

Arkansas Nuclear One  
Drill Report - 2009-04-14  
Final Report - Radiological Emergency  
Preparedness (REP) Program  
2009-05-05





# FEMA

## Drill Report

Arkansas Nuclear One

Drill Date: 2009-04-14

Report Date: 2009-05-05

U.S. DEPARTMENT OF HOMELAND SECURITY

Federal Emergency Management Agency

REP Program

800 North Loop 288

Denton, TX 76209

# Table of Contents

Chapter 1 Executive Summary

Chapter 2 Introduction

Chapter 3 Drill Overview

Section 3.1 EPZ Description

Section 3.2 Drill Participants

Chapter 4 Drill Evaluation and Results

Section 4.1 Summary Results of Drill Evaluation

Section 4.2 Status of Jurisdictions Evaluated

4.2.1 Risk Jurisdictions

4.2.1.1 Pope County EMS - St. Mary's Station

4.2.2 Support Jurisdictions

4.2.2.1 University of Arkansas for Medical Sciences Hospital

Appendices

Appendix 1 - Acronyms and Abbreviations

Appendix 2 - Drill Evaluators and Team Leaders

Appendix 3 - Drill Evaluation Areas and Extent of Play Agreement

Appendix 4 - Drill Scenario and Timeline

# 1. Executive Summary

On April 14, 2009, an out-of-sequence medical drill was conducted at the University of Arkansas for Medical Sciences (UAMS), Little Rock, Arkansas followed by an out-of-sequence ambulance drill conducted in Russellville, Arkansas for the Pope County Emergency Medical Services (EMS) - St. Mary's Station. Personnel from the U.S. Department of Homeland Security/Federal Emergency Management Agency (DHS/FEMA) Region VI, evaluated all activities. The purpose of the drills was to assess the level of preparedness of local responders to react to a simulated radiological emergency at Arkansas Nuclear One (ANO). The previous UAMS medical drill at this site was conducted on April 18, 2007. This was the first ambulance drill conducted at this site. The previous ambulance drill for Pope County EMS was conducted on October 21, 2008.

Personnel from the Pope County EMS, Pope County Office of Emergency Management, University of Arkansas Medical Sciences, and Arkansas Nuclear One participated in the drills. Evaluation Areas demonstrated included: Equipment and Supplies to Support Operations, Implementation of Emergency Worker Exposure Control, and Support Operations/Facilities Transportation and Treatment of Contaminated Injured Individuals. Cooperation and teamwork of all participants was evident during these drills, and DHS/FEMA wishes to acknowledge these efforts.

This report contains the final evaluation of the out-of-sequence drills. The participants demonstrated knowledge of their emergency response plans and procedures and adequately demonstrated them. There were no Deficiencies and no ARCAs identified during the drills.

## 2. Introduction

On December 7, 1979, the President directed the Federal Emergency Management Agency (FEMA) to assume the lead responsibility for all offsite nuclear planning and response. FEMA's activities under the REP Program are conducted pursuant to 44 Code of Federal Regulations (CFR) Parts 350, 351, and 352. These regulations are a key element in the REP Program that was established following the Three Mile Island Nuclear Station accident in March 1979. Rule 44 CFR 350 establishes the policies and procedures for the DHS/FEMA Region VI Office's initial and continued approval of tribal, state, and local governments radiological emergency planning and preparedness for commercial nuclear power plants. This approval is contingent, in part, on state and local government participation in joint exercises with licensees.

