U.S. Department of Homeland Security
Region V
536 South Clark Street, Floor 6
Chicago, IL 60605

FEMA

JUL 11 2011

Mr. Mark Sartorius
Regional Administrator
U.S. Nuclear Regulatory Commission, Region III, Suite 210
2443 Warrenville Road
Lisle, Illinois 60532-4352

Dear Mr. Sartorius:

Enclosed is one copy of the Quad Cities Station Medical Services (MS-1) Drill After Action Report/Improvement Plan (AAR/IP). The drill was conducted at the Morrison Community Hospital in Morrison, Illinois, on June 14, 2011. Participants included members from the Illinois Emergency Management Agency, Morrison Ambulance and Morrison Community Hospital.

No Deficiencies or Areas Requiring Corrective Action were identified during this drill. Please see the enclosed AAR/IP for further details. If you have any questions, please contact William King at (312) 408-5575 or Todd Gemskie at (312) 408-4443.

Sincerely,

Andrew Velasquez III
Regional Administrator

Enclosure

cc: NRC Headquarters Document Control Desk
Ms. Lisa Gibney, REP HQ Branch Chief and HQ Project Officer

Quad Cities Station

After Action Report/ Improvement Plan

Drill Date - June 14, 2011

Radiological Emergency Preparedness (REP) Program

FEMA

Published July 11, 2011

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Quad Cities Station

After Action Report/Improvement Plan

Published July 11, 2011

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EXECUTIVE SUMMARY

On June 14, 2011, the U.S. Department of Homeland Security's (DHS) Federal Emergency Management Agency (FEMA), Region V, evaluated a Medical Services (MS-1) Drill at the Morrison Community Hospital associated with the Quad Cities Station. The purpose of the MS-1Drill was to assess the ability of offsite agencies to respond to a medical emergency involving a potentially radiologically contaminated member of the public.

DHS/FEMA wishes to acknowledge the efforts of the personnel from the Illinois Emergency Management Agency, Morrison Ambulance, and Morrison Community Hospital.

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. The State and local organizations demonstrated knowledge of and adequately implemented organizational emergency response plans and procedures.

There were no Deficiencies identified as a result of this drill. There were no Areas Requiring Corrective Action (ARCAs) identified during this drill. There were no previous Deficiencies or ARCAs to be corrected during this drill.

INTRODUCTION – EXERCISE BASIS

On December 7, 1979, the President directed FEMA to assume the lead responsibility for all offsite nuclear planning and response. DHS/FEMA's activities are conducted pursuant to Title 44 of the Code of Federal Regulations (CFR) Parts 350 “Review and Approval of State and Local Radiological Emergency Plans and Preparedness”, 351 “Radiological Emergency Planning and Preparedness” and 352 “Commercial Nuclear Power Plants: Emergency Preparedness Planning” (Commonly referred to as 44CFR350 through 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 Regulation 44 CFR 350 establishes the policies and procedures for DHS/FEMA's initial and continued approval of State and local governments’ radiological emergency planning and

preparedness for commercial nuclear power plants. This approval is contingent, in part, on State and local governments' participation in joint exercises with nuclear power plant licensees in their vicinity.

DHS/FEMA'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 Agriculture;
- U.S. Department of Commerce;
- 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 Region V Regional Assistance Committee (RAC), which is chaired by DHS/FEMA.

Formal submission of the RERPs for the Quad Cities Station to FEMA Region V by the State of Illinois and involved local jurisdictions, occurred on March 31, 1981. Formal approval of these RERPs was granted by FEMA on June 4, 1982, in accordance with 44 CFR 350.

The purpose of this After Action Report (AAR)/Improvement Plan (IP) is to present the exercise

results and findings based on the performance of the Offsite Response Organizations (OROs) during a medical emergency involving a potentially radiologically contaminated member of the public.

The findings presented in this AAR/IP are based on the evaluations of the Federal evaluation team, with final determinations made by the DHS/FEMA Region V RAC Chairperson, and approved by the DHS/FEMA Headquarters.

The criteria utilized in the 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, which amends the FEMA REP-14, Radiological Emergency Preparedness Exercise Manual.

Section 1 of this report, entitled “Exercise Overview”, presents information pertaining to the team that planned and coordinated the exercise. This section also provides listing of all participating jurisdictions and functional entities that were evaluated.

Section 2 of this report, entitled "Exercise Design Summary", contains the purpose and design of the exercise and presents basic information and data relevant to the exercise scenario.

Section 3 of this report, entitled "Analysis of Capabilities", presents detailed information on the demonstration of applicable exercise criteria at each jurisdiction or functional entity evaluated in a jurisdiction-based, issues-only format.

Section 4 of this report, entitled “Conclusion” presents the DHS/FEMA summary of overall exercise conduct and results as evaluated against the requirements of 44 CFR 350.

SECTION 1: EXERCISE OVERVIEW

1.1 Exercise Details

Exercise Name
Quad Cities Station

Type of Exercise
Drill

Exercise Date
June 14, 2011

Program
Department of Homeland Security/FEMA Radiological Emergency Preparedness Program

Scenario Type
Radiological Emergency

1.2 Exercise Planning Team Leadership

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1.3 Participating Organizations

Agencies and organizations of the following jurisdictions participated in the Quad Cities Station drill:

State Jurisdictions

Illinois Emergency Management Agency

Morrison Ambulance Service

Morrison Community Hospital

SECTION 2: EXERCISE DESIGN SUMMARY

2.1 Exercise Purpose and Design

On June 14, 2011, the DHS/FEMA, Region V, evaluated a Medical Services (MS-1) Drill at the Morrison Community Hospital associated with the Quad Cities Station. The purpose of the MS-1Drill was to assess the ability of offsite agencies to respond to a medical emergency involving a potentially radiologically contaminated member of the public. The MS-1 Drill was held in accordance with DHS/FEMA policies and guidance concerning the exercise of State and local RERPs and procedures.

2.2 Exercise Objectives, Capabilities and Activities

Exercise objectives and identified Capabilities/REP Criteria selected to be demonstrated are discussed in Appendix B "Exercise Plan." The Exercise Planning Team (EPT) selected objectives that focus on evaluating emergency response procedures, identifying areas for improvement, and fostering collaboration between the various OROs and stakeholders. This exercise focused on the following objectives:

• ORO demonstration of effective Emergency Operations Management
• ORO demonstration of effective Protective Action Implementation
• ORO demonstration of effective Support Operations and Facilities

2.3 Scenario Summary

Appendix C "Scenario Details," contains a summary of the Exercise Scenario, a simulated sequence of events that was used as the basis for invoking emergency response actions by Offsite Response Organizations (OROs) in the Morrison Community Hospital MS-1 Drill.

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

SECTION 3: ANALYSIS OF CAPABILITIES

3.1 Drill Evaluation and Results

This section provides the results and findings of the evaluation of all jurisdictions and functional entities that participated in the June 14, 2011, MS-1 Drill conducted to assess the ability of offsite agencies to respond to a medical emergency involving a potentially radiologically contaminated member of the public.

Each jurisdiction and functional entity was evaluated based on its demonstration of the exercise criteria chosen by the EPT. Detailed information on the exercise criteria and the extent-of-play agreement used in this exercise are found in Appendix B "Exercise Plan" of this report.

3.2 Summary Results of Drill Evaluation

The matrix presented in Table 3.1, on the following pages, 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.

This subsection provides information on the evaluation of each participating jurisdiction and functional entity in a jurisdiction-based, issues-only format.

The criteria demonstration status of "M – Met" is defined as the status of a REP exercise Evaluation Area Criterion indicating that the participating Offsite Response Organization (ORO) demonstrated all demonstration criteria for the Evaluation Area Criterion to the level required in the extent-of-play agreement with no Deficiencies or ARCAs assessed in the current exercise and no unresolved prior ARCAs. The criterion status box is blank if it was not scheduled for demonstration.

