurate with those specified in their emergency operations plans and procedures. The Luxemburg Rescue Squad EMS personnel had access to at least one communication system that was determined to be independent of the available primary cellular telephone.

Both primary and secondary communications systems were adequately demonstrated,

and each of the systems was determined to be operational throughout the exercise. There were no communications failures or malfunctions during the exercise.

All activities described in the demonstration criterion were carried out in accordance with the plan, procedures, and extent of play agreement.

**Criterion 1.e.1:**

Successfully demonstrated – This associated criterion requires no narrative.

**Criterion 3.a.1:**

The Community Service Officer (CSO) successfully demonstrated the issuance of appropriate dosimetry, discussion of related procedures, and the management of radiological exposure for the Luxemburg Rescue Squad EMS. The demonstration was conducted out of sequence beginning at 1900 hours on December 8, 2008, at the Kewaunee County Reception Center located at Algoma High School in Algoma, Wisconsin. In accordance with the extent of play agreement, the Luxemburg Rescue Squad EMS was pre-positioned at the Reception Center.

During a radiological emergency, the Luxemburg Rescue Squad EMS would report to the Reception Center staging area to receive required dosimetry and a radiological briefing and wait for instructions to provide medical transportation support, as necessary.

Prior to being deployed, the Luxemburg Rescue Squad EMS personnel were briefed by the CSO on zeroing DRDs, checking and reading DRDs every 30 minutes, dosimetry placement, reading the recording values on the exposure record form, exposure and administrative limits, proper use of permanent record dosimeters, and where and to whom to return dosimetry at the conclusion of their mission.

Through interview, the Luxemburg Rescue Squad EMS personnel demonstrated an adequate knowledge of exposure control procedures, including frequency at which to read and record personal direct reading dosimetry (at least every 30 minutes), exposure notification limit (3R), dosimetry placement, who to contact when approaching or achieving the administrative notification limit (20 mR), and where and to whom to return their dosimetry and documentation at the conclusion of each assignment. The Luxemburg Rescue Squad EMS personnel were also aware that they could contact the CSO should any questions arise during their specific assignment.

Each of the Luxemburg Rescue Squad EMS personnel was issued an emergency worker dosimetry kit at the Reception Center. Each dosimetry kits contained one permanent record Landauer Escort Thermoluminescence Dosimeter (TLD), with a usable date range of August 1, 2008 - July 31, 2009, one Dosimetry Corporation of America (DCA) Model 862 Direct-Reading Dosimeter (DRD), with a range of 0-200 mR, that had been drift/leakage checked on May 13, 2008, a copy of the radiological briefing sheet, and a dosimeter exposure record form.

The State of Wisconsin uses an administrative whole body exposure limit of 3R. In addition, workers were advised to notify their supervisor whenever they observed a change of 20mR or more on the Model 862 DRDs issued to them. This administrative reporting limit was consistent with the 0-200 mR range of the Model 862 DRDs.

Through interview, the Luxemburg Rescue Squad EMS demonstrated that they were also aware of the established maximum whole body exposure limit of 3R for emergency workers and the 20mR administrative reporting limit, as well as who to notify (their supervisor) when these exposure limits were incurred. These pre-determined administrative and maximum limit values were low enough to consider the effects of internal exposure and the subsequent calculation of Total Effective Dose Equivalent (TEDE).

The CSO, in consultation with the Radiological Officer at the Kewaunee Emergency Operations Center (EOC) and the State Radiological Coordinator at the State EOC, would authorize exposure to the Luxemburg Rescue Squad EMS in excess of the 3R administrative exposure limit and replacing those Luxemburg Rescue Squad EMS who were at or near their established administrative exposure limits.

All activities described in the demonstration criterion were carried out in accordance with the plan, procedures, and the extent of play agreement.

**Criterion 6.d.1:**

The Luxemburg Rescue Squad EMS and Algoma Fire and Rescue EMS successfully demonstrated out of sequence that appropriate and adequate resources, including trained personnel, were available to transport and provide medical treatment to a potentially radiologically contaminated and injured individual in support of simulated accident at the Point Beach Nuclear Power Plant (PBNPP). In accordance with the extent of play agreement, the Kewaunee County Reception Center (at Algoma High School) was activated out-of-sequence at 1900 hours on December 08, 2008. The

Luxemburg Rescue Squad EMS was pre-positioned at the Reception Center, which is located at the located at 1715 Division Street in Algoma, Wisconsin.

The transportation and medical treatment portion of the exercise involved a potentially contaminated injured individual, who was to be transported to the Aurora BayCare Medical Center located at 2845 Greenbrier Road, Green Bay, Wisconsin.