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

Taking the lead in offsite emergency planning and in the review and evaluation of radiological emergency response plans (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, September 14, 1993); and

Coordinating the activities of Federal agencies with responsibilities in the radiological emergency planning process:

- U.S. Department of Commerce
- U.S. Nuclear Regulatory Commission
- U.S. Environmental Protection Agency
- U.S. Department of Energy
- U.S. Department of Health and Human Services
- U.S. Department of Homeland Security/FEMA

- U.S. Department of Transportation
- U.S. Department of Agriculture
- U.S. Department of the Interior
- U.S. Food and Drug Administration
- U.S. Department of Agriculture
- U.S. Department of Defense
- U.S. Department of Housing and Urban Development
- U.S. Department of Veterans Affairs
- U.S. Federal Communications Commission
- U.S. Food and Drug Administration
- General Services Administration
- National Communications System

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

The DHS/FEMA Region VI Office evaluated drills on April 14, 2009, to assess the capabilities of local emergency preparedness organizations in implementing their RERPs and procedures to protect the public health and safety during a radiological emergency involving Arkansas Nuclear One (ANO). The purpose of this report is to present the results and findings on the performance of the offsite response organizations (OROs) during a simulated radiological emergency.

The findings presented in this report are based on the evaluations of the federal evaluation team, with final determinations made by the DHS/FEMA Region VI Office RAC Chair. The criteria utilized in the 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; and the Interim REP Program Manual, including the Radiological Emergency Preparedness Exercise Evaluation Methodology (August 2002).

Section 3 of this report, entitled "Drill Overview," presents basic information and data relevant to the drills. This section of the report contains a description of the Emergency Planning Zone (EPZ) and a listing of all participating jurisdictions and functional entities that were evaluated.

Section 4 of this report, entitled "Drill Evaluation and Results," presents detailed information on the demonstration of applicable evaluation areas at each jurisdiction or functional entity. If applicable, this section also contains: (1) descriptions of all Deficiencies and Areas Requiring Corrective Actions (ARCAs) assessed during the drill and recommended corrective actions and (2) descriptions of unresolved ARCAs assessed during previous exercises and the status of the OROs efforts to resolve them.

## 3. Drill Overview

This section contains data and basic information relevant to the April 14, 2009, ambulance and medical drill to test the offsite response capabilities in the area surrounding Arkansas Nuclear One. This section of the report includes a description of the Emergency Planning Zone (EPZ) and a listing of all participating jurisdictions which were evaluated.

### 3.1. EPZ Description

The 10-mile EPZ around Arkansas Nuclear One (ANO), a circle with a radius of 10 miles with ANO at the center, can be described best by referring to a number of prominent features or landmarks in the area.

The most distinctive feature of the EPZ is the Arkansas River and Lake Dardanelle. The river bisects the zone from the northeast near the City of Knoxville to the southeast near the city of Dardanelle. Lake Dardanelle, which surrounds the ANO peninsula and ANO, is the most central feature.

The northern edge of the zone lies approximately 1 mile north of Piney Creek in Pope County. The southern edge lies approximately 2 miles directly south of Mt. Nebo in Yell County. A point approximately one-quarter mile west of the junction of River Mountain Road and Highway 22 in Logan County marks the western edge of the EPZ. The eastern boundary of the zone lies approximately along a line marking the city limits of Russellville and Pottsville in Pope County.

Portions of Pope, Yell, Logan, and Johnson counties are included in the EPZ. The 10-mile EPZ contains approximately 46,607 residents with just over 63% of the population in the cities of Russellville and Dardanelle in the southeastern quadrant. The EPZ is subdivided into 15 protective action zones for emergency planning purposes as well as the implementation of protective actions. Interstate 40 and State Highway 64 cross the EPZ from east to west, and State Highway 7 crosses from north to south.

### 3.2. Drill Participants

Agencies and organizations of the following jurisdictions participated in the Arkansas Nuclear One drill:

Risk Jurisdictions

Pope County Emergency Medical Services

Pope County Office of Emergency Management

Support Jurisdictions

University of Arkansas for Medical Services Hospital

Private Jurisdictions

Entergy Operations Inc.

## 4. Drill Evaluation and Results

Contained in this section are the results and findings of the evaluation of all jurisdictions and functional entities, which participated in the April 14, 2009 ambulance and medical drills to test the offsite emergency response capabilities of local governments and support medical centers in the 10-mile EPZ surrounding Arkansas Nuclear One.