Table 3.1 - Summary of Drill Evaluation

DATE: 2011-06-14 SITE: Quad Cities Station, IL M: Met, A: ARCA, D: Deficiency, P: Plan Issue, N: Not Demonstrated		IL-Morrison CH--MS1F-	IL-Morrison CH--MS1T-
Emergency Operations Management			
Mobilization	1a1		
Facilities	1b1		
Direction and Control	1c1		
Communications Equipment	1d1	M	M
Equip & Supplies to support operations	1e1	M	M
Protective Action Decision Making			
Emergency Worker Exposure Control	2a1		
Radiological Assessment and PARs	2b1		
Decisions for the Plume Phase - PADs	2b2		
PADs for protection of special populations	2c1		
Rad Assessment and Decision making for Ingestion Pathway	2d1		
Rad Assess/Decision making concerning Relocation, Reentry, and Return	2e1		
Protective Action Implementation			
Implementation of emergency worker exposure control	3a1	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 EWs and registration of evacuees	6a1		
Mon/Decon of EW worker equipment	6b1		
Temporary care of evacuees	6c1		
Transportation and treatment of contaminated injured individuals	6d1	M	M

3.3 Criteria Evaluation Summaries

3.3.1 Illinois Jurisdictions

3.3.1.1 State of Illinois - Morrison Community Hospital - Medical Service - Facility

Criterion 1.d.1:
Successfully demonstrated - this criterion narrative is contained in the Criterion 6.d.1 section.

Criterion 1.e.1:
Successfully demonstrated - this criterion narrative is contained in the Criterion 6.d.1 section.

Criterion 3.a.1:
Successfully demonstrated - this criterion narrative is contained in the Criterion 6.d.1 section.

Criterion 6.d.1:
During a Medical Services (MS-1) Drill at the Morrison Community Hospital (MCH) associated with the Quad Cities Station (QCS) conducted on June 14, 2011, Illinois Emergency Management Agency (IEMA) and MCH staff demonstrated the capability to provide appropriate space, adequate resources, and trained personnel for monitoring, decontaminating, and providing medical services to contaminated injured individuals. The demonstration was conducted at the MCH, located at 303 North Jackson Street, Morrison, Illinois, Radiological Emergency Area (REA). Illinois Emergency Management Agency staff demonstrated appropriate use of dosimetry and potassium iodide (KI), and was available to advise hospital staff, as necessary. Morrison Community Hospital staff demonstrated communications, supplies and equipment to support medical decision-making, personal protective equipment (PPE) and treatment of the patient, limiting exposure to hospital staff, decontaminating the patient, and restricting access to the area where the patient was treated and monitored. Hospital staff also demonstrated knowledge of who to call beyond IEMA for assistance, if needed, in handling radiologically contaminated patients.

The hospital has several communication systems available. The primary system consisted of a GAI-Tronics Corporation Navigator Series Master Control Unit Console (Model ICP9000) that is monitored at all times by an Emergency Room (ER) Duty Nurse. The ICP9000 is a multi-channel console designed to operate with conventional radio systems and a PC. It allows control

of up to12 individual base stations. The hospital is also equipped with a backup radio system consisting of a Motorola StarCom ASTRO XTL 2500 digital mobile radio operating on the Statewide 800 MHz band. The StarCom system has numerous talk group and data transmission capabilities that could be used in the event that cellular and landline communications were disrupted. This radio system provides data and encryption capabilities, and compliance with Project 25 (P25) standards for interoperability with local, county and state law enforcement, fire, EMS and other government agencies. The P25 standards for digital radio communications allow public safety agencies in North America to communicate with each other in emergencies. A VHF radio transceiver is also available for communications using both base and handheld units. These radio systems support communications via the Illinois Radio Emergency Aid Channel (I-REACH), Illinois State Police Emergency Radio Network (ISPERN) and Medical Emergency Radio Communications for Illinois (MERCI) networks, as well as with Mercy Medical Center across the Rock River in Clinton, Iowa. Landline commercial telephone and cellular phone services were also available for both internal and external communications. A communications test was performed using the primary system and no communications problems were observed during the demonstration.

The hospital has a backup diesel power generator capable of supporting all hospital needs in the event of a commercial power failure. Sufficient fuel and fuel providers are available should an outage be lengthy. In addition, the hospital has a small 15 kilowatt gas-operated generator that can be used to support all radio communications on an extended basis, if necessary. The ER Treatment Room was equipped with a desktop computer, monitor and printer with internet and e-mail capabilities, including medical reporting via the Illinois Department of Public Health internet site, and a telephone dedicated to making outside calls in the event of a loss of emergency backup power.

The MCH had adequate equipment and supplies to support demonstration activities. Supplies for handling a radiologically contaminated patient were stored in plastic containers in a storage building located in the ER parking lot. The supplies consisted of multi-layered Step-off Mats (with multiple tear-off plastic sheets), PPE for the REA staff, large plastic sheets for covering ground and floor areas in the ER entrance bay and vestibule, sheets for covering wall cabinets and unneeded equipment in the treatment room bays, orifice sample kits, plastic sample bags, swabs and saline solution for patient decontamination, marker pens, and other essentials, such as appropriately marked waste containers for radiologically contaminated and biohazard wastes. The PPE consisted of standard surgical caps, facemasks and shields, gowns, gloves, and shoe

covers.

The REA consisted of a cordoned-off section of a three-bay Patient Treatment Room, a cordoned-off section of the Ambulance Bay immediately outside the ER entrance to the hospital, and a Buffer Zone located in the vestibule between the ER outer and inner doorways. The Patient Treatment Room was located immediately inside the ER. Patients who are known to be or suspected of being contaminated with radiological materials would be segregated from the general hospital population in one or more of the three treatment room bays until decontaminated. Curtains would be drawn between each of the three treatment bays to isolate patients individually.

The IEMA support staff included two Medical Radiation Technicians (MRTs). Each IEMA MRT has an equipment duffle bag and a hard shell case kit. The duffle bags contained a personal dosimetry kit, consisting of a CDV-730 Direct-Reading Dosimeter (DRD) manufactured by Dosimeter Corporation of America, with a range of 0-20 R; a Landauer Luminescent Dosimeter (LD), with a change-out date of June 12, 2012; a Dosimeter/KI Record Card; written instructions for proper use of dosimetry and KI; and a blister pack of 14 AMBEX, Inc iOSAT 130 mg KI tablets. The DRD was last leak-tested on 20 July 2010 and is due again on 20 July 2011. The IEMA MRTs were also equipped with a Model 6 CDV-750 trigger-style electrostatic dosimeter charger manufactured by S.E. International. The personal dosimetry kits also contained sufficient amounts of gloves, Tyvek gowns, caps, masks, booties, swipe sample swabs, decontamination wipes, scrubs, garbage bags, scissors, forceps, smears, glassine envelopes, labels, forms, paper, clipboard, pens, masking tape, caution tape, lint rollers, Saran-wrap, and related gear.

The hard shell case (Kit 1) contained the following items: a Ludlum Model 2241-3 Digital Radiation Scaler/Ratemeter for use with count-rate scintillation, Geiger-Mueller (GM) and proportional-type detectors; a Bicron Micro-Rem Radiation Monitor for measuring low gamma radiation dose rate levels; a Ludlum 44-9 alpha, beta and gamma GM pancake detector; a Ludlum 44-10 gamma radiation scintillation detector. A 10-µCi Cesium-137 source dated JAN 2009 was used to perform operational checks on all survey instruments. The Bicron instrument was last calibrated on 8-24-2010 and is due again on 8-24-2011. The Ludlum instrument was last calibrated on 12-01-2010 and is due again on 12-01-2011. A copy of the “Hospital Supplemental Kit Inventory Checklist” (revised 2/13/09) was provided to the Evaluator. The inventory was last checked on May 18, 2011.

At 1030 hours, the ER Nurse received notification from Morrison Ambulance Service via the ICP9000 system that a radiologically contaminated and injured patient was in transit. The ambulance crew provided information concerning the patient's condition, including vital signs, injuries, possible contamination status, and Estimated Time of Arrival (ETA) (two-to-three minutes). The ETA was compressed to expedite the drill. The patient was alert and oriented, pupils were equal and reactive; blood pressure (BP) was 116/62, pulse was 78 beats per minute, respirations were 30 per minute, and the patient had a laceration on the right forearm that was bleeding and swelling. Vital signs were stable.