The Algoma Fire and Rescue EMS was notified by Controller-inject that an evacuee had been injured while entering the Reception Center. The individual's injuries resulted from a trip and fall into the bleachers. The Algoma Fire and Rescue EMS was told that the individual would require an ambulance to be transported from the Reception Center to the medical center.

The evacuee's injuries were stated by Controller inject to be an open wound on the right arm, a concussion, a broken ankle, with the victim experiencing tremendous pain. The Controller inject also indicated that the individual may have been radiologically contaminated. The EMS personnel proceeded to stabilize the patient by flushing the open-arm wound (simulated) and applying a temporary bandage to stop or limit simulated bleeding, and placing a splint around the broken ankle. The EMS personnel made it clear that medical treatment took precedence over potential contamination.

In accordance with the plan, radiological survey to determine whether the patient was actually contaminated was deferred until the patient was transferred to the medical center. The EMS paramedical personnel stated that radiological surveys would be conducted by health physics technicians at the medical center upon arrival.

Wearing surgical gloves and booties, the paramedics placed the patient on a backboard and covered him with several cotton blankets. The blanket wraps were applied to limit the potential extent of contamination and its potential spread to surrounding surfaces and persons.

The patient and backboard were placed on a waiting gurney and transferred to the Luxemburg Rescue Squad EMS for transport to the medical center. The Algoma Fire and Rescue were careful while lifting and transferring the backboard to avoid potentially cross contaminating the Luxemburg Rescue Squad EMS personnel receiving the patient. Following any contact with the potentially contaminated patient, the EMS personnel changed gloves to minimize the potential for cross contamination.

The Luxemburg Rescue Squad EMS made every effort to minimize and limit the potential for spreading contamination while transporting the patient gurney to the ambulance. Once in the ambulance, one of the paramedics contacted the hospital at 2014 hours via cellular telephone and described the patient's condition to the medical center in preparation for arrival. All medical information forwarded to the medical center was provided by Controller inject. The information provided by the paramedic to the medical center included an estimated time of arrival and the patient's conscious status, respiration rate, pulse rate, blood pressure, and skin and eye conditions. Following any contact with the potentially contaminated patient, the paramedics in the ambulance changed gloves to minimize the potential for cross contamination. They were careful to ensure that their clothing did not make contact with the patient.

Security personnel and signage controlled access to the medical center. The security personnel directed the ambulance to enter the controlled area outside the medical center emergency room. The patient was removed from the ambulance by the Luxemburg Rescue Squad EMS crew, who relinquished control of the patient to medical center personnel. The patient was then wheeled into the medical center emergency room for further treatment, monitoring, and decontamination. All monitoring and decontamination of the patient were conducted at the medical center.

Personnel from the Nuclear Medicine Department of the medical center used a Ludlum Model 14C survey instrument with a side window Geiger Mueller (GM) probe to monitor the ambulance personnel and ambulance for contamination prior to their release from the medical center. The calibration date on this survey instrument was January 6, 2008, with recalibration due by January 6, 2009. Both the paramedics and the ambulance were determined to be free of contamination and were released to return to the Reception Center for further assignments.

All activities described in the demonstration criterion were carried out in accordance with the plan, procedures, and extent of play agreement.

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

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

f. PRIOR ISSUES - UNRESOLVED: None

## APPENDIX 1

### ACRONYMS AND ABBREVIATIONS

The following is a list of the acronyms and abbreviations that were used in this report.

ARC	American Red Cross
CCW	Client Case Work
CSO	Community Service Officer
DDP	Dosimetry Distribution Point
DRD	Direct Reading Dosimeter
DHS	(U.S.) Department of Homeland Security
DWI	Disaster Welfare Inquiry
ECL	Emergency Classification Level
ED	Emergency Department
EMS	Emergency Medical Service
EOC	Emergency Operations Center
EPZ	Emergency Planning Zone
FEMA	Federal Emergency Management Agency
GE	General Emergency
GM	Geiger Mueller
NRC	(U.S.) Nuclear Regulatory Commission
PBNPP	Point Beach Nuclear Power Plant
RAC	Regional Assistance Committee
RC	Reception Center
REA	Radiological Emergency Area
REP	Radiological Emergency Preparedness
RO	Radiological Officer
RSO	Radiation Safety Officer
SAE	Site Area Emergency
TEDE	Total Effective Dose Equivalent

**This Page**

**Intentionally**

**Left Blank**

## APPENDIX 2

### EXERCISE EVALUATORS AND TEAM LEAERS

The following is a list of the personnel who evaluated the PBNPP REP Plume Exposure Pathway Exercise out-of-sequence activities conducted on December 8, 2008. “\*” indicates that the evaluator was also a Team Leader. The organization each evaluator represents is indicated by the following abbreviations:

DHS/FEMA

U.S. Department of Homeland Security /  
Federal Emergency Management Agency

ICF

ICF Consulting, Inc.

