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

FEMA

SEP 1 9 2009

NRC HQ Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

To Whom It May Concern:

Enclosed is one copy of the Braidwood Station Medical Services (MS-1) Drill Report. The drill was conducted in Kankakee, Illinois, on September 25, 2009. Participants included members from the Illinois Emergency Management Agency, Riverside Ambulance Service, and the Riverside Medical Center.

No Deficiencies were identified during this drill. There were no Areas Requiring Corrective Action (ARCA) from previous drills. One incident of an Area Requiring Corrective Action occurred and was corrected on the spot.

If you have any questions, please contact me at (312) 408-5503 or William E. King at (312) 408-5575.

Sincerely,

Janet M. Odeshoo
Acting Regional Administrator

Enclosure

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NRR

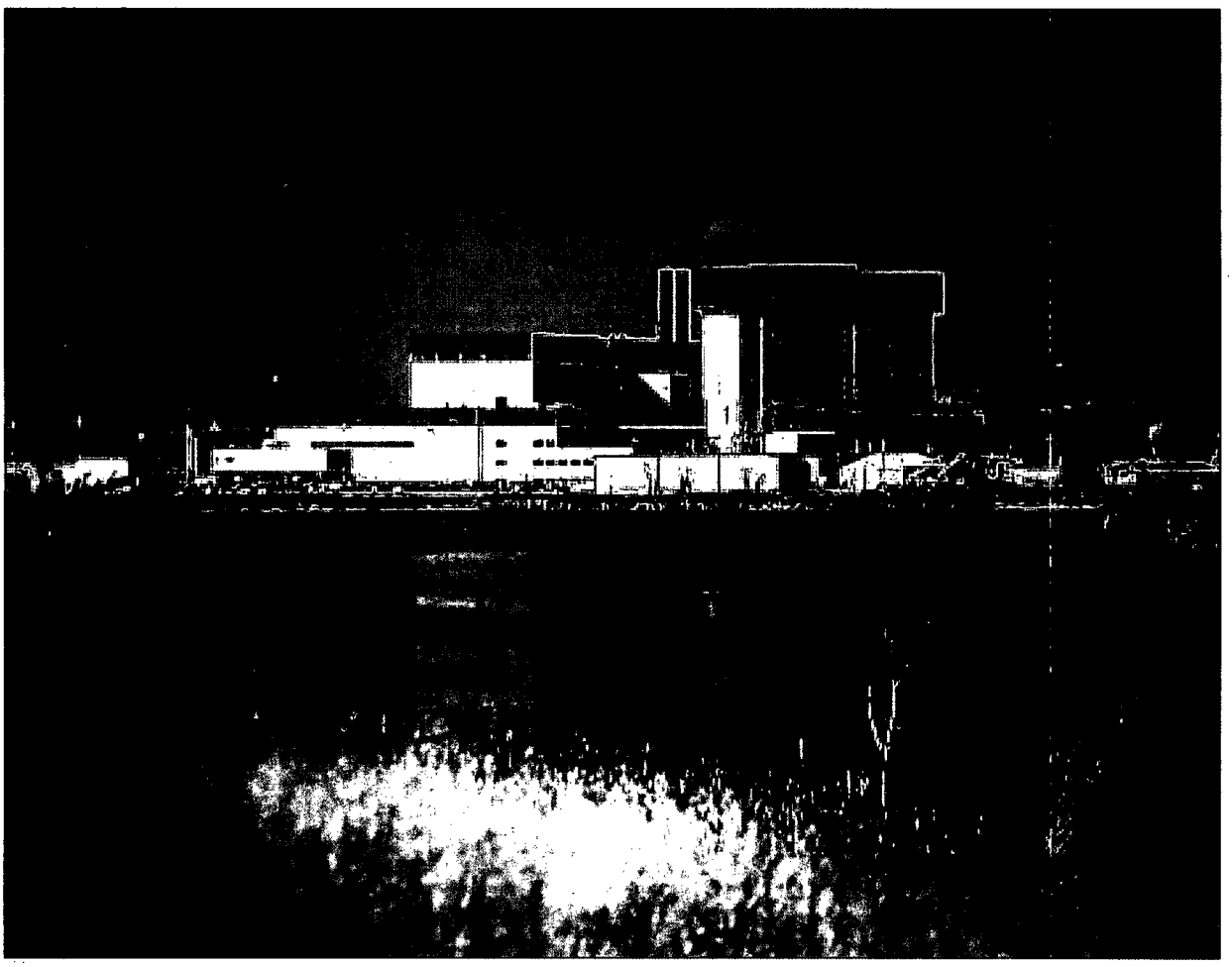
Braidwood Station

Drill Report - 2009-09-25

Final Report - Radiological Emergency Preparedness (REP) Program

2009-10-14

FEMA



FEMA

Drill Report

Braidwood Station

Drill Date: 2009-09-25

Report Date: 2009-10-14

U.S. DEPARTMENT OF HOMELAND SECURITY

Federal Emergency Management Agency

REP Program

536 S. Clark St. 6th floor

Chicago, IL 60605

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1. Executive Summary

On September 25, 2009, the U.S. Department of Homeland Security's (DHS) Federal Emergency Management Agency (FEMA), Region V, evaluated a Medical Services (MS-1) drill in the 10-mile plume exposure pathway Emergency Planning Zone (EPZ) around the Braidwood Station (BS). The purpose of the MS-1 drill was to assess the ability of off-site agencies to respond to a medical emergency involving a potentially contaminated (radiological) 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 radiological emergency response plans.

The scenario for the MS-1 drill was developed by personnel from the State of Illinois Emergency Management Agency (IEMA). The scenario stated that a General Emergency was declared at the Braidwood Station. The emergency alert sirens had sounded. The public had been directed to evacuate affected areas and to report to reception centers set up in the local area. The scenario was based on a local resident who had just returned from traveling and was unloading her luggage. The resident had not heard the evacuation order over the local radio station nor the order to report to the Kankakee Reception Center. While unpacking she hears that a radioactive release has occurred from the Braidwood Station and that members of the public living in her area are to report to the reception center located in Kankakee, Illinois. The resident grabs a few necessities and leaves her home, however when leaving she slips and falls down her front porch stairs injuring her arm. The resident attempts to evacuate but cannot straighten her arm to drive her car, a manual transmission. The resident calls an ambulance for assistance. Upon arrival the EMS staff evaluates the patient and she explains how she fell while on her way to the reception center. While leaving the EPZ the ambulance crosses through several checkpoints that were not previously set up.