The Duty Nurse immediately notified the Front Office, directing that hospital staff be notified via the hospital's public address system that the "Radiation Plan is now in effect." The announcement was made at 1031 hours, and setup of the REA commenced at 1032 hours. This action notified applicable hospital staff to report to the ER. The Charge Nurse directed staff as they mobilized to the ER to stage supplies and equipment, prepare the REA and don PPE in preparation for receipt of a radiologically contaminated patient. The staff assisted each other in appropriately donning their PPE.

The REA staff consisted of the Emergency Department Charge Nurse (who coordinated REA activities), a Buffer Zone/Step-Off Pad Nurse, REA Checklist Nurse who served as the REA Recorder, two nurses who received the patient at the ambulance/hospital transfer point in ER vestibule, assisted in patient handling and decontamination, transferred samples to the Buffer Zone nurse, and relayed patient evaluation information to the Recorder. Also present to support patient care was the IEMA MRT /Radiological Safety Officer (RSO), who monitored the REA staff, patient, and items used in and leaving the REA. The RSO surveyed the REA following treatment, decontamination and transfer of the patient to the general hospital population in order to clear the REA for return to normal operations. A physician was on-call but not mobilized to the ER, as the patient's injuries were minor.

The IEMA MRT arrived at the hospital with a duffle bag and hard shell case (Kit 1) containing radiological equipment and supplies. The IEMA MRT zeroed the DRD using the dosimeter charger and performed operability checks on survey instruments at the beginning of the MS-1 Drill. Instrument contacts were inspected, new batteries were installed, and each instrument was range-tested using the 10-µCi Cs-137 check source card contained in the case. The ER Bicron instrument read 1200 cpm on the 10X scale, which was within the 1000-1500 cpm calibrated

range listed on the side of the instrument. The transport Bicron instrument read 1300 cpm on the 10X scale, which was within the 1100-1700 cpm calibrated range listed on the side of the instrument. The ER Ludlum instrument read 336 cpm using the DET 1 scale, which was within the 312-468 cpm calibrated range listed on the side of the instrument. The transport Ludlum instrument read 358-365 cpm using the DET 1 scale, which was within the 339-509 cpm calibrated range listed on the side of the instrument.

The IEMA MRTs were aware of their guidelines for total accumulated dose (5 rem per year). Both Monitors wore their LD inside their outer Tyvek gown and their DRD outside the gown. The use of survey instruments supplanted the need for monitoring their DRDs during the MS-1 Drill, as the Monitors took real-time exposure readings and had the capability to measure real-time dose rates. In the event that the ER MRT's instrument failed, the transport MRT's instruments could serve as immediately available backup instruments. Other instruments could be obtained from the Radiology Department or via the Regional Coordinating Center at Rockford Memorial Hospital in Rockford, Illinois.

The hospital's Nuclear/Radiation Decontamination Plan (Page 12of 20) called for "MCH HICS 252 – Section Personnel Time Sheet" form to be used for tracking all hospital staff who had contact with a radiologically contaminated patient, but this form was not completed. However, the IEMA Controller provided an "Illinois Plan for Radiological Accidents (IPRA) – Quad Cities Medical Services Drill" attendance form for the MCH MS-1 Drill, which was used by the participants to identify themselves by name, organization and title. The Plan (Page 8 of 20) also requires staff to use "MCH HICS 254 – Disaster Victim/Patient Tracking Form" for initial documentation of victims, standard nursing documentation, and patient registration, but this form was not used during the MS-1 Drill. No written record of patient vital signs was established or maintained during the drill, but the information was verbally communicated to REA staff by the ambulance crew, and the patient's vital signs were monitored by the REA staff during the facility portion of the MS-1 Drill.

The REA setup consisted of establishing security and barriers in the Ambulance Bay, establishing a transfer zone in the ER vestibule, removing or covering unnecessary equipment normally staged in treatment bay 1, covering wall cabinets with sheets, closing the curtain separating Bay 1 from Bay 2, removing carpet runners from the ER, laying down plastic sheets to cover the fixed all-weather carpet at the ER ambulance bay and the ER vestibule, staging radiological and bio-hazard waste receptacles in treatment bay 1, laying down the multi-layered

Buffer Zone Step-off Pad, posting a Radiation Emergency Response (RER) Incident Checklist on the wall outside Bay 1, staging treatment consumables (such as moistened wipes for patient decontamination, a container of latex gloves, saline solution, orifice swabs and sample bags), and donning PPE. The multi-layered Buffer Zone Step-off pad was taped to the floor on the ER side of the entrance/exit to treatment bay 1.

The REA staff had ready access to the hospital's Nuclear/Radiation Decontamination Plan, as well as the hospital's other Standard Operating Procedures, administrative supplies and recording forms, which were located in the ER outside the treatment bays.

The treatment bays have an impervious floor covering that can be easily decontaminated. Sheets, towels and swabs would be used to soak-up excess fluids and prevent the spread of contamination to areas outside the ER and Bay 1. All waste generated by the hospital would be temporarily stored in an isolated section of the hospital until removed and disposed of by the Licensee. The decontamination threshold for determining whether further decontamination would be required was established as twice background. During Setup of the REA, the IEMA MRT determined that background in the ER was 40 counts per minute (cpm), and the decontamination threshold was set at 80 cpm.

A laminated Radiation Emergency Response (RER) Incident Checklist was posted on the ER hallway wall immediately outside treatment bay 1 in the Buffer Zone adjacent to the Step-off Pad. The checklist grouped events into blocks of activity, with actions listed as they would normally occur in chronological sequence. Blocks included Notification, REA Preparation, Patient Arrival, Patient Care & Assessment, Sample Collection, Patient Decontamination, Patient Exit, and REA Return to Service. In addition, the checklist contained conspicuous blocks with telephone numbers for IEMA and the 24-hour Emergency Service for the U.S. Department of Energy's Radiation Emergency Assistance Center/Training Site (REAC/TS) located at the Oak Ridge National Laboratory in Tennessee. The later number provided access to technical assistance regarding patient decontamination. The REA Checklist Nurse was responsible for ensuring that the REA staff addressed all checklist items and marked each checklist item using an erasable marker pen as the staff performed the items.

Once the REA was set-up, the Morrison EMS Ambulance arrived at the ER entrance outside the entrance to the REA. The patient was moved by the ambulance crew to the ER vestibule using the ambulance gurney. The ambulance crew briefed the two hospital staff who were assigned to

transfer the patient, and the ambulance and hospital personnel coordinated patient transfer from the ambulance gurney to the hospital's Stryker gurney. The ambulance gurney was positioned in the vestibule in such a way that following transfer, the hospital's gurney had to cross over a portion of the area where the ambulance gurney had been positioned. A different arrangement of the two gurneys could have avoided the crossover. However, subsequent surveys showed that neither gurney was contaminated; consequently, the crossover, while avoidable, was not a concern.

The patient was fully cocooned in a sheet on arrival. The REA staff with a clean sheet had covered the hospital's gurney prior to patient arrival and transfer. At 1044 hours, the ambulance crew briefed the REA staff regarding the patient's medical condition. The EMS crew noted to the attending nurses that the patient alarmed a portal monitor at a reception center for the QCS and presented a laceration and embedded glass in an open wound on her right forearm. The wound resulted from a fall while removing a spare tire from the trunk of her car to replace a tire that had gone flat while in transit to the reception center. The patient had lost her footing and fell in an area of broken glass.

The IEMA Ambulance Monitor noted that initial survey at the reception center using hand-held equipment showed that the patient's forehead at the hairline read 400 cpm, right palm read 1800 cpm, the left palm read 1600 cpm, both knees read 800 cpm, and the patient's shoes read 1200 cpm. Latex gloves had been placed on both hands and a hair covering had been placed on the patient's head to control the spread of contamination. The ambulance crew noted that the patient's outer clothing and shoes had been removed (simulated) and bagged to help reduce contamination levels prior to transfer to the hospital.