TITLE	NAME	AGENCY
Regional Assistance Committee Chairman	William King	DHS/FEMA
Exercise Director	Dwayne Warren	DHS/FEMA
Site Specialist	Carl Bebrich	DHS/FEMA

LOCATION	EVALUATOR	AGENCY
Wisconsin - Evacuee/Emergency Worker Monitoring/Decontamination - Kewaunee County Reception Center - Algoma High School	William McCance	ICF
Wisconsin - Evacuee Vehicle Monitoring/Decontamination - Kewaunee County Reception Center - Algoma High School	Robert Vork	ICF
Wisconsin - Emergency Worker Vehicle/Equipment Monitoring/Decontamination - Kewaunee County Reception Center - Algoma High School	Robert Vork	ICF
Wisconsin - Medical Services Drill - Facility - Aurora BayCare Medical Center	Richard Watts	ICF
Kewaunee County - Dosimetry Distribution Point - Kewaunee County Reception Center - Algoma High School	Dennis Wilford	ICF
Kewaunee County - Evacuee/Emergency Worker Registration - Kewaunee County Reception Center - Algoma High School	Ernest Boaze	ICF
Kewaunee County - Congregate Care Center - Algoma High School	Ernest Boaze	ICF
Kewaunee County - Medical Services Drill - Transportation - Algoma Rescue Squad - Kewaunee County Reception Center - Algoma High School	Richard Smith	ICF
* Team Leader		

**This Page**

**Intentionally**

**Left Blank**

## APPENDIX 3

# EXERCISE CRITERIA AND EXTENT-OF-PLAY AGREEMENTS

This appendix lists the exercise criteria that were scheduled for demonstration in the REP Plume Exposure Pathway Exercise conducted for the PBNPP on December 9, 2008, and the off-site extent-of-play agreement.

The exercise criteria, contained in FEMA "Radiological Emergency Preparedness Exercise Evaluation Methodology," as published in the Federal Register Notice, Volume 67, No 80, dated April 25, 2002, represent a functional translation of the planning standards and evaluation criteria of NUREG-0654/FEMA-REP-1, Rev. 1, Criteria for the Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, November 1980.

Because the exercise criteria are intended for use at all nuclear power plant sites and because of variations among off-site plans and procedures, an extent-of-play agreement is prepared by the State and approved by DHS/FEMA to provide evaluators with guidance on expected actual demonstration of the criteria.

### A. Exercise Criteria and Extent-of-Play

Listed below are the specific REP criteria scheduled for demonstration during this exercise.

# Point Beach Nuclear Plant Exercise Extent of Play Agreement State of Wisconsin / Kewaunee County

**Exercise Date: December 9, 2008**

The following extent of play agreement was abridged to reflect only those activities for which credit was given by DHS/FEMA as a result of early termination of the PBNPP REP Full Participation Plume and Ingestion Exposure Pathway Exercise that was originally scheduled for December 9 and 10, 2008. In the original extent of play agreement, the State of Wisconsin and Kewaunee and Manitowoc Counties were the off-site response organizations (OROs). This extent of play agreement addresses only the Exercise Criteria associated with out-of-sequence activities that occurred on December 8, 2008.

---

Locations: The Kewaunee County Reception and Congregate Care Centers in Algoma, Wisconsin and the Aurora BayCare Medical Center in Green Bay, Wisconsin.

Criteria that can be re-demonstrated for credit during or immediately following the exercise, at the decision of the federal evaluator, include the following: 3.a.1, 3.b.1, 3.d.1, 3.d.2, 6.a.1, 6.b.1, 6.c.1, and 6.d.1. Criteria that may be re-demonstrated, as approved on a case-by-case basis by the Chairperson of the Regional Assistance Committee, include the following: 2.a.1, 2.b.1, 2.b.2, 5.a.1, and 5.b.1.

