



FEMA

November 29, 2007

Mr. Jim Caldwell
Regional Administrator
U.S. Nuclear Regulatory Commission, Region III
2443 Warrenville Road
Lisle, Illinois 60532-4352

Dear Mr. Caldwell:

Enclosed is one copy of the Dresden Nuclear Power Station Medical Services (MS-1) Drill Report. The drill was conducted in Kankakee, Illinois, on October 16, 2007. Participants included members from the Illinois Emergency Management Agency, Riverside Ambulance Service, and the Riverside Medical Center.

No Deficiencies and no Areas Requiring Corrective Action were identified during this drill. If you have any questions, please contact me at (312) 408-5575 or Sandra Bailey at (312) 408-5353.

Sincerely,

A handwritten signature in cursive script, appearing to read "William E. King".

William E. King, Chairman
Regional Assistance Committee

Enclosure

CC: Mr. Anthony McMurtry, Chief
Inspection and Communication Section
U.S. Nuclear Regulatory Commission
Mail Stop: O-6H2
Washington, DC 20555-0001

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FEMA

Final Medical Services (MS-1) Drill Report

Dresden Nuclear Power Station

Licensee: Exelon Corporation

Exercise Date: October 16, 2007

Report Date: November 29, 2007

U.S Department of Homeland Security
Federal Emergency Management Agency
Region V

536 South Clark Street
Chicago, Illinois 60605 – 1521

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I. EXECUTIVE SUMMARY

On October 16, 2007, 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 Dresden Nuclear Power Station (DNPS). 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 radiologically contaminated member of the public. The MS-1 drill was held in accordance with DHS/FEMA's policies and guidance concerning the exercise of State and local radiological emergency response plans.

DHS/FEMA wishes to acknowledge the efforts of the personnel from the State of Illinois Emergency Management Agency (IEMA), Riverside Ambulance Service, and the Riverside Medical Center who participated in the MS-1 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 Dresden Nuclear Power Station. The emergency alert sirens were sounded; the public was directed to evacuate affected areas and to report to reception centers set up in the local area. The scenario is based on an individual that is an evacuee driving to the Kankakee Community College Reception Center. While en-route to the reception center, the individual's car over heated. The individual stopped at the roadside, opened the car hood, and got his left arm sprayed with hot steam causing a second degree burn on the bottom of the left forearm. Another evacuee saw the accident and drove the individual to the reception center. Radiological monitoring and, if necessary, decontamination, of evacuees is provided for at these facilities by staff from IEMA under the Illinois Plant for Radiological Accidents (IPRA). The individual entered the reception center holding his arm and explained the accident to reception staff members; an ambulance was contacted to transport the individual to the hospital. The individual was surveyed while waiting for the ambulance and contamination was detected. The individual will be transported to Riverside Medical Center.

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 FEMA-REP 14, Radiological Emergency Preparedness Exercise Manual, was evaluated. The State and local organizations demonstrated knowledge of their organizational emergency response plans and procedures and adequately implemented them. No issues were identified as a result of this drill.

II. DRILL NARRATIVES

Medical Services (MS-1) Transportation – Riverside Ambulance Service

On Tuesday, October 16, 2007, 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, and an Illinois Emergency Management Agency (IEMA) Radiological Monitor (RM), assigned to provide services at the simulated reception center and in the ambulance, 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 Dresden Nuclear Power Station. The emergency alert sirens were sounded; the public was directed to evacuate affected areas and to report to reception centers set up in the local area. The scenario is based on an individual that was an evacuee driving to the Kankakee Community College Reception Center. While en-route to the reception center, the individual's car over heated. The individual stopped at the roadside, opened the car hood, and got his left arm sprayed with hot steam causing a second degree burn on the bottom of the left forearm. Another evacuee saw the accident and drove the individual to the reception center. Radiological monitoring and, if necessary, decontamination, of evacuees is provided for at these facilities by staff from IEMA under the Illinois Plant for Radiological Accidents (IPRA). The individual entered the reception center holding his arm and explained the accident to reception staff members; an ambulance was contacted to transport the individual to the hospital. The individual was surveyed while waiting for the ambulance and contamination was detected. The individual will be transported to Riverside Medical Center.