The EMS crew worked with the REA staff to transfer the patient from the ambulance gurney to the hospital gurney, at which point the ambulance crew relinquished care, custody and control to the REA staff. The patient was transferred into treatment bay 1 at 1047 hours.

The attending nurses noted that the patient was conscious, alert and oriented, able communicate verbally with the REA staff, and reported pain in her right forearm. The nurses gently unwrapped the sheet used by the EMS crew to cocoon the patient. The sheet was rolled inward as it was gently pulled back in order to trap and control the spread of contamination. The rolls were arranged on the gurney alongside the patient. While uncovering the patient, the lead nurse spoke with the patient regarding how she felt. Once the patient was uncovered and ready for

medical examination, the nurses changed their gloves.

The nurses asked the patient to raise her right forearm so that they could visually inspect the wound area. They determined that the laceration was still showing signs of minor bleeding and wrapped it with additional gauze pending the completion of decontamination efforts. The nurses collected the patient's vital signs, which were as follows: blood pressure, 116/62; pulse, 78 per minute; respirations 26 per minute; skin color normal; pupils equal and reactive. The patient was queried about allergies to medications and reported that she had no known allergies. She was also queried about her name, age, and medications used.

The injury suffered by the patient was determined by the REA staff to be non-critical, and consequently the ER physician was not called to the REA. The staff determined that decontamination took precedence over the observed injury to the patient's right forearm. The REA staff recognized that had the patient's injuries been more serious, treatment would have taken precedence.

The IEMA MRT carefully surveyed the unwrapped patient to identify any remaining areas of contamination. He systematically performed the survey on the patient's anterior side, starting with the head and neck and working from there to the shoulders, upper chest, left and right arms and hands, and then from there to the lower chest, abdomen, groin/hips, left leg, right leg, and finally to the left and right foot. The monitoring technique was deliberate and controlled, with the GM detector held approximately 0.5-1.0 inches from the surface being monitored and moving at a rate of about one inch per second. The same technique was applied to subsequent surveys following attempts to decontaminate specific body areas.

Results provided during the initial treatment bay survey showed that the patient's forehead at the hairline was still reading 400 cpm, the gloved right palm was still reading 1800 cpm, the gloved left palm was still reading 1600 cpm, both knees were reading background (pants removed), and both feet (shoes removed) were reading background. All other areas of the patient yielded background readings.

The Buffer Zone Nurse/Recorder was not equipped with body diagram forms to help track the decontamination process and location(s) and type(s) of injuries. Injury location and contamination location and level information was recorded on a blank sheet of paper. The IEMA MRT was equipped with body diagram forms that were used to record contamination levels

during decontamination activities. While such forms are currently not part of the hospital's radiation emergency plan and are not required, their use is a good practice that could help expedite the decontamination and treatment process, minimize recording errors, and provide a permanent record to include in each patient's chart. The wall-mounted checklist is designed to be reusable and, therefore, does not provide a permanent record of actions taken or decontamination results.

The IEMA MRT advised the nurses to start decontamination with the head and then move to the hands. In accordance with the Monitor's guidance, one of the nurses used a pre-moistened swab to simulate decontamination of the patient's forehead. This was done by making swiping motions an inch or two from the contaminated skin area. The nurse then changed her gloves. The MRT resurveyed the patient's forehead, and the reading was "background." The nurses determined that the decontamination effort was successful and proceeded to the left hand.

The MRT advised that removing the latex glove from the hand would probably take with it a portion of the contamination due to normal sweating of the hand. The lead nurse carefully rolled the glove up towards the fingers, pulled it free from the patient's hand and placed the glove in the radiological contaminated waste container. The Monitor surveyed the hand and obtained a reading of 1000 cpm, thus confirming that the removal of the glove took with it a portion of the original contamination.

The nurse once again changed gloves while waiting for the monitoring results and obtained a clean swab with which to decontaminate the left palm. The decontamination technique used on the palm was the same as applied to the forehead. Following the first decontamination attempt, the MRT resurveyed the palm, and the reading was 600 cpm. The nurses once again changed gloves and determined that the hand was still contaminated above the decontamination threshold. They proceeded to perform a second decontamination using similar technique. The MRT resurveyed the palm for a third time and the results for the palm were now 60 cpm. The nurses concluded that the palm was below the decontamination threshold and that further decontamination was not needed. The nurses disposed of the swabs in the RadWaste Container and changed gloves again.

The nurses then turned their attention to the patient's right hand. The initial survey had determined that the right palm had a reading of 1800 cpm. They removed the latex glove covering the hand in the same manner as was done with the left hand and then changed their own

gloves. The MRT re-surveyed the palm and obtained a reading of 1800 cpm, the same as before the glove was removed. The nurses then attempted decontamination of the palm using the same technique as before. Re-monitoring of the palm for a second time yielded a result of 300 cpm. While changing their gloves, the nurses determined that further decontamination was needed, as this reading was well above the 80 cpm decontamination threshold. The nurses again attempted to decontaminate the right palm. The monitoring result was 75 cpm. As this result was below the decontamination threshold, the nurses concluded that further decontamination was not necessary. The nurses disposed of the swabs in the RadWaste Container and changed gloves again.

The nurses then turned their attention to the wound on the patient's right forearm. They removed the over-bandage and original bandage. The wound contained glass fragments. A special swab with an adhesive-like substance was used to extract the glass shards and regular pre-moistened swabs were used to cleanse the area of contamination. The gauze and used swabs were placed in the RadWaste Container, following which the nurses changed gloves. The wound area was resurveyed by the MRT and found to have a reading of 800 cpm. The nurses determined that further decontamination was necessary and used the same technique to attempt decontamination for a second time, following which they disposed of the used swabs in the RadWaste Container and changed their gloves. Monitoring results showed that the wound area was now reading 300 cpm. The nurses concluded that additional decontamination would be needed and made a third decontamination attempt. As before, they disposed of the used swabs in the RadWaste Container and changed their gloves. Monitoring results now indicated a reading of 75 cpm. The nurses concluded that further decontamination was not necessary, as the reading was below the decontamination threshold of 80 cpm.

One simulated nasal swab was collected by faux swabbing of the nostrils. One of the nurses prepared the sample tube by marking the name of the patient, type of the sample, date and time of collection, and the name of the collector. She also affixed special tape marked "radioactive" to the sample tube to alert subsequent handlers of the sample to its nature. She then handed the clean swab to the lead nurse who used it to faux swab the patient's nostrils. She then carefully inserted the sample into the clean sample tube without touching the outside of the container with her hands or swab. The nurse who prepared the sample container sealed the sample tube and placed it in a clear zip-lock bag. The zip-lock bag was not marked, as the sample identification information recorded on the tube was clearly visible from outside the bag. The bagged sample was then surveyed by the MRT and determined to be at "background" level. The nurse then

carefully transferred the bagged sample across the demarcation line to the Buffer Zone/Recorder Nurse. At no time did the Buffer Zone nurse make direct contact with the nasal swab tube or the attending nurses, thus avoiding cross-contamination. The Buffer Zone Nurse would then have sent the sample to the Radiology to confirm the MRT's monitoring results. The nurses who collected and handled the sample changed their outer gloves immediately after transfer to the Buffer Zone Nurse.

At the direction of the MRT, the nurses rolled the patient onto her right side in order to survey the patient's posterior. As before, the MRT worked systematically from the patient's head to feet, carefully surveying the back of the head and neck, shoulders, back, buttocks, legs and feet. Only one area on the left buttocks was found to be contaminated, showing a reading of 500 cpm (initial survey at the reception center prior to the simulated removal of the patient's clothing had shown a count of 1000 cpm). The nurses attempted decontamination of the contaminated area via faux swiping using pre-moistened swabs and then changed gloves. The used swabs and gloves were placed in the RadWaste Container. The area was monitored and found to have a reading of 200 cpm. The nurses determined that further decontamination was necessary and made a second effort to decontaminate the area. Once again, swabs and gloves were placed in the RadWaste Container. The areas was monitored and found to have a "background" level reading. The nurses determined that all known areas of contamination had been cleared and further decontamination was not necessary.