At the hospital the nuclear medicine department monitored hospital and/or EMS staff until an IEMA medical radiation technician arrived. As noted in the extent of play agreement, hospital personnel and hospital staff were not issued personnel monitoring devices as radiation levels are below those requiring dosimetry.

At the hospital, medical personnel utilized universal precautions and good housekeeping practices to ensure contamination from the patient was controlled and not spread. Simple decontamination efforts were demonstrated after the patient had been medically stabilized. Hospital personnel demonstrated their knowledge of who to call for

assistance in Radiological Accidents such as IEMA and/or REAC/TS.

For purposes of the exercise, there was no medical need to bring equipment into and out of the treatment room, nasal swabs were taken (swabs were 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.

The drill concluded with the Radiological Safety Officer (RSO) supervising the removal of protective clothing and surveying of attending staff. The SRO also provided details as to the clearing of the treatment room and handling of hazardous materials. IEMA also provided advice on the proper procedure for the release or disposal of contaminated material. Following the conclusion of the drill, a short critique was held.

During the MS-1 drill, Criterion 6.d.1 – Transportation and Treatment of Contaminated Injured Individuals, which is part of the six Exercise Evaluation Areas described in Federal Register notice [67 FR 20580-20602], April 2002, which amends the FEAM-REP 14, Radiological Emergency Preparedness Exercise Manual, was evaluated. The State and local organizations demonstrated knowledge of the organizational emergency response plans and procedures and adequately implemented them. One Area Requiring Corrective Action (ARCA) that was corrected on the spot was identified.

An Area Requiring Corrective Action (ARCA) that was corrected on the spot was identified within the Riverside Medical Center. Under Criterion 6.d.1, Transportation and Treatment of Contaminated Injured Individuals, a lack of control of contaminated materials occurred during the drill. An attending nurse after handling a moist towel used to clean off contamination from the forearm of the patient handled a clean towel to dry the decontaminated area without changing her contaminated gloves. This would have resulted in the contamination being reapplied to the previously clean area of the forearm. The nurse and controller were advised of the incident. The scenario continued which provided several more opportunities for the glove exchange to occur. There was no reoccurrence of the situation. Also a nurse that was taking nasal swab samples passed the sample to the Buffer Zone Nurse without having the sample surveyed. The Radiological Safety Officer was conducting patient monitoring and decontamination at the time. The Buffer Zone Nurse confirmed that the sample had not been surveyed. The sampling nurse was advised of the error by the evaluator. The controller was also advised of the incident. The drill continued with the second nasal sample being processed without error.