Each jurisdiction and functional entity was evaluated on the basis of its demonstration of criteria delineated in exercise evaluation area criteria contained in the Federal Register, Vol. 67, No. 80, "FEMA - Radiological Emergency Preparedness: Exercise Evaluation Methodology" (April 25, 2002) and the Interim REP Program Manual. Detailed information on the exercise evaluation area criteria and the extent-of-play agreement used in this exercise are found in Appendix 3 of this report.

### 4.1. Summary Results of Drill Evaluation

The matrix presented in Table 1, on the following page(s), presents the status of all exercise evaluation area criteria from the REP Program Manual that were scheduled for demonstration during this exercise by all participating jurisdictions and functional entities. Exercise evaluation area criteria are listed by number and the demonstration status of those evaluation area criteria is indicated by the use of the following letters:

M - Met (No Deficiency or ARCAs assessed, and no unresolved ARCAs from prior exercises, planning issues identified or ARCA corrected during the exercise)

D - Deficiency assessed

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

N - Not Demonstrated (Reason explained in Subsection 4.2)

Table 1 - Summary of Drill Evaluation

		Pope County EMS - St Mary's Station	UAMS
DATE: 2009-04-14 SITE: Arkansas Nuclear One, AR A: ARCA, D: Deficiency, M: Met			
<b>Emergency Operations Management</b>			
Mobilization	1a1		
Facilities	1b1		
Direction and Control	1c1		
Communications Equipment	1d1		
Equip & Supplies to support operations	1e1	M	M
<b>Protective Action Decision Making</b>			
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		
<b>Protective Action Implementation</b>			
Implementation of emergency worker exposure control	3a1	M	M
Implementation of KI decision	3b1		
Implementation of protective actions for special populations - EOCs	3c1		
Implementation of protective actions for Schools	3c2		
Implementation of traffic and access control	3d1		
Impediments to evacuation are identified and resolved	3d2		
Implementation of ingestion pathway decisions - availability/use of info	3e1		
Materials for Ingestion Pathway PADs are available	3e2		
Implementation of relocation, re-entry, and return decisions.	3f1		
<b>Field Measurement and Analysis</b>			
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		
<b>Emergency Notification and Public Info</b>			
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		
<b>Support Operations/Facilities</b>			
Mon / decon of evacuees and emergency workers, and registration of evacuees	6a1		
Mon / decon of emergency worker equipment	6b1		
Temporary care of evacuees	6c1		
Transportation and treatment of contaminated injured individuals	6d1	M	M

## 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 is a definition of the terms used in this subsection relative to the demonstration status.

**Met** - Listing of the demonstrated exercise evaluation area criteria under which no Deficiencies or ARCAs were assessed during this exercise, and under which no ARCAs assessed during prior exercises remain unresolved. This also includes planning issues identified and ARCAs corrected on the spot during the exercise.

**Deficiency** - Listing of the demonstrated exercise evaluation area 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 evaluation area criteria under which one or more ARCAs were 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 evaluation area criteria which were not demonstrated as scheduled during this exercise and the reason they were not demonstrated.

**Prior ARCAs - Resolved** - Descriptions of ARCAs assessed during previous exercises that were resolved in this exercise and the corrective actions demonstrated.

**Prior ARCAs - 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 the REP Program Manual as "...an observed or identified

inadequacy of organizational performance in an exercise that could cause a finding that off-site 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 the REP Program Manual. 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, ARCAs, and Plan Issues). This system is used to achieve consistency in numbering exercise issues among DHS/FEMA Regional Offices 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 for Deficiencies, ARCAs, and Plan Issues 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 Codes.

Exercise Year - The last two digits of the year the exercise was conducted.

Evaluation Area Criterion - A letter and number corresponding to the criteria in the FEMA REP Program Manual.