For the purpose of the exercise, the Kankakee Community College Reception Center (simulated) was set up at the Riverside Ambulance Center approximately 1.5 miles from the receiving hospital. Upon arrival at the reception center, at 1110 hours, the evaluator observed an IEMA RM arrive with a metal carrying case containing survey meters, personal dosimetry, and other support supplies such as disposable gloves and yellow tape, which was later used to cordon off areas of the reception center. Supplies also consisted of copies of the Decontamination Center Monitoring/Action Log Form [IL 473-0258 (Rev. 1/97) Job # 1173]. A copy of this form was used during the drill to record patient survey information.

For demonstrations purposes, the IEMA RM readied the survey equipment that would be used during the drill. Meters were checked to ensure that they contained fresh batteries. Survey meters and 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 July 13, 2007, and due for calibration on July 13, 2008, and Ludlum

2241-3 digital scalar/rate meter with pancake probe last calibrated on July 17, 2007, with the next calibration due on July 17, 2008. 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 1.1-1.8mR/hr and the Ludlum 2241-3 was 21.6-36.0 kcpm).

The IEMA RM 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 40 counts per minute were noted in the reception center. This level was established as background to be used for establishing the decontamination level. The State of Illinois has established a decontamination level of two times background.

The metal carrying case included a personal dosimetry kit. The kit included the following: a Dosimeter Corporation of America Model 622 Direct-Reading Dosimeter (DRD) with a range of 0-20 R, leak tested on May 9, 2007; a permanent reading Landauer Optically Stimulated Luminescent Dosimeter (LD) with an effective date of July 06 – June 08; a Radiation Exposure Record card with space to record user information; an instruction sheet describing use and precautions for ingesting potassium iodide (KI); and 14 doses of KI provided by iOSAT in 130 mg tablets individually sealed with an expiration date of June 2007. A printed card inside the kit advised the user that the KI was tested and the drug was found to be viable so the expiration date was extended. Through an interview, it was stated that a copy of the extension letter, which identifies the extension date as June 2008, is kept in the command vehicle located at the reception center from which the IEMA RM would be dispatched.

At 1142 hours, reception center workers placed a call to the 911 center. At 1143 hours, the ambulance crew from the Riverside Ambulance Service received a call from the 911 dispatch center deploying them to the reception center. 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. Drill records indicate that the ambulance crew contacted the Riverside Medical Center at 1144 hours, and informed the center that they were en-route to attend to a contaminated patient and they would call in later with more information.

Concurrent with the IEMA RM readying the survey instruments and taking background readings, the reception center staff kept the accident victim comfortable. While waiting for the ambulance to arrive, the victim was monitored for contamination by the IEMA RM. Monitoring of the patient was conducted in a low radiation background area. The patient was examined using a Ludlum Model 2241-3 survey instrument equipped with a pancake probe, speaker and set-able alarm. The monitoring techniques used were slow and methodical, with proper positioning of the probe for personnel monitoring. Contamination was found on the victim and documented on a Decontamination Center Monitoring/Action Log Form as follows: right palm - 3000 cpm; left palm - 2000 cpm; pants at the waist – 1000 cpm; left shoe – 1500 cpm; and background - 40 cpm. Personal information and comments containing information regarding the injury also were

recorded on the form.

At 1154 hours, personnel from the Riverside Ambulance Service arrived at the reception center. The EMT's were given a status of the patient's condition by the IEMA RM. The EMTs took caution in their approach to the victim; this ensured their safety. The EMTs took universal contamination control precautions while treating the patient. They wore paper coveralls, booties, hair protection, face and eye protection, and rubber gloves.

The EMTs examined the victim. Both the IEMA RM and EMT's agreed that due to the condition of the patient decontamination should not be attempted until the patient arrived at the hospital. The EMT's assessed the patient level of consciousness, level of pain and vital signs. The victim's left shoe was wrapped in a sheet and the victim walked to the backboard, a sheet was previously placed on the Long Back Board (LBB) on the floor. The ambulance crew stated the shoe was wrapped in a sheet to prevent the spread of contamination. The patient laid down on the LBB with assistance from the ambulance crew. He was wrapped in the sheet and secured to the LBB with three patient straps. The ambulance crew then moved the victim to the stretcher using the LBB as support. The patient was secured to the stretcher with the stretcher straps and placed into the ambulance.