Table 1 - Summary of Drill Evaluation

DATE: 2009-09-25 SITE: Braidwood Station, IL A: ARCA, D: Deficiency, M: Met, N: Not Demonstrated		MS-1 T - Riverside Amb	MS-1 H - Riverside Med Cntr
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 the Ingestion Exposure Pathway	2d1		
Rad Assessment and Decision making concerning Relocation, Reentry, and Return	2e1		
Protective Action Implementation			
Implementation of emergency worker exposure control	3a1		M
Implementation of KI decision	3b1		
Implementation of protective actions for special populations - EOCs	3c1		
Implementation of protective actions for Schools	3c2		
Implementation of traffic and access control	3d1		
Impediments to evacuation are identified and resolved	3d2		
Implementation of ingestion pathway decisions - availability/use of info	3e1		
Materials for Ingestion Pathway PADs are available	3e2		
Implementation of relocation, re-entry, and return decisions	3f1		
Field Measurement and Analysis			
Adequate Equipment for Plume Phase Field Measurements	4a1		
Field Teams obtain sufficient information	4a2		
Field Teams Manage Sample Collection Appropriately	4a3		
Post plume phase field measurements and sampling	4b1		
Laboratory operations	4c1		
Emergency Notification and Public Info			
Activation of the prompt alert and notification system	5a1		
Activation of the prompt alert and notification system - Fast Breaker	5a2		
Activation of the prompt alert and notification system - Exception areas	5a3		
Emergency information and instructions for the public and the media	5b1		
Support Operations/Facilities			
Mon / decon of evacuees and emergency workers, and registration of evacuees	6a1		
Mon / decon of emergency worker equipment	6b1		
Temporary care of evacuees	6c1		
Transportation and treatment of contaminated injured individuals	6d1	M	M

2.1. Status of Jurisdictions Evaluated

2.1.1. Illinois Jurisdictions

2.1.1.1. Medical Services (MS-1) Transportation - Riverside Ambulance Service

Criterion 1.d.1:
The result of this criteria is contained in the narrative for 6.d.1.

Criterion 1.e.1:
The result of this criteria is contained in the narrative for 6.d.1.

Criterion 6.d.1:
On Friday, September 25, 2009, a Medical Services (MS-1) Drill was conducted at the Riverside Medical Center, 350 North Wall Street, Kankakee, Illinois. In accordance with the extent of play agreement, the ambulance and crew from the Riverside Ambulance Service, Kankakee, Illinois, assigned to provide services in the controlled area simulated for the Braidwood Station, participated in the MS-1 Transportation Drill.

The scenario for the MS-1 Drill was developed by personnel from the State of Illinois. The scenario stated that an Emergency Classification Level of General Emergency was declared at the Braidwood Station. The emergency alert sirens were sounded; the public was directed to evacuate the affected areas and to report to reception centers set up in the local area. The scenario is based on a local resident who had just returned from traveling and was unloading luggage from her vehicle. The resident has not heard the evacuation order over the local radio station or the order to report to the reception center. While unpacking she hears that a radioactive release has occurred from the Braidwood Station and that members of the public living in her area were to report to the reception center located in Kankakee, Illinois. The resident grabbed a few necessities and left her home, however when leaving she slips and falls down her front porch stairs injuring her arm. The resident cannot straighten her arm to drive her car to the reception center and calls an ambulance for assistance.

Riverside Ambulance is dispatched to her home that is located within the EPZ.

At 1104 hours, the resident who slipped and fell placed a call to the 911 center. The 911 center notifies the ambulance service of the situation and notifies the Hazardous Material Group to respond to the scene. At 1104 hours, the ambulance crew from the Riverside Ambulance Service received a call from the 911 dispatch center deploying them to the residence. The ambulance used for the drill was equipped with an 800 MHz radio system, which had the capability to be contacted from the 911 center and the hospital. The ambulance crew also had a regional medical channel and cell phones for communication.

The Riverside Ambulance crew readied themselves with double gloves, disposable masks and eye shields, and plastic gowns. At 1109 hours, the ambulance reported by radio they were in route to the scene of the fall. Drill records indicate that the ambulance crew contacted the Riverside Medical Center at 1109 hours, and informed the center that they were in route to a potentially contaminated patient in the controlled area and they would call in later with more information.

At 1110 hours, personnel from the Riverside Ambulance Service arrived on scene. The EMTs approached with caution and assessed the patient's condition and injuries. The EMTs took universal contamination control precautions while treating the patient.

The EMTs examined the victim. The EMT's assessed the patient level of consciousness, level of pain and vital signs. The ambulance crew placed two sheets on the stretcher and assisted the patient to the stretcher which was placed in the seated position. The stretcher with the patient was placed in the horizontal position, wrapped in the two sheets and secured to the stretcher with three patient straps. The patient was then placed into the ambulance.

At 1113 hours, the EMTs prepared to transport the patient to the hospital. During this preparation the ambulance crew took vital signs, and simulated placing the patient on oxygen, starting an IV of .9 Normal Saline, and placing the patient on a heart monitor. The EMT riding in the back of the ambulance provided medical care and gathered personal information from the patient to relay to the hospital. Patient treatment received the highest priority.