Issue Classification Identifier - (D = Deficiency, A = ARCA, P= Plan Issue). Only Deficiencies and ARCAs are included in main body of the exercise reports. Areas Recommended For Improvement and Plan Issues are listed in the the appropriate appendix.

Exercise Issue Identification Number - A separate two (or three) digit indexing number assigned to each issue identified in the exercise.

## 4.2.1. Risk Jurisdictions

## 4.2.1.1. Pope County EMS - St. Mary's Station

- a. MET: 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

## 4.2.2. Support Jurisdictions

### 4.2.2.1. University of Arkansas for Medical Sciences Hospital

- a. MET: 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

ADH	Arkansas Department of Health
ANO	Arkansas Nuclear One
ARCA	Areas Requiring Corrective Action
CFR	Code of Federal Regulations
DHS/FEMA	Department of Homeland Security/Federal Emergency Management Agency
EMS	Emergency Medical Service
EMT	Emergency Medical Technician
EPZ	Emergency Planning Zone
EW	Emergency Worker
HPT	Health Physics Technician
NRC	Nuclear Regulatory Commission
ORO	Off-site Response Organization
OSL	Optically Stimulated Luminescent
RAC	Regional Assistance Committee
REA	Radiological Emergency Area
REP	Radiological Emergency Preparedness
RERP	Radiological Emergency Response Plans
RPT	Radiation Protection Technician
RSO	Radiation Safety Officer
SRD	Self Reading Dosimeters
TLD	Thermoluminescent Dosimeter
UAMS	University of Arkansas for Medical Sciences Hospital

## APPENDIX 2

# DRILL EVALUATORS AND TEAM LEADERS

DATE: 2009-04-14, SITE: Arkansas Nuclear One, AR

LOCATION	EVALUATOR	AGENCY
Pope County EMS - St. Mary's Station	*Scott Flowerday Tim Pflieger	DHS/FEMA FEMA Region VI
University of Arkansas for Medical Sciences Hospital	Bill Bischof *Scott Flowerday Tim Pflieger	DHS/FEMA DHS/FEMA FEMA Region VI
* Team Leader		

# APPENDIX 3

**Arkansas Nuclear One 2009 MS-1 Drill  
April 14, 2009  
Extent-of-Play (EOP) Agreement  
Between  
The Arkansas Department of Health and FEMA Region VI**

## **EVALUATION AREA 1**

### **Emergency Operations Management**

#### **Sub-element 1.e – Equipment and Supplies to Support Operations**

#### **INTENT**

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

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

**Locations: University of Arkansas for Medical Sciences (UAMS); Pope County EMS (St Mary's Station), Russellville**

- EOP:**
- 1. It is Arkansas policy to issue KI only to Emergency Workers (EW) and institutionalized individuals. KI is not issued to the general public.**
  - 2. Meters or DRDs that have "bar code" labels can have their calibration and operational check dates verified with the master database maintained by the NP&RP HP. Each meter will have a range sticker attached.**
  - 3. The quantities of Dosimetry and the quantities and expiration of KI will be confirmed by evaluators at locations identified in plans.**
  - 4. Meters that do not have "bar code" labels will have appropriate calibration stickers attached.**

**ARCA: None**

---

**EVALUATION AREA 3**

**Protective Action Implementation**

**Sub-element 3.a – Implementation of Emergency Worker Exposure Control**

**INTENT**

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

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

**Locations: University of Arkansas for Medical Sciences (UAMS); Pope County EMS (St Mary’s Station), Russellville**

- EOP:**
- 1. EMS crews will use gloves and booties as necessary. Hospital teams will wear “anti-Cs” IAW hospital plans.**
  - 2. Dosimetry and KI will be issued IAW plans.**
  - 3. The RO or designee will demonstrate the EW briefing, record keeping, and procedures for issuing and returning dosimetry and KI. The use of KI will be simulated.**
  - 4. Correction-on-the-spot will be considered at these locations at the discretion of and concurrence between the evaluator and the controller. Caution should be exercised to ensure that exercise play is not interrupted.**