At 1202 hours, the EMTs recorded the patient's contamination information provided by the IEMA RM. The EMTs prepared to transport 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. The ambulance crew requested orders from the hospital to administer pain medication. After receiving the authorization the EMT pulled the drug box out of the cabinet and simulated administering the pain medication.

At 1210 hours, the ambulance crew departed the scene. The IEMA RM rode with the ambulance to the hospital. During the entire demonstration the ambulance crew and the IEMA RM remained aware of potentially contaminated areas, and conducted contamination surveys when contamination was suspected. The ambulance personnel change gloves and place them, and all used equipment, into a bag that indicated that the contents contained contaminated items. During transport, an EMT carefully removed the patient's contaminated left shoe and sheet covering the contamination by enveloping the sheet and shoe and removing while contained within the bag. The EMT changed gloves before continuing with treatment. 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 (burn to the anterior forearm), radiological contamination readings and the location of contamination, level of consciousness, vital signs, and that the patient was cocooned. 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 three minutes.

Documentation indicated that the hospital was informed that they would be receiving a contaminated patient picked up at the Kankakee Community College Reception Center in advance of the patient's arrival

The Riverside Ambulance Service arrived at the Riverside Medical Center at 1216 hours. The Emergency Department Staff and IEMA RM 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 on the LBB. The ambulance IEMA RM provided the patient's information, which was recorded earlier on a Decontamination Center Monitoring/Action Log Form, to the Riverside Medical Center Staff and IEMA RM assigned to the Center.

After the patient transferred to hospital personnel, the EMTs, equipment, and ambulance were surveyed for contamination by the IEMA RM. The ambulance crew and IEMA RM displayed awareness for the location of potential contamination. For example, the crew was aware of the location the patient placed his 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, one EMT was 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.

A survey of the ambulance by the IEMA RM indicated contamination on the right side of the stretcher area in the ambulance. 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 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.

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

Medical Services (MS-1) Hospital –
Riverside Medical Center, Kankakee, Illinois

The State of Illinois' Medical Services (MS-1) Hospital Drill was performed out of sequence on October 16, 2007, commencing at 1120 hours, at the Riverside Medical Center (RMC) in Kankakee, Illinois. At that time, the Illinois Emergency Management Agency (IEMA) Hospital Controller simulated telephoning the RMC to notify them of a simulated event at the Dresden Nuclear Power Station. He explained that they potentially could receive injured contaminated patients at their facility.

The RMC followed their procedures and established a secure Radiological Emergency Area (REA) for receipt of a contaminated injured patient. A simulated public address system announcement was made for a Code D – Radiation – Emergency Department (ED) drill. Medical Center personnel responding for the drill included personnel from Security, Maintenance, and ED (Team Leader, buffer nurse/radiation safety officer, four nurses to attend to the patient, and a senior nurse who portrayed an ED physician, who was engaged in real world events, and ancillary personnel.) Other RMC persons observed the drill. It should be noted that all persons assisting and observing the drill, along with other Medical Center and ambulance personnel had just received Emergency Medical Services for Radiation Accidents training presented by IEMA the morning of the MS-1 Drill. About 36 persons were in the training session.

Medical Center personnel readied the REA for patient arrival. The entrance road to the REA and the REA itself provided an area that could be controlled with minimal need for security personnel and traffic barriers. Maintenance personnel placed traffic cones down the center of the driveway that ran parallel with the Emergency Room Entrance doorway. Yellow "Caution Do Not Enter" tape was strung from cone to cone down the middle of the driveway. This divided the driveway into two lanes. The far side lane of the driveway was left open for routine ED traffic, which was routed to the Emergency Entrance doorway. The inside lane was used for ambulance traffic, which carried contaminated injured patients who would be admitted through the Ambulance Entrance Only doorway. Yellow Caution tape also was strung in the inside lane, perpendicular to traffic flow. This provided a visual barrier that prevented vehicles from moving forward into the routine ED traffic lane. Later, during the drill, when the ambulance arrived to off load the contaminated patient, yellow Caution tape also was strung in back of the ambulance to cordon off the vehicle from the rear until it was surveyed before release. Both lanes of traffic were protected from the weather by a fixed overhead canopy. A large parking lane also was located in this enclosed area that could be set up as a treatment staging area. Two large storage sheds and an emergency response trailer were stored in this area. They house additional equipment and shower facilities for mass decontamination efforts.