During the entire demonstration the ambulance crew remained aware of the patients potentially contaminated state. The ambulance personnel change gloves and place

them, and all used equipment, into a bag that indicated that the contents contained contaminated items. Prior to transport, an EMT carefully removed the patient's shoes and covered the patient by double sheeting. The patient's contaminated shirt and pants were cut down the center and rolled inside to the outside to contain the contamination. Again the EMT changed gloves before touching either the patient or equipment.

The EMT Paramedic communicated the patient's condition with Riverside Medical Center Emergency Department staff via cell phone in the ambulance. The EMT Paramedic reported the ambulance was in route with a patient's chief complaint (pain and scrapes right forearm), level of consciousness, vital signs, and that the patient was wrapped in two sheets and potentially contaminated from the controlled area. The EMTs further reported the patient's respiratory rate, pulse, skin color, temperature, and blood pressure and patient's history, and treatment in progress. The EMTs gave an estimated time of arrival of five minutes.

Documentation indicated that the hospital was informed that they would be receiving a contaminated patient picked up at the patient's residence in advance of the patient's arrival.

The Hospital Radiological Monitor (HRM) took background readings in the area of the reception center that would be used for patient transfer and treatment. Using a Bicron Micro-R meter, readings of 30 counts per minute were noted in the hospital receiving area. This level was established as background to be used for establishing the decontamination level. The State of Illinois had established a decontamination level of two times background.

The Riverside Ambulance Service arrived at the Riverside Medical Center at 1126 hours. The Emergency Department Staff met the ambulance personnel in the receiving area. The ambulance was directed into an area roped off to prevent unauthorized entry and control the area. The patient was removed from the ambulance. The Emergency Department staff was briefed on the patient's condition by the ambulance crew and the patient was transferred from the stretcher to the hospital gurney by grasping the sheets.

After the patient was transferred to hospital Emergency Room personnel, the Riverside Hospital Radiological Technician (HRT) surveyed the receiving area and ambulance stretcher for contamination. Upon the arrival of the IEMA Radiological Monitor (IEMA RM), the EMTs, equipment, and ambulance were surveyed for contamination by the IEMA RM and HRT. The ambulance crew and IEMA RM displayed an awareness for

the location of potential contamination. For example, the crew was aware of the location the patient placed her hand during treatment. Also surveyed were all locations touched by the EMT during treatment and monitoring of the patient during transport to the hospital.

For demonstration purposes, both EMT's were monitored and demonstrated the proper doffing of anti-contamination clothing. Potentially contaminated clothing and equipment was double bagged and was simulated tagged for transfer to the appropriate receiving agency.

The IEMA RM took a swipe of the contaminated area and bagged the sample for later transfer to the laboratory. The area was monitored again and found clean. Through interview, decontamination procedures were reviewed with the IEMA RM and ambulance crew. The steps the monitor described would have adequately decontaminated the ambulance. Further discussions indicated the ambulance and ambulance equipment would have been adequately monitored for contamination, and released back to service.

Through interview, the ambulance crew stated that they knew what locations are designated as monitoring and decontamination facilities in the local area. They would report to one of these locations, or they would be told where to go for decontamination in the event they needed this service. They were familiar with the hazards of radiation contamination and the precautions to take to avoid the spread of contamination. Through interview the ambulance crew demonstrated that they were aware of the primary route to the Riverside Medical Center and other hospitals in the area that could treat radiological exposed patients. The crew was able to identify and describe alternative routes to the Medical Center in the event that the primary route was blocked.

The IEMA RM and HRT both demonstrated the process of surveying the Riverside Medical Center receiving area with the Ludlum 2241-3 survey meter. He demonstrated and described what actions would be taken should contamination be found in this area. The IEMA RM stated that an established priority for getting the ambulance and the hospital's receiving area cleared and completed the radiation monitoring process to ensure that the ambulance and hospital receiving area were placed back into service. All areas of the hospital and path from ambulance to treatment room cleared and had readings of background.

For demonstrations purposes, the IEMA RM demonstrated how the meters were

checked, to ensure that they contained fresh batteries. The survey meters probes were secured in plastic bags to protect them from contamination. Additional bags were available in case a bag become contaminated and had to be replaced. Survey meters were turned on and allowed to warm up. Headphones were attached to the meters. Survey instruments used included: Bicron Micro-R meter, last calibrated on June 12, 2009, and due for calibration on June 12, 2010, and Ludlum 2241-3 digital scalar/rate meter with pancake probe last calibrated on May 21, 2009, with the next calibration due on May 21, 2010. Instruments passed an operational battery test and a source response check prior to use by the IEMA RM. Sources were imbedded in the side of the carrying case used to transport the equipment. Operability check exposure rate and count rate were recorded on a label affixed on a side of the instrument (Bicron Micro-R meter was 1.0-1.6mR/hr and the Ludlum 2241-3 was 21.6-36.0 kcpm).