**ARCA: NONE**

---

**Sub-element 6.d - Transportation and Treatment of Contaminated Injured Individuals  
INTENT**

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

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

**Locations: Pope County EMS (St Mary's Station), Russellville**

- EOP:**
- 1. The Controller will contact Pope County 911 with the exercise message. Communication between the ambulance and the EMS dispatch will be demonstrated. EMS dispatch will discuss procedures for passing information to UAMS.**
  - 2. The EMS will pick up the patient at the plant. Prior to transfer of the patient, EMS and/or Entergy personnel will demonstrate monitoring the patient. After patient transfer to the training center, the EMS will demonstrate vehicle monitoring. The ambulance will not be draped.**
  - 3. This EA will be demonstrated at approximately 1500 on April 14, 2009**
  - 4. *Any real emergency will take precedence.***
  - 5. Correction-on-the-spot will be considered at these locations at the discretion of and concurrence between the evaluator and the controller. Caution should be exercised to ensure that exercise**

**ARCA: None**

**Location: U of A for Medical Science (UAMS), Little Rock**

- EOP:**
- 1. This EA will be demonstrated at approximately 0830 on April 14, 2009**
  - 2. *Any real emergency will take precedence.***
  - 3. The patient will be transported to UAMS via a non-emergency vehicle.**
  - 4. Radiation decontamination, monitoring and contamination control will be performed by both UAMS and Entergy personnel.**
  - 5. The ANO Controller will contact UAMS Emergency Room with the alerting message approximately one (1) hour prior to patient arrival**
  - 6. The ANO Controller will contact UAMS Emergency Room with an update message approximately fifteen (15) minutes prior to patient arrival**
  - 7. UAMS personnel will not take any action to prepare for the demonstration of these evaluation areas before the One (1) hour notification.**

8. **No shift change will be performed. A list of second shift Key Personnel will be given to the evaluator.**
9. **The 1<sup>st</sup> shift may be over staffed for training purposes. Some staff identified on the 2<sup>nd</sup> shift roster may play with the 1<sup>st</sup> team. In an actual emergency this over staffing would not be used.**

**ARCA:       None**

---

# APPENDIX 4

## POPE COUNTY EMS/UAMS FEMA EVALUATION Emergency Medical Scenario April 14, 2009

### SCENARIO:

A group of mechanics was replacing a Reactor Coolant Pump seal. In order to disassemble the seal it was attached by slings and shackles to the crane in the work area. As the lift began one of the shackles slipped, causing the load to shift. This shift, in turn, caused one sling to fail and the load dropped and swung out to the side striking one of the mechanics. As the seal plate swung by the mechanic, a metal flange attached to the seal plate ripped across and down the mechanic's right thigh. Then the seal swung back and struck the mechanic knocking him to the floor.

The load was quickly lowered to the floor, and the other mechanics rushed to the downed man's side to provide assistance. The mechanic's protective clothing was torn where the flange had struck his leg, and blood was oozing from the wound. One of the mechanics put his hand on the open wound, and the Control Room was notified that the Emergency Medical Team was needed.

The Emergency Medical Team initiated care of the patient by doing the following:

1. Establishing that the seal plate had been secured and the scene was safe.
2. Gained control of the patient's cervical spine.
3. Placed gauze dressings in place to control bleeding.
4. Assessed the patient's airway, breathing, and circulation.
5. Determined the patient's level of consciousness.
6. Immediately began to cut away the patient's anti-c's.
7. Cut away the patient's greens to expose the leg.
8. Replaced the gauze with abdominal dressings to control bleeding and protect the wound from further contamination.