Entrance into the Medical Center from the driveway was through double electronically controlled doors. Inside the doors to the right was a short corridor with a roll cart containing equipment. A shower room was located at the end of the corridor that could be used to decontaminate ambulatory patients. The shower room had its own door

leading to the driveway. For this drill, this area was not used.

Inside the doors to the left was a large Treatment Room that was established as the REA. The REA had a large sliding door on a far wall that could be opened up to access to the main ED. Also inside the double electronically controlled doors, moving straight ahead, was another set of electronically controlled doors that opened up into the main ED. For the drill, traffic cones strung with yellow Caution tape were placed in front of both sets of doors, on the main ED side, to secure the areas. Security personnel and the buffer nurse/radiation safety officer also controlled the areas; preventing non-essential or not approved persons from entering potentially contaminated areas. The secure corridor was used as a buffer zone.

During the drill, the buffer nurse/radiation safety officer stood on the other side of the doorway to control movement of persons and supplies into and out of the REA. In addition to collecting all medical samples (after they were surveyed by an IEMA Radiological Monitor (RM) before they were sent to a laboratory for analysis, she recorded medical and radiation survey information gathered during patient treatment. She also maintained a list of Medical Center personnel who came in contact with the patient. All information was recorded on forms contained in the Riverside HealthCare, Kankakee, Illinois, Policy and Procedure document last modified on January 3, 2007.

The REA was a large room filled with equipment and supplies used for routine emergency treatment. Medical Center personnel visually surveyed the room and removed nonessential equipment into the main ED. The ventilation system in the REA could be sealed off and a negative pressure could be maintained. This system was demonstrated for the evaluator.

As the REA was readied for patient arrival, a sticky step off pad was placed in the buffer zone just outside the doorway of the REA leading to the driveway. A Stryker gurney was left in the REA and covered with a sheet. A Tiger Cat (portable plastic self contained decontamination unit) was placed on the gurney and covered with a blanket. Supply carts were outfitted with equipment needed for wound, decontamination, and post decontamination treatment (soap, water, saline solution, gauze wipes, chucks, towels, blankets, patient gowns, stethoscope, scissors, etc.). Additional medical supplies were available in wall cabinets located in the REA. Two Tiger Cat Drums were placed in the REA. These would be used to collect contaminated water. More were available, if needed. A least three large clearly marked Hazmat bins were placed in the room for use in collecting contaminated waste. More were available, if needed. Radiation Emergency Response Incident Checklist signage was posted on the door leading to the buffer room.

A communications room was located inside the main RMC ED. The communications room contained various 2-way radio units. These radios provide coordinated communication links between the Medical Center staff and personnel staffing area fire and ambulance field based units. Personnel from the ED used one of the 2-way radios to listen to and speak with an Emergency Medical Technician (EMTs) from the Riverside Ambulance Service who participated in this drill.

At 1144 hours, the ED staff was notified by ambulance personnel that a drill was in progress, the EMTs were en-route to attend to an injured patient contaminated by radiological materials, and they would call in with patient information after they arrived on scene. If this radio was inoperable, communications with the ambulance service could be routed through another radio system.

In preparation to treat a contaminated patient, RMC ED personnel donned Personnel Protective Equipment to include plastic gown, two pairs of gloves, surgical mask, booties, and hair cover.

At 1150 hours, an IEMA Radiological Monitor (RM) dispatched (simulated) by his supervisor at the Kankakee Congregate Care Center arrived at the RMC to provide survey and verbal technical support to Medical Center personnel, and survey the Emergency Room used in patient treatment. He arrived with a metal carrying case containing survey meters, personnel dosimetry, and other support supplies such as disposable gloves. Copies of the Decontamination Center Monitoring/Action Log Form [IL 473-0258 (Rev. 1/97) Job # 1173] were available. A copy of this form was used during the drill by the ambulance IEMA RM to record patient survey information. A copy filled out with patient information was turned over to the Medical Center IEMA RM during patient transfer.