All activities described in the demonstration criterion were carried out in accordance with the plan, procedures and the 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. NOT DEMONSTRATED: None
e. PRIOR ISSUES - RESOLVED: None
f. PRIOR ISSUES - UNRESOLVED: None

2.1.1.2. Medical Services (MS-1) Hospital - Riverside Medical Center

Criterion 1.d.1:
An out of sequence MS-1 Drill was conducted on September 25, 2009, at the Riverside Medical Center, 650 North Wall Street, Kankakee, Illinois, where at least two communications systems were available, at least one operated properly, and communications links were established and maintained with appropriate locations. The communication capabilities were managed in support of emergency operations.

Within the Emergency Department (ED) the communications station contained a Medical Emergency Radio Communications of Illinois (MERCI) 800 MHz channel radio system, commercial cell phone, commercial landline telephone and a facsimile machine

capability. Internally there is a public address and paging system that can be activated for this station. The Medical Center utilized the Medical Emergency Radio Communications of Illinois (MERCI) as the primary communication system during the drill. The cell phone system would be the first back-up communication system between the ambulance service and the center.

The ambulance and the medical center utilized the MERCI for initial and follow-up contact. Commercial landlines were in use within the ED during the drill. There were no communications equipment checks necessary since these systems are in continuous use during real world emergencies. There were no communication failures noted during the exercise.

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

Criterion 1.e.1:
An out of sequence MS-1 drill was conducted on September 25, 2009, at the Riverside Medical Center, 650 North Wall Street, Kankakee, Illinois, where equipment, maps, displays, dosimetry, potassium iodide (KI), and other supplies were sufficient to support emergency operations.

The drill scenario involved an accidental injury occurring within the 10-mile Emergency Planning Zone after a contamination release from the Braidwood Station. The Medical Center was notified that it would be the recipient of a possibly contaminated patient. This notice initiated the Medical Center's response to prepare the Emergency Department (ED) for a Hazardous Material (radiation) event.

The Medical Center's Radiological Department utilized a Biodex Model 14C Survey meter with a pancake probe for monitoring within the ED Hazardous Material Control Area. The meter was last calibrated on July 13, 2009, with a due date of July 2010. A Ludlum Model 2214-3 meter with a scintillator probe was also available. The calibration date for this equipment was also July 13, 2009 and the July 2010 due date.

In accordance with the extent of play the availability and issuance of KI and dosimetry for the Medical Center staff was not evaluated.

The Emergency Department/treatment room was equipped with the necessary support materials and equipment. This included Personal Protective Equipment (PPE)

(face/eye shields, gowns, booties, gloves, hair covers); medical supplies (dressings, bandages, patient gowns, blood pressure monitors, stethoscopes, sterilized water, lab sample kits, etc.); and hazardous material handling equipments (hazardous waste containers with liners, sealable plastic bags, floor coverings, etc). Items were in sufficient quantities to support several patients and staff. There were no shortages relating to equipment or supplies during the exercise. Those items needed that were not within the treatment room were quickly made available from within the ED area.

A REAC/TS poster sized checklist was attached to the wall outside of the treatment room used for the contaminated patient. The checklist was actively used by the buffer zone nurse to ensure activities were accomplished. This poster was also used by the MD Radiological staff to obtain telephone numbers for IEMA and REAC/TS to gain assistance/information.

The secure parking area for the ambulance was successfully established by the security staff utilizing traffic cones and plastic barrier tape.

The hospital plan provides several forms/checklists to be used by the ED staff during a radiological event. The form (Attachment II, ED buffer, Patient Decontamination Documentation Sheet) for recording CMP readings was not utilized by the attending team. The readings were recorded on a blank sheet of paper; complete and accurate data was not recorded. Attachment III-B, Radiation Safety Officer, Radiation Accident Scannings, was not used. Not all of the information identified by the form was recorded on a blank sheet of paper; number of washes and the reading after each.

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

Criterion 3.a.1:
In accordance with the extent-of-play agreement the medical staff was not issued dosimetry for this drill. The Medical Center's internal management of radiological exposure measures are addressed in the narrative to criterion 6.d.1.

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

Criterion 6.d.1:

An out of sequence MS-1 drill was conducted on September 25, 2009, at the Riverside Medical Center, 650 North Wall Street, Kankakee, Illinois, where the facility had the appropriate space, adequate resources, and trained personnel to provide transport, monitoring, decontamination, and medical services to contaminated injured individuals.

The State of Illinois' Medical Services (MS-1) Hospital Drill was performed out of sequence commencing at 1100 hours, at the Riverside Medical Center. At 1109 hours, a radio message was received by the Medical Center's Emergency Department that a Riverside ambulance was being dispatched to pick-up an injured and possibly contaminated patient from their residence. The EMS member also identified to the ED nurse that there was an incident at the Braidwood Nuclear Station with a radiological release. The ED nurse that received the message contacted the Medical Center staff (simulated). The ED nurse advised the staff of the available information and the likelihood that a contaminated patient would be arriving at the ED.