The Emergency Medical Team established that:

1. The patient was conscious and complaining of pain to the right leg, and pain to the back of his head.
2. The patient was breathing without difficulty, and that he had Radial pulses and distal pulses in both feet.
3. The patient had received a jagged cut to the right thigh that started approximately three inches below the top of the thigh and extended laterally down across the leg.
4. Emergency Medical Team personnel also assumed that contamination would be present in the wound due to the equipment/material involved in the injury.

**Emergency Medical Team treatment:**

	Action:	Finding/result
1.	Checked scene safety	Scene safe.
2.	Determined level of consciousness	Patient is alert and oriented
3.	Checked airway, breathing, circulation	Airway open, patient breathing without difficulty. Carotid and radial pulse present.
4.	Assessed bleeding	Patient is bleeding from the right leg on the upper and lateral portion of the thigh.
5.	Assessed injuries/cut away pants. Removed shoe and sock.	Jagged laceration beginning just below the top of the thigh and extending laterally and downward toward the knee.
6.	Performed quick head-to-toe survey	<p>Head</p> <ul style="list-style-type: none"> <li>No obvious injuries, but the patient complains of some pain to the back of the head.</li> </ul> <p>Neck</p> <ul style="list-style-type: none"> <li>No obvious injuries</li> </ul> <p>Chest</p> <ul style="list-style-type: none"> <li>No obvious injuries</li> </ul> <p>Abdomen, lower back, pelvis</p> <ul style="list-style-type: none"> <li>No obvious injuries</li> </ul> <p>Lower extremities</p> <ul style="list-style-type: none"> <li>Right leg as previously noted/no other injuries noted</li> </ul> <p>Upper extremities</p> <ul style="list-style-type: none"> <li>No obvious injuries</li> </ul>
7.	Changed from initial 4 X 4 gauze pads to Abdominal dressings.	
8.	Administered oxygen via simple face mask at 10 lpm.	
9.	Packaged patient on Long Spine Board, with CID and c-collar.	
10.	Assessed vital signs	<ul style="list-style-type: none"> <li>Pulse-100 regular strong</li> <li>Respirations-28 unlabored</li> <li>Skin-Warm, flushed, moist</li> <li>B/P-132/84</li> </ul>
11.	HP surveyed patient for contamination	<ul style="list-style-type: none"> <li>20,000 ccpm on the right thigh, along the line of the wound</li> <li>No other contamination found</li> </ul>
12.	Transferred to stokes basket for transport to CA-1.	
13.	Arrived at CA-1. Medical staff assumes care of the patient.	

	Action:	Finding/result
14.	Injuries and vital signs are re-assessed	<ul style="list-style-type: none"> <li>• No new injuries noted</li> <li>• Pulse-90 regular strong</li> <li>• Respirations-24 unlabored</li> <li>• Skin-Warm, dry, normal color</li> <li>• B/P-126/80</li> </ul>
15.	Health Physics Technician surveys for contamination	<ul style="list-style-type: none"> <li>• 20,000 ccpm on the right thigh, along the line of the wound</li> <li>• No other contamination found</li> </ul>
16.	Discuss decontamination options	<ul style="list-style-type: none"> <li>• Due to injuries, determine that it will be better for the patient to delay decontamination until the patient reaches the hospital.</li> </ul>
17.	Continue oxygen therapy Established IV Normal Saline	
18.	Package patient for transport as contaminated	<ul style="list-style-type: none"> <li>• Move patient to clean LSB</li> <li>• Place LSB in disposable body bag</li> <li>• Close body bag around patient</li> <li>• Leave bag open at about chin level</li> </ul>
19.	Transfer patient to Pope County EMS Paramedic	<ul style="list-style-type: none"> <li>• Provide Paramedic with Patient Information Form</li> <li>• Give verbal description of injuries and care provided</li> <li>• Introduce Paramedic to HP who will accompany the patient to hospital</li> </ul>