ACTIVITY	DATE	TIME	LOCATION
Pre-exercise briefing	12/8/2008	2:00 pm	Holiday Inn, Manitowoc, WI
KEW Reception Center	12/8/2008	6:30 pm	Algoma High School
KEW Red Cross Interview	12/8/2008	6:30 pm	Algoma High School
KEW MS-1 Hospital	12/8/2008	6:30 pm	Aurora BayCare Medical Center, Green Bay

## **AREA'S REQUIRING CORRECTIVE ACTIONS**

The following ARCA's received in earlier exercises will be redemonstrated during the Point Beach 2008 Plume Phase Exercise on December 8 and 9.

**Issue No: 49-06-1.e.1-A-01** – Point Beach Nuclear Power Plant Exercise, December 5, 2006.

Criterion 1.e.1 – Equipment, maps, displays, dosimeters, potassium iodide (KI) and other supplies are sufficient to support emergency operations.

Hospital staff at Aurora BayCare Medical Center wore expired TLD's.

**Issue No: 33-07-6a1-A-07** – Kewaunee Power Station Exercise, December 4, 2007.  
Criterion 6.a.1 – Monitoring and Decontamination of Evacuees and Emergency Workers and Registration of Evacuees.

Reception Center staff at the Kewaunee County Reception Center did not recognize that they may have become radiologically contaminated and were not monitored. Since the 2007 exercise, additional training in this area has been given to Reception Center staff.

**Issue No: 33-07-5b1-A-08** – Kewaunee Power Station Exercise, December 4, 2007.  
**Issue No: 33-07-5b1-A-09** – Kewaunee Power Station Exercises, December 4, 2007.

Criterion 5.b.1 – Emergency Information and Instructions for Public and the Media.

One PIO represented both counties during Media Briefings. Contradictory language regarding the Livestock Advisory and evacuations was given at Media Briefing #3. The language was taken from a prescribed message. The message will be rewritten, so as not contain contradictory language.

## **EVALUATION AREA 1 – EMERGENCY OPERATIONS MANAGEMENT**

**Criterion 1.d.1: Communications Equipment:** *At least two communication systems are available, at least one operates properly and communication links are established with appropriate locations. Communications capabilities are managed in support of emergency operations.*

### **State of Wisconsin**

The State of Wisconsin has available and will use several of the following communication systems: Commercial telephones, cellular phones, satellite phone, and/or amateur radio to communicate with other locations.

### **Kewaunee County**

Kewaunee County will use a variety Commercial telephones and cellular telephones to communicate with the utility and other locations.

## **Criterion 1.e.1 Equipment and Supplies to Support Operations:**

*Equipment, maps, displays, dosimeters, potassium iodide (KI) and other supplies are sufficient to support emergency operations.*

### **State of Wisconsin**

The State will demonstrate the use of equipment, maps and displays to support emergency operations at the Kewaunee County Reception Center.

The state will demonstrate the availability of potassium iodide (KI). Documentation of the KI expiration date will be available at applicable locations for inspection by federal evaluators.

The state will demonstrate the use of dosimetry as a part of the demonstration of reception center operations and the response to a medical emergency involving a potentially contaminated evacuee. Survey instrument inventory and calibration records will be included as a part of the Annual Letter of Certification. Instrument inventory and calibration records are maintained by Wisconsin Department of Health Services, Radiation Protection Section (DHFS-RPS), and will be available for review at the State EOC if requested. In the Point Beach December 5, 2006, exercise, an ARCA

was issued regarding expired TLDs used by the hospital staff at Aurora BayCare Medical Center. Issue No: 49-06-1e1-A-01 will be redemonstrated during this exercise.

#### Kewaunee County

Kewaunee County will demonstrate their ability to support operations through the use of maps, status boards, and other displays as appropriate. Some county emergency worker dosimetry kits will be pre-distributed and additional distribution will occur at two locations: (1) out-of-sequence on Monday, December 8, 2008 at the Reception Center at Algoma High School, 1715 Division, Algoma, Wisconsin;. The Algoma High School activities will be demonstrated out-of-sequence on Monday, December 8, 2008, beginning at ~6:30p.m. The dosimetry kits that will be distributed on December 9 will have KI in the bags. Document regarding the expiration date of the KI will be available for the evaluator in the EOC during the exercise.

### **EVALUATION AREA 3 – PROTECTIVE ACTION IMPLEMENTATION**

**Criterion 3.a.1 Implementation of Emergency Worker Exposure Control:** *The OROs issue appropriate dosimetry and procedures and manage radiological exposure to emergency workers in accordance with the plan 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.*

#### State of Wisconsin

This criterion will be demonstrated at appropriate field locations, including the Kewaunee County Reception Center in Algoma, Wisconsin. Monitoring and decontamination personnel will receive a radiological exposure control briefing and demonstrate the proper use of direct-reading and thermoluminescent dosimeters (DRDs and TLDs) to monitor and control their radiation exposure as well as the appropriate associated documentation for their issued dosimetry.