The Evaluator queried the REA staff regarding what they would do if they were unable to reduce contamination readings below the decontamination threshold. They replied that if they were unsuccessful after three decontamination attempts, they would call IEMA for guidance (if an IEMA MRT was not already on scene) and/or contact REAC/TS at the telephone numbers shown on the Incident Checklist.

Upon completion of the medical and radiological evaluation, the patient was determined to be cleared to exit the REA and would be transferred to the ER for further evaluation. The patient was able to walk up to the Step-off Pad and was monitored prior to being permitted to advance on to the pad and exit the REA. The patient exited the REA at approximately 1110 hours.

Both attending nurses demonstrated the doffing of PPE. They followed the prescribed doffing procedure and were released from the REA. The procedure involved the following removal sequence: outer gloves; cap; mask/face-shield; and gown (carefully to minimize "fluffing" of

particulate contamination). At this point, each nurse was monitored from head to ankles (front and back). Each nurse then removed her shoe covers one at a time, and stepped one foot at a time on to the Step-Off Pad. Before stepping on to the pad, the MRT surveyed the sole of each foot. Finally, each nurse removed her inner set of gloves and disposed of them in the RadWaste Container. Each nurse was then released from the REA and allowed to enter the ER. The other REA nurses watched the doffing process for lessons-learned, doffed their PPE and returned to their normal assignments.

The Evaluator then interviewed the IEMA MRT regarding the steps that would be taken to clear the REA and ambulance crew and vehicle for returning facilities, vehicles and people to normal service and duties. He discussed how the REA would be surveyed to identify areas of contamination, steps that could be taken to reduce contamination levels below the 80 cpm threshold, steps that might be taken if normal decontamination procedures failed to restore the REA to full operability. These steps included, contacting IEMA and the Licensee for assistance, sealing contaminated areas until they could be remediated, and removal and temporary storage of RadWaste by the Licensee until normal decay rendered it safe or it could be transferred to an approved permanent storage facility. Steps that could be taken to reduce contamination levels included using Swiffer dust collection pads to collect surface contamination on the REA floor areas, using wash solutions and sponge pads to more intensely clean floor areas, applying sealers to the floor to hold contaminants in place until more aggressive methods could be applied, and cordoning-off the treatment bay and other areas that remained resistant to decontamination efforts. Wipes would be used to clean counter tops, equipment, cabinet surfaces, and walls. Periodic monitoring would be conducted as the decontamination progressed to determine the effectiveness of these procedures.

The MS-1 Drill concluded at 1124 hours.

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. PLAN ISSUES: None
e. NOT DEMONSTRATED: None
f. PRIOR ISSUES - RESOLVED: None
g. PRIOR ISSUES - UNRESOLVED: None

3.3.1.2 State of Illinois - Morrison Community Hospital - Medical Service - Transportation

Criterion 1.d.1:
Successfully demonstrated - this criterion narrative is contained in the Criterion 6.d.1 section.

Criterion 1.e.1:
Successfully demonstrated - this criterion narrative is contained in the Criterion 6.d.1 section.

Criterion 6.d.1:
During a Medical Services (MS-1) Drill at the Morrison Community Hospital (MCH) associated with the Quad Cities Station (QCS) conducted on June 14, 2011, Illinois Emergency Management Agency (IEMA) and Morrison Ambulance staff demonstrated the capability to provide appropriate space, adequate resources, and trained personnel for monitoring, decontaminating, and providing medical services to contaminated injured individuals. Illinois Emergency Management Agency staff demonstrated appropriate use of dosimetry and potassium iodide (KI), and was available to advise hospital staff as necessary. Morrison Ambulance staff demonstrated communications, supplies and equipment to support medical decision-making, personal protective equipment (PPE), treatment of the patient, minimizing the spread of contamination, and decontaminating the patient to the extent possible prior to transfer to the hospital.

The ambulance had several communication systems available. The primary system consisted of a Vertex standard 16 channel system with a backup Motorola StarCom ASTRO XTL 2500 digital mobile radio operating on the Statewide 800 MHz band. Cellular phone services were also available for communications. A communications test was performed using the primary system and no communications problems were observed during the demonstration.

The IEMA support staff included two Medical Radiation Technicians (MRTs). Each IEMA MRT has an equipment duffle bag and a hard shell case kit. The duffle bags contained a personal dosimetry kit, consisting of a CDV-730 Direct-Reading Dosimeter (DRD) manufactured by Dosimeter Corporation of America, with a range of 0-20 R; a Landauer

Luminescent Dosimeter (LD), with a change-out date of June 12, 2012; a Dosimeter/KI Record Card; written instructions for proper use of dosimetry and KI; and a blister pack of 14 AMBEX, Inc iOSAT 130 mg KI tablets. The DRD was last leak-tested on 20 July 2010 and is due again on 20 July 2012. The IEMA MRT was also equipped with a Model 6 CDV-750 trigger-style electrostatic dosimeter charger manufactured by S.E. International. The bag containing the personal dosimetry kit also contained sufficient amounts of gloves, Tyvek gowns, caps, masks, booties, swipe sample swabs, decontamination wipes, scrubs, garbage bags, scissors, forceps, smears, glassine envelopes, labels, forms, paper, clipboard, pens, masking tape, caution tape, lint rollers, Saran-wrap, and related gear.

The hard shell case (Kit 1) contained the following items: a Ludlum Model 2241-3 Digital Radiation Scaler/Ratemeter for use with count-rate scintillation, Geiger-Mueller (GM) and proportional-type detectors; a Bicron Micro-Rem Radiation Monitor for measuring low gamma radiation dose rate levels; a Ludlum 44-9 alpha, beta and gamma GM pancake detector; a Ludlum 44-10 gamma radiation scintillation detector. A 10-µCi Cesium-137 source dated JAN 2009 was used to perform operational checks on all survey instruments. The MRT had a Bicron and Ludlum instrument. The Bicron instrument was last calibrated on 8-09-2010 and is due again on 8-09-2011. The Ludlum instrument was last calibrated on 7-30-2010 and is due again on 7-30-2011. A copy of the "Hospital Supplemental Kit Inventory Checklist" (revised 2/13/09) was provided to the Evaluator. The inventory was last checked on May 18, 2011.

The IEMA MRT was aware of his guidelines for total accumulated dose (5 rem per year). The MRT wore his LD inside his outer Tyvek gown and his DRD outside the gown. The use of survey instruments supplanted the need for monitoring their DRDs during the MS-1 Drill, as the MRT took real-time exposure readings and had the capability to measure real-time dose rates. In the event that the transport MRT's instrument failed, the ER MRT's instruments could serve as immediately available backup instruments. Other instruments could be obtained from the Radiology Department or via the Regional Coordinating Center at Rockford Memorial Hospital in Rockford, Illinois.

The scenario presented to the Morrison Ambulance crew was that QCS had declared a General Emergency and the public had been directed to evacuate affected areas and to report to reception centers set up in the surrounding area. The scenario was based on a local resident who works in the Quad Cities Emergency Planning Zone who experienced a flat tire while driving to the reception center. While loading the flat tire in the trunk she lost her footing and fell on a broken

bottle, embedding glass in her right arm. Upon arrival to the reception center she alarmed the portal monitor where IEMA staff noticed that she has injured herself and was bleeding. IEMA called 911 and the Morrison Ambulance service was directed to report to the reception center to transport the victim to MCH.

As the Morrison Ambulance arrived at the location of the victim, they were met by the IEMA MRT that would serve as the Radiation Safety Officer for the ambulance and crew. The MRT was in process of monitoring the victim for contamination as per procedure at the reception center.