<b>NOTE: ALL OF THE ACTIONS DESCRIBED IN THIS SECTION HAVE BEEN SIMULATED.</b>
--

**Pope County Emergency Medical Services: (on-scene/transport)**

	Expected Action:	Finding/result
1.	Receive patient information from Emergency Medical Team personnel	<ul style="list-style-type: none"> <li>• Patient Information Form</li> <li>• Verbal description of injuries and care provided</li> <li>• Introduce Paramedic to HP who will accompany the patient to hospital</li> </ul>
2.	Confirm packaging and treatment provided	<ul style="list-style-type: none"> <li>• Continue oxygen therapy with NRB</li> <li>• Patient packaged in body bag</li> <li>• Wound covered with Abdominal dressing.</li> </ul>
3.	Provide hospital with a radio report concerning the patient that is being transported	<ul style="list-style-type: none"> <li>• See previous information</li> </ul>
4.	Upon arrival at hospital, frisk the patient package, himself, and the ambulance for contamination	<ul style="list-style-type: none"> <li>• No contamination noted outside of patient containment bag</li> </ul>
5.	Provide turnover to hospital staff	<ul style="list-style-type: none"> <li>• See previous information</li> </ul>

**NOTE: Failure to perform all of these actions does not indicate failure on the part of the participant.**

## UAMS Response

	Expected Action:	Finding/result
1.	Receive notification via telephone that a patient is being brought from Arkansas Nuclear One.	<ul style="list-style-type: none"> <li>• Patient has a large laceration on the right thigh, and possible neck and spine injuries.</li> <li>• The patient is contaminated.</li> </ul>
2.	Receive radio report from Pope County EMS	<ul style="list-style-type: none"> <li>• See Paramedic information received from ANO personnel.</li> </ul>
3.	Receive patient from Pope County Emergency Medical Services	<ul style="list-style-type: none"> <li>• Patient Information Form</li> <li>• Verbal description of injuries and care provided</li> </ul>
4.	Re-assess patient's injuries	<ul style="list-style-type: none"> <li>• Controller will provide information consistent with the scenario</li> </ul>
5.	Determine the extent of contamination involved	<ul style="list-style-type: none"> <li>• 20,000 cpm on right thigh following the laceration down the leg</li> <li>• no other contamination found.</li> </ul>
6.	Decontaminate patient	<ul style="list-style-type: none"> <li>• For each decontamination attempt the amount of contamination will decrease as follows: <ul style="list-style-type: none"> <li>• 1<sup>st</sup> attempt—10,000 cpm</li> <li>• 2<sup>nd</sup> attempt—5,000 cpm</li> <li>• 3<sup>rd</sup> attempt—1,000 cpm</li> <li>• Further decontamination does not change the survey results after the third decontamination attempt.</li> </ul> </li> </ul>

### DRILL MESSAGES:

Message 1 (Marlin Fletcher) to Pope County Communications (911)

This is the Shift Manager at Arkansas Nuclear One. We have an injured worker at the site, and need an ambulance to respond. He was struck by a piece of equipment, and may have a leg injury. He is contaminated. I do not know the level of contamination at this time.

Message 2 (Marlin Fletcher) to Pope County EMS responding personnel

Provide patient information as needed based on scenario.

Message 3 (Marlin Fletcher) to UAMS Emergency Department

This is the Shift Manager at Arkansas Nuclear One. An injured worker is being transported to your hospital by Pope County EMS. The worker was struck by a piece of equipment that broke loose while being moved. He has a large laceration on his right

leg. The local hospital cannot receive patients at this time due to a bus accident on Highway 7 that involves a large number of patients. Pope County EMS just left the site, and estimate a one hour transport time. This patient is contaminated. The report that the Radiation Protection Technicians have given us is that the patient has approximately 20,000 cpm on his right leg and thigh.

Message 4 (Marlin Fletcher) to UAMS

Provide patient report (see Emergency Medical Treatment and patient information).