#### Kewaunee County

Emergency workers will demonstrate the proper use of DRDs and TLDs to monitor and control their exposure to radiation. Emergency workers will

follow procedures in their plan regarding radiological equipment use and exposure limits and will monitor and record dosimeter readings.

Reception Center personnel will be issued dosimetry at the Reception Center, out-of-sequence on Monday, December 8, 2008.

## **EVALUATION AREA 6 – SUPPORT OPERATIONS/FACILITIES**

### **Criterion 6.a.1 Monitoring and Decontamination of Evacuees and Emergency**

**Workers and Registration of Evacuees:** *The reception center/emergency worker facility has appropriate space, adequate resources, and trained personnel to provide monitoring, decontamination and registration of evacuees and/or emergency workers.*

#### **State of Wisconsin**

The State of Wisconsin will demonstrate the adequacy of procedures, facilities, equipment and personnel for radiological monitoring and decontamination. Health monitoring teams will demonstrate radiological monitoring and decontamination of evacuees at reception centers in accordance with the applicable County reception center procedures. Both counties will set up and operate three monitoring stations (i.e. two portal monitors and one hand monitor). The health teams do not use calibrated check sources. The instruments are calibrated annually by a certified calibration facility.

The health monitoring teams will include personnel from the DHFS-RPS and individuals from the counties who have received training as Auxiliary Health Monitors. The personnel from the county will work under the supervision of DHS-RPS staff and will be evaluated as a part of the State of Wisconsin's response.

Once each reception center is operational and monitors have surveyed several evacuees to establish flow, at least six evacuees will be monitored and registered, with one evacuee requiring decontamination. Two evacuee vehicles will be monitored, one of which will require decontamination. Staff

will also demonstrate the monitoring of at least one emergency worker, who will require decontamination.

Registration demonstrations for this criterion are a County responsibility and will be held out-of-sequence in Kewaunee County on Monday evening, Monday, December 8, 2008, beginning at ~6:30 p.m. at the Algoma High School, 1715 Division Street, Algoma, WI.

Kewaunee County

Kewaunee County will demonstrate this criterion out-of-sequence on Monday, December 8, 2008 beginning at ~6:30 p.m. at the Algoma High School, 1715 Division, Algoma, Wisconsin. Kewaunee County, with assistance from the American Red Cross, is responsible for registering evacuees and assigning them to appropriate congregate care facilities.

**Criterion 6.b.1 Monitoring and Decontamination of Emergency Worker**

**Equipment:** *The facility/ORO has adequate procedures and resources for the accomplishment of monitoring and decontamination of emergency worker equipment including vehicles.*

State of Wisconsin

Health monitoring teams will demonstrate this criterion out-of-sequence, beginning at ~6:30 p.m. on Monday night, Monday, December 8, 2008, at the Kewaunee County Reception Center (Algoma High School), 1715 Division, Algoma, Wisconsin. Reception Center personnel will demonstrate the monitoring of one emergency vehicle, which will require decontamination.

Kewaunee County

The County will not demonstrate this criterion; it is a state responsibility.

**Criterion 6.c.1 Temporary Care of Evacuees:** *Managers of congregate care facilities demonstrate that the centers have resources to provide services and accommodations consistent with American Red Cross planning guidelines. Managers demonstrate the procedures to assure that evacuees have been monitored for contamination and have been decontaminated as appropriate prior to entering congregate care facilities.*

State of Wisconsin

The state will not demonstrate this criterion, it is a county responsibility.

Kewaunee County

Kewaunee County will demonstrate this criterion out-of-sequence on Monday, December 8, 2008, by opening a congregate care center following the reception center demonstration. The congregate care center will be set up in the lunch room of the Algoma High School, located at 1715 Division Street. The Red Cross will bring inventory lists of equipment and will operate in accordance with their procedures. At least one evacuee will be processed through the congregate care center. A Red Cross representative will be available to the federal evaluator to answer questions about the congregate care center.

**Criterion 6.d.1 Transportation and Treatment of Contaminated Injured**

**Individuals:** *The facility/ORO has the appropriate space, adequate resources and trained personnel to provide transport, monitoring, decontamination and medical services to contaminated injured individuals.*

State of Wisconsin

The MS-1 hospital drill will be held out-of-sequence on December 8, 2008 at the Aurora BayCare Medical Center, 2845 Greenbrier Road, Green Bay, Wisconsin. The hospital portion of the drill will be a continuation of the Kewaunee County ambulance drill. Set-up for the drill will commence at ~6:30 p.m. at the Kewaunee Reception Center. The transportation portion of the drill will begin at ~7:00 p.m. and should transition to the hospital portion by ~7:30 p.m. The hospital will demonstrate setting up the Radiological Emergency Area, providing appropriate medical care to the patient, and monitoring and decontamination of the patient.