The MRT asked the victim to stand with arms extended and proceeded to monitor the victim. The monitoring techniques was deliberate and controlled, with the GM detector held approximately 0.5-1.0 inches from the surface being monitored and moving at a rate of about one inch per second. During the monitoring, the detector was placed near the victim's face and she pulled away from the probe. The MRT continued to monitor the rest of her body. Once questioned about the victim's reaction, he explained to the victim what he was doing and why. She then allowed monitoring of her face and head.

The IEMA MRT noted readings for contamination on the victim's body. He called out each reading and it was to be recorded on an IEMA Monitoring/Action Log Form. Surveys showed that the patient's forehead at the hairline read 400 cpm, right palm read 1800 cpm, the left palm read 1600 cpm, both knees read 800 cpm, and the patient's shoes read 1200 cpm. Latex gloves were placed on both hands and a hair covering had been placed on the patient's head to control the spread of contamination. The ambulance crew, under the direction of the MRT was going to cut away the victim's clothing to remove as much contamination as possible prior to transport to the MCH. A blanket was placed on the ground and the victim was asked to slowly step onto the blanket. The victim was then instructed to hold her arms out to her side so that her clothes could be removed while minimizing possible spread of contamination.

Wearing two pairs of surgical gloves and a pair of booties, an ambulance crew member slowly cut away the victim's clothes (as simulated by a Tyvek suit) starting from the neck down through the waist and each sleeve and leg. The ambulance crew then slowly rolled the clothing away from the victim and placed the clothes in a plastic bag. The victim's shoes were also removed and placed in the plastic bag. She was then asked to step off the blanket. The MRT frisked the victim again and results showed that the patient's forehead at the hairline was still reading 400

cpm, the gloved right palm was still reading 1800 cpm, the gloved left palm was still reading 1600 cpm, both knees were reading background (pants removed), and both feet (shoes removed) were reading background. The paramedics changed out their gloves and then placed a blanket and then the patient, on the gurney and covered her with another cotton blanket. The blanket wraps were applied to limit the potential extent of contamination and its potential spread to surrounding surfaces and persons. The Morrison Ambulance EMS made every effort to minimize and limit the potential for spreading contamination while transporting the patient gurney to the ambulance.

At 1030 hours, the Morrison Ambulance called the MCH via the ICP9000 system and informed them that a radiologically contaminated and injured patient was in transit. The ambulance crew provided information concerning the patient's condition, including vital signs, injuries, possible contamination status, and Estimated Time of Arrival (ETA) (two-to-three minutes). The ETA was compressed to expedite the drill. The patient was alert and oriented, pupils were equal and reactive; blood pressure (BP) was 116/62, pulse was 78 beats per minute, respirations were 30 per minute, and the patient had a laceration on the right forearm that was bleeding and swelling. Vital signs were stable.

Throughout the assessment and transport, the EMS crew was mindful to minimize the spread of contamination but did not withhold or delay medical treatment. Medical care took priority over contamination concerns and the attending paramedic reiterated his primary concern was patient care. Contamination issues were addressed after patient care.

The Morrison Ambulance arrived at the ER entrance outside the entrance to the REA. The patient was moved by the ambulance crew to the ER vestibule using the ambulance gurney. The ambulance crew briefed the hospital staff who was assigned to transfer of the patient, and the ambulance and hospital personnel coordinated patient transfer from the ambulance gurney to the hospital's Stryker gurney. The ambulance gurney was positioned in the vestibule in such a way that following transfer, the hospital's gurney had to cross over a portion of the area where the ambulance gurney had been positioned. A different arrangement of the two gurneys could have avoided the crossover. However, subsequent surveys showed that neither gurney was contaminated; consequently, the crossover, while avoidable, was not a concern.

The patient was fully cocooned in a sheet on arrival. The REA staff with a clean sheet had covered the hospital's gurney prior to patient arrival and transfer. At 1044 hours, the ambulance

crew briefed the REA staff regarding the patient's medical condition. The EMS crew noted to the attending nurses that the patient alarmed a portal monitor at a reception center for the QCS and presented a laceration and embedded glass in an open wound on her right forearm. The wound resulted from a fall while removing a spare tire from the trunk of her car to replace a tire that had gone flat while in transit to the reception center. The patient had lost her footing and fell in an area of broken glass.

The MRT noted that initial survey at the reception center using hand-held equipment showed that the patient's forehead at the hairline read 400 cpm, right palm read 1800 cpm, the left palm read 1600 cpm, both knees read 800 cpm, and the patient's shoes read 1200 cpm. Latex gloves had been placed on both hands and a hair covering had been placed on the patient's head to control the spread of contamination. The ambulance crew noted that the patient's outer clothing and shoes had been removed (simulated) and bagged to help reduce contamination levels prior to transfer to the hospital.

The Morrison Ambulance crew worked with the REA staff to transfer the patient from the ambulance gurney to the hospital gurney, at which point the ambulance crew relinquished care, custody and control to the REA staff. The patient was rolled into treatment bay 1 at 1047 hours.

After the patient was transferred to the hospital staff, the MRT explained and demonstrated the proper technique for monitoring the ambulance crew. The MRT then explained how he would monitor the ambulance for contamination, paying close attention to any areas where hands and feet come into contact with surfaces and equipment. The MRT then described how he would decontaminate the ambulance before it could be placed back into service.

The MS-1 Drill concluded at 1124 hours.

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, 6.d.1.
b. AREAS REQUIRING CORRECTIVE ACTION: None
c. DEFICIENCY: None

d. PLAN ISSUES: None
e. NOT DEMONSTRATED: None
f. PRIOR ISSUES - RESOLVED: None
g. PRIOR ISSUES - UNRESOLVED: None

SECTION 4: CONCLUSION

There were no Deficiencies, ARCAs, or Plan Issues identified for the State of Illinois.

APPENDIX A: DRILL EVALUATORS AND TEAM LEADERS

The following is a list of the personnel that evaluated the Medical Services (MS-1) Drill conducted on June 14, 2011, at the Morrison Community Hospital associated with the Quad Cities Station.

DATE: 2011-06-14, SITE: Quad Cities Station, IL

LOCATION	EVALUATOR	AGENCY
State of Illinois - Morrison Community Hospital - Medical Service - Facility	Carl Bebrich	DHS/FEMA
State of Illinois - Morrison Community Hospital - Medical Service - Transportation	*Todd Gemskie	DHS/FEMA
* Team Leader		

APPENDIX B: EXERCISE PLAN

This appendix lists the exercise criteria, which were scheduled for demonstration in the Medical Services (MS-1) Drill associated with the Quad Cities Station on June 14, 2011 and the offsite extent-of-play agreement accepted by DHS/FEMA Region V. The exercise criteria, contained in the FEMA "Radiological Emergency Preparedness Exercise Evaluation Methodology; Notice," as published in the Federal Register Notice/Vol. 67, dated April 25, 2002, represent a functional translation of the planning standards and evaluation criteria of NUREG-0654/FEMA-REP-1, Rev1, "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 offsite plans and procedures, an extent-of-play agreement is prepared by the State and accepted by DHS/FEMA to provide evaluators with guidance on expected actual demonstration of the criteria.

OFFSITE MEDICAL DRILL

MORRISON COMMUNTIY HOSPTIAL
(Reception Center)
MORRISION, ILLINOIS

JUNE 14, 2011
10:00 a.m.

EXTENT OF PLAY AGREEMENT
FOR THE
MEDICAL SERVICES EXERCISE
June 14, 2011

Location: Morrison Community Hospital **Transportation Provider:** Morrison Ambulance
303 North Jackson Street
Morrison, IL 61270

Participants:
Victim (volunteer)
Lead Controller: (IEMA)
IEMA ER Monitor: Grahn
IEMA Hospital Controller: Joni Estabrook
IEMA Ambulance Monitor: Wos
IEMA Ambulance Controller: Kathy Allen

Criteria that can be re-demonstrated immediately for credit, at the discretion of the evaluator, include the following: For Transportation: 1.d.1, 3.a.1 and 6.d.1; for the Hospital, 1.d.1, 1.e.1, 3.a.1 and 6.d.1. Criteria may be re-demonstrated, as agreed by the Lead Controller and FEMA Evaluators.