Since this was an exercise, the Medical Center was notified of the situation by artificial means, through a Controller inject that was provided to the EMS of the Riverside Ambulance service.

The communications station within the ED contained sufficient radio and telephonic equipment to allow for the center to communicate with responding ambulance services. The radio system utilized was the Medical Emergency Radio Communications of Illinois (MERCI) 800 MHz channel. During the drill, the ambulance and the Medical Center utilized the MERCI for initial contact. Within the medical center, the public address system would be utilized to inform or provide messages to staff and occupants of the Medical Center. However, the public address system was not used; the staff was assembled outside of the ED and briefed by the nurse that took the radio dispatch call. The nurse advised the staff of the probable arrival of a contaminated injured patient. The staff then began immediate preparation for a hazardous material (radiation) response.

The Medical Center personnel followed their procedures and established a secure treatment room for the receipt of a contaminated injured patient. Medical Center personnel responding for drill activities included personnel from Security, Housekeeping, Maintenance, Radiology Department, the Radiation Safety Officer (RSO), and ED (Nursing Supervisor, physician (simulated by a nurse), Buffer Zone Nurse, and ancillary personnel.) The hospital radiological Decon Team was available and was prepared to conduct patient monitoring and decontamination. Other Medical

Center personnel observed the drill from outside the treatment room. Through interview with the IEMA representative, it is noted that all persons assisting, along with other Medical Center and EMS personnel had received Emergency Medical Services for Radiation Accidents training presented by IEMA the morning of the drill.

Medical Center personnel readied the treatment room for the patient's arrival. The driveway to the ED and the treatment room itself provided an area that could be controlled with minimal need for security personnel and traffic barriers. During the exercise, yellow Caution tape was strung across the driveway as a visual barrier to control/limit vehicle traffic. Physical security for the driveway and the ED entrance was controlled by Medical Center staff. The ambulance off loading area was protected from the weather by a fixed overhead canopy.

There are two entrances to the ED, the main entrance under the overhead canopy and a Triage entrance. The main entrance into the Medical Center was through double electronically controlled doors. Inside the doors to the right was a short corridor with roll carts containing equipment/supplies. The decontamination showers were located at the end of the corridor. The main entrance electronic doorway was used for the receipt of the contaminated injured patient.

Also inside the double electronically controlled doors, moving straight ahead, was another set of electronically controlled doors that opened up into the main ED. This interior doorway was taped off to prevent unauthorized personnel from accessing the buffer zone. Upon entering from the ambulance area through the exterior electronic doors the treatment room was the first room to the right. Once the patient was within the treatment room the doorway was taped off; establishing the buffer zone boundary area between the two electronically controlled entrances.

At 1110 hours, the Radiation Safety Officer (RSO) arrived at the treatment room to provide monitoring and technical support to Medical Center personnel. The RSO surveyed the treatment room being used for the contaminated injured patient treatment and established a radiological baseline of 40 cpm. He arrived with a survey meter (Biodex Model 14c Survey with a pancake probe attached, last calibrated on July 13, 2009) and personnel dosimetry. The head of the pancake probe was covered with a surgical glove prior to the onset of the drill as identified in the Medical Centers response procedures; however it was removed at some point prior to the treatment room survey being conducted to establish a background reading.

According to the extent-of-play agreement negotiated with the Department of Homeland Security Federal Emergency Management Office, Region V, and IEMA personal dosimetry was not issued to Medical Center staff. However, the RSO's personal dosimetry included a Direct-Reading Dosimeter and a permanent reading Landauer Luminescent Dosimeter.

At 1121 hours, a second radio call was received by the Medical Center from the Riverside Ambulance EMS stating that they had arrived on scene. Vital signs and the patient's physical condition (injury to right forearm) were transmitted to the nurse taking the call. All information received was recorded on a Riverside Emergency Department Radio Log. The log was delivered to the Buffer Zone Nurse, who in-turn briefed the awaiting treatment room staff. An ETA of five minutes was briefed.

The RSO advised the attending staff within the treatment room that nothing was to leave the room without first being surveyed for contamination.

All supplies needed to set up the treatment room and perform decontamination activities were stored on carts in the room or in the adjacent corridor. Yellow Caution tape and signs were obtained from one of the carts and used to visually establish control boundaries. Receptacles were available, placed in strategic locations, and identified for contaminated waste. Medical and decontamination supplies located within the treatment room were of sufficient quantities. Additional medical supplies and decontamination kits with cleaning supplies, wipes, and protective clothing were located in a supply cart in the receiving area just outside of the treatment room.