Kewaunee County

The transportation section of the drill will be demonstrated out-of-sequence beginning at ~7:00 p.m. at the Kewaunee County Reception Center (Algoma High School, 1715 Division Street) on Monday, December 8, 2008, during the Reception Center drill. Algoma Rescue Squad personnel will demonstrate

the packaging and preparation of a potentially contaminated medical victim and Luxemburg Rescue will demonstrate the transport of the victim to Aurora BayCare Medical Center and while in route, will make a report to the hospital per their SOP.

**This Page  
Intentionally  
Left Blank**

## APPENDIX 4

### EXERCISE SCENARIO

This appendix contains a summary of the simulated sequence of events that was used as the basis for invoking emergency response actions by Offsite Response Organizations (OROs) in the REP Plume Exposure Pathway Exercise out-of-sequence activities conducted for the PBNPP on December 8, 2008.

This plume exercise scenario for the out-of sequence activities conducted on December 8, 2008, was submitted for the State of Wisconsin by the Wisconsin Emergency Management Division of the Wisconsin Department of Military Affairs.

During the exercise, controllers from the State of Wisconsin either gave "inject messages", containing scenario events and/or relevant data, to those persons or locations who would normally receive notification of such events. These inject messages were the method used for invoking response actions by OROs.

**This Page  
Intentionally  
Left Blank**

# RECEPTION CENTER DRILL SCENARIO

## KEWAUNEE COUNTY

### ALGOMA RECEPTION CENTER

#### I. PROPOSED SCHEDULE

Date: December 8, 2008  
Time: ~6:30 pm  
Location: Algoma High School  
1715 Division Street, Algoma, WI

#### II. PURPOSE

This simulated radiological emergency is being conducted to exercise the setup and operation of the reception center in Kewaunee County. The basic objective is to assess the ability of county and state personnel to setup and operate Algoma Reception Center in response to a radiological incident at Point Beach Nuclear Plant.

#### III. OBJECTIVES OF THE DRILL

- Demonstrate the adequacy of procedures, facilities, equipment, and personnel for the radiological monitoring, decontamination, and registration of evacuees.
- Demonstrate the adequacy of procedures for the monitoring and decontamination of emergency workers, equipment, and vehicles.

#### IV. EXTENT OF PLAY

Kewaunee County and the State of Wisconsin will demonstrate these objectives between 6:30 pm and 9:00 pm on December 8, 2008, at Algoma High School in Algoma. Kewaunee County is responsible for registering evacuees and assigning them to appropriate congregate care facilities. The state is responsible for directing

the radiological monitoring and decontamination portions of this objective.

State health monitoring teams will demonstrate radiological monitoring and decontamination of evacuees, emergency workers, and vehicles in accordance with the procedures set forth in the county reception center plan and the WI DHS-RPS *Radiological Incident Response Plan*. Health monitoring teams will include personnel from the Department of Health Services Radiation Protection Section, the University of Wisconsin Safety Department, and individuals from the county who have received training as Auxiliary Health Monitors. Health monitoring personnel from the county will work under the supervision of DHS-RPS staff, and should be evaluated as part of the State of Wisconsin's response.

Once the reception center is operational and monitors have surveyed several evacuees to establish flow, at least six evacuees will be monitored and registered for evaluation purposes, with one evacuee requiring decontamination. At least two evacuee vehicles will be monitored with one vehicle requiring decontamination.

Following demonstration of monitoring and decontamination of evacuees and their vehicles, one emergency worker will be monitored and require decontamination. One emergency worker vehicle will be monitored and require decontamination.

## **V. NARRATIVE SCENARIO**

Activation of the Algoma Reception Center will commence at approximately 6:30 pm, Monday, December 8<sup>th</sup> in response to notification that a radiological incident has occurred at the Kewaunee Power Station.

Once the center is operational, processing of evacuees will commence. At least six evacuees will be monitored. Contamination at levels greater than 100 cpm above background will be detected on one evacuee, who will be sent to the decontamination area for decontamination. All evacuees will be registered in accordance with reception center procedures. One worker will also be monitored and will require decontamination.