EVALUATION AREA 1 - EMERGENCY OPERATIONS MANAGEMENT

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

Morrison Ambulance will use 2-way radios to communicate with Morrison Community Hospital. Other communication systems that can be used include commercial telephone or cell phones.

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

Morrison Community Hospital will adequately demonstrate the ability to support operations, with adequate resources. The availability of dosimetry and KI for hospital personnel will **not** be demonstrated during this exercise, however IEMA staff will be issued dosimetry and KI as field team members.

EVALUATION AREA 3 - PROTECTIVE ACTION IMPLEMENTATION

Criterion 3.a.1: 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.

The use of dosimetry and KI will not be demonstrated by hospital staff. IEMA staff will demonstrate appropriate use of dosimetry and KI.

For purposes of the exercise, if there is no medical need to bring equipment into and out of the treatment room, nasal swabs will be taken (swabs to be taken outside the nose to simulate taking swabs inside the nose) and passed out of the room to demonstrate movement of equipment and supplies into and out of the controlled area. These swabs will also be utilized to establish if any radioactive materials have been inhaled.

EVALUATION AREA 6.d – TRANSPORTATION AND TREATMENT OF CONTAMINATED INJURED INDIVIDUALS

Criterion 6.d.1: The facility/ORO has the appropriate space, adequate resources, and trained personnel to provide transport, monitoring, decontamination, and medical services to contaminated injured individuals.

Peru Ambulance will demonstrate the capability to transport contaminated, injured individuals to Morrison Community Hospital. The ambulance crew will pick up a contaminated injured patient near the grounds of Morrison Community Hospital that will simulate a local reception center. The ambulance crew will be aware that a release has occurred from Quad Cities plant but not able to determine if the patient is contaminated. Morrison Ambulance will utilize universal precautions and good housekeeping practices to minimize the spread of contamination, and will focus on treating the patient's medical condition.

Morrison Ambulance will call in the information regarding the patient to Morrison Community Hospital in Morrison so they can prepare for receipt of a potentially contaminated patient Morrison Community Hospital will implement their plan for receipt, isolation and treatment of an injured contaminated patient. Medical personnel will utilize universal precautions and good housekeeping practices to minimize the spread of contamination, and will focus on treating the patient's medical condition. Simple decontamination efforts will be demonstrated after the patient has been medically stabilized. The hospital will demonstrate procedures for limiting exposure to hospital staff, decontaminating a patient, and restricting access to the area where the patient is being treated and monitored. Hospital personnel will demonstrate their knowledge of who to call beyond IEMA for assistance in Radiological Accidents, e.g., REAC/TS.

For purposes of this exercise, 2 IEMA staff members will participate. One will accompany Peru Ambulance and one will be dispatched to Morrison Community Hospital to assist in an advisory role to nuclear medicine staff. Both IEMA staff will be equipped with monitoring equipment. The purpose of having an IEMA MRT available is to facilitate monitoring the ambulance and ambulance personnel so they are not kept out of service for an extended period of time.

The drill will conclude with the hospital representative supervising the removal of protective clothing and surveying of the emergency room and hospital personnel. IEMA will also advise on the proper procedure for release or disposal of contaminated material.

Following the conclusion of the drill, a short critique will be held.

APPENDIX C: SCENARIO DETAILS

OFFSITE MEDICAL DRILL
(Summary and Injects)
Morrison Community Hospital
Morrison, IL

June 14, 2011
Start time: 10:00 a.m.

OBJECTIVES:

1. Demonstrate the ability of EMS personnel to transport a contaminated accident patient.
2. Demonstrate the ability of hospital personnel to treat a contaminated injured patient.
3. Demonstrate the ability of personnel to exercise proper radiological controls.
4. Demonstrate the proper techniques of personnel decontamination.
5. Demonstrate good communication between medical personnel and IEMA staff.
6. Demonstrate proper use of radiation detectors.

IEMA PLAYERS AND CONTROLLERS

Injured Victim	TBD
IEMA Rad Monitor (Amb.)	Greg Wos
IEMA Rad Monitor (Hosp.)	Kelly Grahn
IEMA Ambulance Controller	Kathy Allen
IEMA Hospital Controller	Joni Estabrook
Lead Controller	IEMA

EXTENT OF PLAY FOR MORRISON MEDICAL DRILL

INTRODUCTION:
An offsite medical drill will be conducted to demonstrate the State of Illinois' concept of operations for handling contaminated injured individuals. The drill is structured to address MS-1 Hospital and Transportation criteria.

NOTE: Evaluators should be aware that while hospital personnel are encouraged to assume responsibility for monitoring, decontamination, and contamination control activities within their facility to the extent they are able to do so, they are advised to take direction from Illinois Emergency Management Agency (IEMA) personnel regarding these issues. The purpose of providing IEMA support is to ensure appropriate radiation protection protocols are observed.

Extent of Play:
Quad Cities Nuclear Power Station has declared a general emergency. The emergency alert sirens have sounded, the public has been directed to evacuate affected areas and to report to reception centers set up in the surrounding area. The scenario is based on a local resident who works in the Quad Cities EPZ and experiences a flat tire while driving to reception center. While loading the flat tire in the trunk she loses her footing and falls where a broken bottle was laying embedding glass in her right hand. Upon arrival to the reception center trips the portal monitor where IEMA staff notice she has injured herself and is bleeding. IEMA calls 911 and informs the reception center supervisor.

1. An ambulance and EMS staff will be used to demonstrate loading, transporting and unloading the victim. EMS personnel will pick up the patient at a staged location close to the hospital. IEMA staff will be present for the transportation portion of the drill.

2. The ambulance crew will communicate with the receiving hospital regarding the medical status and any additional precautions taken to prevent spread of contamination.

3. IEMA MRT will be available to conduct monitoring at the simulated reception center and during transport.

4. IEMA MRT and hospital nuclear medicine staff will be providing radiological exposure control and monitoring of EMS and hospital personnel.

5. Decontamination is determinant on ambulance protocols and extent of the injury that the patient presents.

6. The IEMA MRT will supervise the ingress and egress of radiological control areas. Monitoring will be performed prior to personnel leaving the potentially

7. Hospital nuclear medicine personnel will be the primary radiological advisor for contamination control and any patient and staff radiological monitoring and contamination control activities unless no nuclear medicine staff is available to assume responsibility. IEMA will be present to advise and assist as needed.

8. The medical facility will demonstrate or describe their procedures for the medical treatment and necessary decontamination of a contaminated injured individual. Multiple methods of decontamination, including dry, damp or wet, may be utilized for the removal of contamination. IEMA/hospital nuclear medicine personnel will survey the hospital REA and medical personnel to maintain contamination control. These methods will include taking swipes of floors and surfaces so that the hospital and ambulance can be cleared for normal operations.

9. The hospital may need to contact REAC/TS to determine appropriate samples needed to assess internal contamination. Any samples collected will be sent to REAC/TS for analyzing, IEMA does not process biological samples.

10. Emergency medical personnel will be able to maintain their exposure below the limits specified in 10 CFR Part 20 because for the exercise, the dose rate from the patient is below 2 mr/hr**.**

11. After the Hospital is notified, hospital personnel will prepare the area to receive the patient in accordance with their procedures and provide security as necessary. IEMA as a general practice would, if necessary, post radiation signs in accordance with the requirements as set forth in 10 CFR Part 20. Hospital security will control the area in accordance with the same policies and procedures used to provide isolation in the treatment of a chemical or biological agent.

12. Regardless of specific written hospital procedures for addressing radiation contamination, the supervision and advice provided by IEMA personnel should be the governing guidance for determining whether the patient's contamination situation is appropriately addressed.

The drill shall terminate when the controller verifies that the criteria under Evaluation Area 6, Sub-element 6.d and Evaluation Area 3, Sub-element 3.a.1, have been satisfied.