In preparation to treat a contaminated patient, Medical Center ED personnel assisted each other as they each donned Personnel Protective Equipment (PPE) to include a gown, two pairs of gloves, face masks, booties, and hair cover. Other available equipment included the necessary supplies for patient decontamination: soap, moist wipes, sterile water, wraps in various sizes, and plastic bags to hold contaminated items. Individual packets with protective clothing were available for emergency response personnel.

As the treatment room was readied for patient arrival, a gurney in the treatment room was covered with a sheet and a Tiger Cat (fluid retention system). A step off pad (chuck) was taped to the hallway floor in the Buffer Zone just outside the doorway entrance of the treatment room and another was taped to the floor just inside of a glass doorway leading to the ED. The glass door to the ED remained closed until the patient

was prepared to depart the treatment room.

During the drill, the Buffer Zone Nurse stood on the outside of the treatment room interior doorway to control movement of persons and supplies into and out of the room. I strip of yellow Caution tape was secured across the doorway to assist in identifying the buffer zone from the hot zone. The nurse recorded medical and radiation survey information gathered during patient treatment. However, the prescribed forms were not used as directed by the Center's response plan. Information being captured was written on plain bond paper.

At 1126 hours, the ambulance arrived at the Medical Center. The ambulance pulled into the secure area and up to the electronic double doors and the patient was unloaded from the ambulance. Patient transfer occurred inside the established vehicle corridor then moved into the treatment room. The patient was mummy wrapped in a sheet to prevent the spread of contamination. The clean Medical Center gurney was placed next to the ambulance gurney and the patient was transferred. Care was taken by Medical Center and ambulance personnel during patient transfer so as not to spread contamination. Once transferred, a quick assessment of the patient's medical condition was conducted to determine if the injuries were life threatening. The EMS verbally provided the patient's condition to the attending Medical Center staff. He included that the patient was within the contaminated area and should be considered as being contaminated. The patient's injuries were not considered life threatening.

The patient was rolled into the treatment room with the medical team accompanying the patient. The Buffer Zone Nurse staffed a station just outside of the treatment room in the clean entryway. After the patient was moved into the treatment room, the corridor was monitored to ensure that the area was clean for receiving additional patients, if needed, or clean for persons exiting the treatment room.

The RSO announced to the attending staff that nothing was to leave the treatment room without being monitored for contamination.

The attending medical staff commenced to unwrap the patient utilizing the proper technique to contain any contamination. Once unwrapped it was noted that the patient's clothing had been cut away and the shoes removed. This had been accomplished by the EMS personnel.

Upon entering the treatment room, a through physical assessment of the patient's

injuries and medical condition were conducted. Priority was given to ensuring that the patient was medically stable and the injury was treated prior to treatment for the exposure to radiation. The attending physician directed that the vital signs be taken and questioned the patient on her injury and pain level. An attending nurse also questioned the patient for her identity and what had occurred at the accident site. All vital information was recorded by the Buffer Zone Nurse.

Upon confirming that the patient was not in a life threatening situation the SRO began surveying the patient for contamination. The patient's survey information indicated that contamination (readings above the established baseline) were detected at the forehead at the hairline, left palm, right palm, right forearm and abdomen above the waistline.

The physician having established the extent of injuries and that the patient was stable directed the removal of the contaminated wrap (blanket) and the clothing that had been cut away by the EMS personnel. This action was monitored by the RSO and the backside of the patient was also surveyed. Gloves were exchanged as necessary, during this process. The removed materials were secured in a hazardous waste container within the treatment room.

Continued medical treatment was administered. The injury site was viewed and the patient questioned for the location and level of pain. There was no visible break or dislocation of the limb. There was no visible lacerations or bleeding. The area was simulated as having an abrasion and bruised. The patient complained moderate pain. The physician directed an attending nurse to administer a pain medication. The RSO surveyed the hands of the attending medical staff after the examination of the injured arm and injection. Contaminated gloves were removed and bagged. New, clean gloves were donned.

After the medical assessment was conducted, the RSO initiated actions to decontaminate the patient. The following radiation readings were encountered and recorded: Forehead at hairline 1600 cpm; right palm 3000 cpm; right injured forearm 1200 cpm; left palm 1200 cpm; and abdomen 1200 cpm. Each of the contaminated areas were washed with a soap and water solution as a means of decontamination. A moistened wash cloth was used to minimize water runoff. Each towel was disposed of in a hazardous waste container after use. One incident of cross contamination occurred while attending to the injured forearm. After the last washing, the contaminated towel was disposed of in a hazardous waste container. A clean towel was picked and the nurse began drying the forearms prior to her changing her outer gloves. The RSO had

surveyed the forearm prior to the drying and determined the arm to be under baseline (clean). The drying towel and contaminated gloves could have resulted in contamination being deposited on to the forearm.