Two evacuee vehicles will be monitored with one having contamination levels greater than 100 cpm above background detected on the wheel wells. This vehicle will be directed to the vehicle decontamination area for decontamination. One

emergency worker vehicle will be monitored and require decontamination.

Section VI contains the controller data for contamination levels.

**VI. SCENARIO**

**THIS IS A DRILL**

<u>Scenario Phase</u>	<u>Controller Message/Notes</u>
Evacuee Monitoring	Sixth evacuee will be contaminated Contamination levels  - Left palm 250 cpm >bg - Right palm 300 cpm >bg - Left forearm 250 cpm >bg =====
Evacuee Decontamination	First decontamination lowers contamination levels to less than 100 cpm above background =====
Evacuee Vehicle Monitoring	Second vehicle will be contaminated Contamination levels  - Wheel wells 900 cpm >bg =====
Evacuee Vehicle Decontamination	First decontamination lowers contamination levels to less than 100 cpm above background =====
Emergency Worker Monitoring	- Seat of pants 700 cpm >bg - Both palms 1000 cpm >bg - Shoes 2000 cpm >bg =====
Emergency Worker Decontamination	First decontamination lowers contamination levels to less than 100 cpm above background =====
Emergency Worker Vehicle Monitoring	- Wheel wells 1800 cpm >bg - Rear end 1200 cpm >bg =====
Emergency Vehicle Decontamination	First decontamination lowers contamination levels to less than 100 cpm above background

**END OF DRILL**

**This Page**

**Intentionally**

**Left Blank**

# **MEDICAL SERVICES (MS-1) HOSPITAL & AMBULANCE DRILL SCENARIO**

## **KEWAUNEE COUNTY**

### **AURORA BAYCARE MEDICAL CENTER**

### **LUXEMBURG EMERGENCY AND RESCUE ASSOCIATION**

#### **I. PROPOSED SCHEDULE**

Date: December 8, 2008  
Time: ~7:00 pm (ambulance drill)  
~7:45 pm (hospital drill)  
Locations: Algoma High School (ambulance drill)  
1715 Division Street  
Algoma, WI  
  
Aurora BayCare Medical Center (hospital drill)  
2845 Greenbrier Road  
Green Bay WI  
  
Injury/Illness: Concussion, broken ankle and open wound on  
right arm

#### **II. PURPOSE**

This simulated radiation medical emergency is being conducted to exercise the emergency medical response in Kewaunee County. The basic objective is to assess the ability of the pre-hospital and hospital emergency medical service to handle a contaminated and injured patient.

#### **III. OBJECTIVES OF THE DRILL**

##### **Ambulance Crew:**

##### Terminal Objective

Demonstrate the adequacy of vehicles, equipment, procedures, and personnel for transporting contaminated, injured, or exposed individuals.

#### Demonstration Objectives

To accomplish the terminal objective, drill participants will adequately:

Determine the nature and extent of external radiological contamination of a contaminated injured individual.

- 
- Implement appropriate contamination control measures during preparation and transport of individuals from the accident site.
- Determine the identity of the medical facility to which the individual will be transported and transport the individual without undue delay.
- Demonstrate the capability to maintain timely and accurate communications with the receiving medical facility.
- Demonstrate the capability to follow policies, implement procedures, and use equipment/facilities as delineated in the applicable emergency response plan.

#### **Medical Facility:**

#### Terminal Objective

Demonstrate the adequacy of the equipment, procedures, supplies, and personnel of medical facilities responsible for treatment of contaminated, injured, or exposed individuals.

#### Demonstration Objectives

To accomplish the terminal objective, drill participants will adequately:

- Demonstrate the timely availability of appropriate medical facility staff.

- Demonstrate the preparation of the receiving area for a contaminated individual and implement appropriate contamination control measures.
- Determine, by both survey and bioassay sample, the nature and extent of radiological contamination of a contaminated injured individual and demonstrate proper decontamination.
- Implement appropriate contamination control measures during and after treatment of a contaminated individual.
- Demonstrate the capability to follow policies, implement procedures, and use equipment/facilities as delineated in the applicable emergency response plan.

#### **IV. NARRATIVE SCENARIO**

This simulated radiation accident begins as a member of the general public arrives at the Algoma High School Reception Center as a result of a simulated radiological release. This individual has driven to the center as recommended by emergency messages delivered via the media.

Upon entering the reception center, the individual trips and falls into the end of the bleachers. This results in a possible concussion, broken ankle, and open gash on the right arm. The individual becomes very disoriented and cannot stand.