NARRATIVE SUMMARY FOR MORRISON MEDICAL DRILL

Quad Cities Nuclear Power Station has declared a general emergency. The emergency alert sirens have sounded, the public has been directed to evacuate affected areas and to report to reception centers set up in the local area. The scenario is based on a local resident who was attempting to evacuate the EPZ. While evacuating the area she has a flat tire and injures her hand, which dramatically slows her leaving the area. She eventually reports to the local Reception Center.

Upon arrival to the Reception Center the evacuee trips the portal monitor and is asked by IEMA staff to step aside for personal monitoring. IEMA personnel notice the evacuee is bleeding and inquires regarding the person's injury. IEMA staff realizes the injury requires more than basic first aid and calls 911 and notifies the Reception Center Supervisor. Morrison Ambulance is dispatched to the reception center to which an IEMA staff member accompanies the patient and ambulance crew.

For purposes of the drill, a location close to the hospital will be used to represent the actual reception center. Ambulance personnel will demonstrate patient loading and transport. Ambulance personnel will communicate with the receiving hospital. Patient contact dose rates are less than 2 mR/hr. Contamination levels will be less than 5,000 cpm, which means EMS personnel are exempt from direct read dosimeters and LDs in accordance with IEMA procedures for personnel monitoring.

At the hospital an IEMA MRT will assist hospital staff in monitoring and decontamination efforts. For the purposes of the evaluated exercise, IEMA will provide two individuals to perform monitoring: one will monitor ambulance and the other will provide assistance to hospital staff.

At the hospital, medical personnel will utilize universal precautions and good housekeeping practices to ensure contamination from the patient is controlled and not spread. Simple decontamination efforts will be demonstrated after the patient has been medically stabilized. IEMA personnel will discuss the need to take additional samples for further radiological analysis. Hospital personnel will demonstrate their knowledge of who to call beyond IEMA for assistance in Radiological Accidents, e.g., REAC/TS.

For purposes of the exercise, if there is no medical need to bring equipment into and out of the treatment room, nasal swabs will be taken (swabs to be taken outside the nose to simulate taking swabs inside the nose) and passed out of the room to demonstrate movement of equipment and supplies into and out of the controlled area. These swabs will also be utilized to establish if any radioactive materials have been inhaled.

The drill will conclude with the hospital representative and IEMA personnel supervising the removal of protective clothing and survey of the emergency room and hospital personnel. IEMA will also advise on the proper procedure for release or disposal of contaminated material. Following the conclusion of the drill, a short critique will be held.

TIME: Pre t = 0

Victim Instructions

MESSAGE FORM

() Controller (X) Player ( ) Contingency

Drill/Exercise Type: Morrison Community Hospital Medical Drill

Message for: Victim and EMS staff

MESSAGE

The Quad Cities Nuclear Station has issued a public broadcast that a radioactive release has occurred and that resident's and those working in the Quad Cities EPZ area are being evacuated. You then report to the Reception Center.

While driving you experience a flat tire. After changing it and putting the flat in your trunk you slip on gravel and fall into broken glass injuring your hand. Upon arrival at the reception center you trip the portal monitor and are asked to step aside for personal monitoring. IEMA staff notices you are bleeding and calls 911.

You are in a moderate amount of pain from the glass being embedded in your hand and are having difficulty making a fist.

You have no known medical issues other than a history of allergic reactions to penicillin.

FOR CONTROLLERS USE ONLY

The information would be available to the hospital as they received preliminary notification information from outbound ambulance calls.

TIME: Time 0
MESSAGE: Initial Conditions

MESSAGE FORM

(X) Controller (X) Player ( ) Contingency

Drill/Exercise Type: Morrison Community Hospital Medical Drill

Message for: Hospital Personnel

MESSAGE Initial Conditions:

The patient initially is uncomfortable and slightly bleeding from embedded glass in her hand.

Contamination Levels:	**Initial survey Reading**	**First Decon**	**Second Decon**	**Third Decon**
Right hand	1800 cpm	800 cpm	300 cpm	75 cpm
Left hand	1600 cpm	600 cpm	60 cpm	
Backside of Pants	1000 cpm	0 cpm Pants should be removed		
Pants at knees	800 cpm	0 cpm pants should be removed		
Hairline right temple	400 cpm			
Shoes (should be removed)	1200 cpm	0 should be removed		

*Pant/shoes should be removed and bagged.
**Contamination would likely be spread from hand to injured arm either on patient's skin or clothing.

Current Medical Conditions:

Current pain and bleeding of right hand

Note: See last page for contamination locations and levels.

FOR CONTROLLERS USE ONLY

Contamination levels have not been established at this time.

TO: First Responders/EMS

FROM: EMS Controller

NOTE: Do not provide the data to players unless the means to obtain it are demonstrated.

THIS IS A DRILL
DO NOT initiate actions affecting safe operations

Message:

Patient pain is 7 of 10 and seems to be worsening.

	EMS Arrival on Scene	*Enroute to Hospital*	*In REA*	*After Treatment*
Level of consciousness:	Alert & Oriented X3	Alert & Oriented X3	Alert & Oriented X3	Alert & Oriented X3
Respirations:	30	30	26	20
Pulse:	80	78	78	74
Skin:	Normal	Normal	Normal	Normal
Pupils:	PERL	PERL	PERL	PERL
Blood Pressure:	120/70	116/62	116/62	135/78
Visual:	Bleeding and swelling of right hand	Bleeding and swelling of right hand	Bleeding and swelling of right hand	Bleeding and swelling of right hand

Note:
ECG Monitor – Sinus tachycardia corresponding to pulse.
Pulse Oximeter 97% on room air.

- Penicillin

Expected Action:
Follow local protocols or standing orders.

THIS IS A DRILL
DO NOT initiate actions affecting safe operations

TIME: 0 + 5 min.

MESSAGE: _____

MESSAGE FORM

(X) Controller (X) Player () Contingency

Drill/Exercise Type: Morrison Community Hospital Drill

Message for: Hospital Personnel

MESSAGE

When the Hospital is notified that a potentially contaminated patient will be arriving, the Hospital should make preparations to receive patient in accordance with hospital procedures.

IEMA staff will be dispatched to the hospital in advance of the receipt of the patient for purposes of this exercise.

FOR CONTROLLERS USE ONLY

Issue the message only if ambulance departure from reception center was to occur after 1020. Realistically it would take 20 minutes after the initial call for the ambulance to respond and depart with the patient.

TIME: After patient arrival at hospital

MESSAGE: Decontamination

Activities

MESSAGE FORM

(X) Controller () Player ( ) Contingency

Drill/Exercise Type: Morrison Community Hospital Drill

Message for: IEMA RAD Controllers

MESSAGE

If proper radiological controls are in place no contamination is found in the ambulance. All areas of the hospital and path from ambulance to treatment room will be surveyed and read as background.

The controller may adjust contamination levels based on actions of the players.

The patient has contamination on right palm, left palm, forehead at hairline, right knee, left knee and on both pant cuffs and bottom and toes of shoes.

IT DOES NOT MATTER IF THE CLOTHING IS REMOVED BY THE AMBULANCE OR HOSPITAL PERSONNEL. Clothing should be bagged and labeled.

TIME: After patient arrival at hospital

MESSAGE: Decontamination

Activities

MESSAGE FORM

(X) Controller () Player ( ) Contingency

Drill/Exercise Type: Morrison Community Hospital Drill

Message for: IEMA RAD Controller

MESSAGE

Decontamination efforts are as follows:

Once clothing is carefully removed, all outer contamination is removed. **Bagged clothing reads 1200 cpm.**

The first attempt will remove all contamination from the left palm, however the right palm will take several attempts. After decontamination efforts the right hand still reads slightly above background but below the contamination threshold level.
The temple at the hairline will not be able to be decontaminated on the first attempt and reads 400 cpm the second decon effort will result in readings slightly above background. The contamination levels and locations may be adjusted accordingly.

The cuts and glass embedded in the patients hand should be properly addressed by hospital personnel as well as observing contamination control measures.

*Pants and shoes should be removed and bagged.
**Contamination would likely be spread from hand to injured arm either on patient's skin or clothing.

Note: Controllers may adjust levels based on player actions.

FOR CONTROLLERS USE ONLY

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