The physician also directed that samples be taken from the patient's nose and ears to determine any possible ingestion of contaminated particles. An attending nurse complied with the request. The first sample taken from the right nostril was placed in a sealed plastic bag and taken directly to the Buffer Zone Nurse. The Buffer Zone Nurse accepted the sample into a second sealable plastic bag. The RSO was engaged in monitoring and decontamination of the patient at this time. The evaluator interviewed the Buffer Zone Nurse to determine if the sample had been monitored before being transferred out of the treatment room. The reply from the Buffer Zone Nurse was that the sample had not been surveyed. The evaluator approached the nurse that had taken the sample and advised her of the error and also notified the controller of the incident. The second nasal sample was taken and processed without incident; bagged, surveyed, double bagged, and transferred out of the room.

Throughout the Medical Center portion of the drill, monitoring of the patient was conducted in a low radiation background area. The monitoring techniques used were slow and methodical, with proper positioning of the probe for personnel monitoring. The RSO effectively decontaminated all areas.

As monitoring occurred, contamination readings found on the patient were verbally given to the Buffer Zone Nurse, who recorded the information. The prescribed forms for the decontamination recording were not utilized as directed in the Medical Center's response plan.

All supplies used during treatment were properly disposed of in a container. As a precautionary measure, the injury site was re-surveyed to ensure that it had not become contaminated. Periodically during the decontamination process, attending staff would change their outer gloves to prevent the spread of contamination.

The physician having determined that all immediate medical treatment was conducted and the decontamination was successful, directed that a final survey of the patient be conducted. Upon completion of the survey the patient could depart the secure room for further processing. The RSO had the patient stand as he performed a complete survey of the patient. A clean pathway from the gurney to the glass door entrance was established by placing clean sheets on the floor. This survey process was carried out

slowly and methodically as the medical staff and the RSO wanted to ensure that no contamination haphazardly was overlooked. The patient was determined to be clean and was guided to the doorway and seated in a wheelchair outside of the treatment room.

For demonstration purposes, the RSO performed a survey of the physician as he exited the treatment room. The physician started out by removing the outer gloves on both hands, rolling the outside of the glove to the inside during removal and then putting the gloves into a hazardous waste container. The hands were surveyed and found clean. The face mask and hair covering were removed. The physician removed his gown; rolling the outside to the inside, and put the gown in the hazardous material container.

The RSO performed a slow and methodical full body survey. This was the same technique used for all survey attempts conducted during the drill. The physician then faced to exit the treatment room. The RSO surveyed the upper portion of the doorway to determine a clean area for the physician to have a handhold while the booties were removed and shoes were surveyed. The RSO instructed the physician to remove the left bootie. After this occurred, the physician's left foot was surveyed. It was found clean and he stepped out of the treatment room onto a clean step off pad. This process was repeated with the other foot. Finally, the physician was told to take off the final pair of gloves. These were also placed into the hazardous waste container.

The RSO was interviewed regarding the clearing of the treatment room. He stated that he would follow the same procedures to clear and release the rest of the medical team from the room. All hazardous wastes would be double bagged, labeled, sealed and properly processed for disposal. Afterwards, he would survey the entire room for contamination, paying attention to the door jam and used equipment (gurney, backboard, scissors, stethoscope, etc). If contamination was found at any spot, a surface wipe would be done at the location and the area would be resurveyed. If an area could not be decontaminated, the room would be closed off until more thorough decontamination efforts could be performed. The RSO would provide direction on waste disposal that would be provided to him from State or IEMA officials.

The RSO was interviewed to determine what action would be taken if there was a need to obtain technical assistance with the handling of radioactive contamination and contaminated patient care. He advised that if IEMA and State Radiological Emergency Assistance Center (REAC) could not be reached to provide the information that the Radiological Emergency Assistance Center/Training Site (REAC/TS) located in Oak

Ridge, Tennessee, would be contacted. The contact information these agencies was identified as being available on the Radiation Patient Treatment checklist/poster located on the wall outside of the treatment room.

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

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

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

APPENDIX 1

ACRONYMS AND ABBREVIATIONS

ED	Emergency Department
HRM	Hospital Radiological Monitor
HRT	Hospital Radiological Technician
PPE	Personnel Protective Equipment
REAC	Radiological Emergency Assistance Center
RSO	Radiation Safety Officer

APPENDIX 2

DRILL EVALUATORS AND TEAM LEADERS

DATE: 2009-09-25, SITE: Braidwood Station, IL

LOCATION	EVALUATOR	AGENCY
Medical Services (MS-1) Transportation - Riverside Ambulance Service	Delwyn Kinsley	DHS/FEMA
Medical Services (MS-1) Hospital - Riverside Medical Center	*William Sulinckas	DHS/FEMA
* Team Leader		