Ambulance personnel medically evaluate the patient, request assistance from other workers as necessary, and prepare the victim for transport to Aurora BayCare Medical Center in Green Bay. Aurora BayCare Medical Center is notified of the victim's condition and estimated time of arrival, prepares the Radiation Emergency Area (REA), and notifies the appropriate staff according to procedures. The ambulance crew continues patient care and transports the patient to Aurora BayCare Medical Center.

The hospital emergency staff meets the ambulance upon arrival. An initial

report is received and the patient is transferred to the REA. The hospital staff evaluates the patient and initiates appropriate treatment. The hospital radiation safety personnel perform a radiological survey of the patient. Bioassay samples are taken from the wound area and intact skin areas. Decontamination efforts are performed until surveys indicate acceptable readings on previously contaminated areas.

The patient is surveyed prior to transfer out of the REA. Appropriate exit procedures for the patient and attending personnel are performed. Surveys of the ambulance crew and vehicle are performed prior to releasing the crew and vehicle.

## V. SCENARIO

### THIS IS A DRILL

#### DO NOT initiate actions affecting normal operations

*Note: Ambulance staff DRDs read <1 mR throughout the drill*

#### Scenario Phase

#### Controller Message

#### Discovery of patient

#### Medical Conditions

Conscious level:

disoriented/groggy

Respiration:

24

Pulse:

135

Blood pressure:

152/82

Skin:

warm/dry/normal color

Pupils:

unequal/ sluggish reaction to light

Other:

open cut on lower right arm  
bump/abrasion on forehead  
right ankle swollen and very painful

#### EMS treatment

#### Medical Conditions

Conscious level:

unchanged

Respiration:

20

Pulse:

90

Blood pressure:

138/78

Skin:

unchanged

Pupils:

unchanged

Other:

unchanged

#### Radiological Conditions (if surveyed prior to transport)

Wound on right arm:

2000 cpm

Victim's right palm:

2000 cpm

#### EMS transport

#### Medical Conditions

Conscious level:

unchanged

Respiration:

18

Pulse:

84

Blood pressure:

138/78

Skin:

unchanged

Pupils:

unchanged

Other:

unchanged

## **THIS IS A DRILL**

<u>Scenario Phase</u>	<u>Controller Message</u>
Initial hospital evaluation	<p>Medical Conditions</p> <p>Conscious level: unchanged</p> <p>Respiration: 16</p> <p>Pulse: 80</p> <p>Blood pressure: 1 36/74</p> <p>Skin: unchanged</p> <p>Pupils: unchanged</p> <p>Other: unchanged</p> <p>Radiological Conditions</p> <p>Wound on right arm: 2000 cpm</p> <p>Victim's right palm: 2000 cpm</p> <p>=====</p>
After first decontamination	<p>Radiological Conditions</p> <p>Wound on right arm: 500 cpm</p> <p>Victim's right palm: 1000 cpm</p> <p>=====</p>
After second decontamination	<p>Radiological Conditions</p> <p>Wound on right arm: 200 cpm</p> <p>Victim's palms: background</p> <p>=====</p>
After third decontamination	<p>Radiological Conditions</p> <p>All areas: background</p> <p>=====</p>
Post medical treatment	<p>Medical Conditions</p> <p>Conscious level: unchanged</p> <p>Respiration: 14</p> <p>Pulse: 74</p> <p>Blood pressure: 130/74</p> <p>Skin: unchanged</p> <p>Pupils: unchanged</p> <p>Other: X-ray</p> <ul style="list-style-type: none"><li>• C-spine - negative</li><li>• Fracture to right ankle</li></ul>
Termination	Termination message issued when authorized by Exercise Manager

**END OF DRILL**

## THIS IS A DRILL

<u>Scenario Phase</u>	<u>Controller Message</u>
Initial hospital evaluation	Medical Conditions Conscious level: unchanged Respiration: 16 Pulse: 80 Blood pressure: 136/74 Skin: unchanged Pupils: unchanged Other: unchanged  Radiological Conditions Wound on right arm: 2000 cpm Victim's right palm: 2000 cpm =====
After first decontamination	Radiological Conditions Wound on right arm: 500 cpm Victim's right palm: 1000 cpm =====
After second decontamination	Radiological Conditions Wound on right arm: 200 cpm Victim's palms: background =====
After third decontamination	Radiological Conditions All areas: background =====
Post medical treatment	Medical Conditions Conscious level: unchanged Respiration: 14 Pulse: 74 Blood pressure: 130/74 Skin: unchanged Pupils: unchanged Other: X-rays • C-spine - negative • Fracture to right ankle =====

Termination: Termination message issued when authorized by Exercise Manager

**END OF DRILL**