Personal dosimetry included the following: a Dosimeter Corporation of America Model 622 Direct-Reading Dosimeter with a range of 0-20 R, leak tested on May 9, 2007; a permanent reading Landauer Luminescent Dosimeter with an effective date of July 06 – June 08; a Radiation Exposure Record card with space to record user information; an instruction sheet describing use and precautions for ingesting potassium iodide (KI); and 14 doses of KI provided by iOSAT in 130 mg tablets individually sealed with an expiration date of 6/07. A printed card inside the kit advised the user that the KI was tested and the drug was found to be viable so the expiration date was extended. Through prior interview, the evaluators were informed that a copy of the extension letter, which identifies the extension date as June 2008, is kept in the command vehicle located at the reception center from which the IEMA RM would be dispatched.

The IEMA RM was familiar with how to complete the Radiation Exposure Record card with name, social security number, and current date; knew how to wear the permanent Landauer Luminescent Dosimeter, check the DRD every 15-30 minutes and record readings on the record cards. He was aware of the administrative reporting limit (3R) and turn-back value (10R). By monitoring his own DRDs and using radiation survey equipment, the IEMA RM at the Medical Center was aware of local conditions and could advise Medical Center personnel of changes in readings, if any. Only a very low level of exposure was expected at this facility. After this assignment, the IEMA RM could be reassigned to another location. Equipment would be checked out at the end of the mission.

According to the extent of play agreement negotiated with the Department of Homeland Security Federal Emergency Management Office, Region V, personal dosimetry was not issued to Riverside Medical Center staffs by IEMA.

A Bicon Micro-R meter, last calibrated on 7/13/07, and due for calibration on 7/13/08; and a Ludlum 2241-3 digital scalar/rate meter with pancake probes last calibrated on 7/17/07, with the next calibration due on 7/17/08 were available. The IEMA RM donned disposable gloves and checked out his Bicon survey equipment. In reality, this process would have occurred at the Kankakee Reception Center. The survey meter was checked to ensure that it contained fresh batteries. The survey meter and probe were secured in plastic bags to protect them from contamination. Additional bags were available in case a bag became contaminated and had to be replaced. The survey meter was turned on and allowed to warm up. Headphones were attached. Instruments passed an operational battery test and a source response check prior to use by the IEMA RM. Sources were imbedded in the sides of the carrying cases used to transport the equipment. Operability check exposure rate and count rate were recorded on labels affixed on a side of the instrument (Bicon Micro-R meter was 1.1-1.8mR/hr and the Ludlum 2241-3 was 21.6-36.0 kcpm). Additional probes that were highly sensitive were available to measure small areas for contamination.

Using a Bicon Micro-R meter, a background check was done in the REA at 1155 hours. A reading of 40 counts per minute was noted. This level was established as background to be used for future patient and emergency worker care. Decontamination levels established by the State of Illinois are two times background.

At 1207 hours, a RMC ED Nurse received a call over a 2-way radio from a Riverside Ambulance Service EMT that they were en-route to the Medical Center with a patient. The following patient information was given: exposed to radiation, burn on left arm with blistering, alert and oriented, shortness of breath with asthma, respirations 19, pulse 102, blood pressure 120/90, allergic to Demerol, partially undressed/decontaminated and cocooned and estimated time of arrival is three minutes.

After receiving the call and logging this information on a Riverside Emergency Department Log, the RMC ED nurse informed the ED senior nurse/physician about the incoming patient and that the person was contaminated. He contacted the nurses assigned to assist in the REA and briefed them on the medical and radiological conditions of the incoming patient. The RMC Security team secured the REA and ambulance entrance.

At 1216 hours, the ambulance arrived at the Riverside Medical Center. The ambulance pulled into the inside lane just past the Ambulance Only Entrance and patient transfer occurred. The patient was unloaded from the ambulance and transferred to the Medical Center gurney with the Tiger Cat. The ambulance IEMA RM, assisting with the patient at the simulated reception center and in the ambulance, provided verbal and written format [form: IL 473-0258 (Rev. 1/97) Job # 1173] information to the IEMA RM at the Medical Center. The patient's survey information indicated that contamination occurred as follows: left palm 2000 cpm, right palm 3000 cpm, pants at waist 1000 cpm and left shoe 1500 cpm. The left shoe was removed and pants and shirt cut away during transport to the Medical Center; these areas were reported as decontaminated and clean by the ambulance IEMA RM. The first priority of the ED senior nurse/physician was to do a quick, on the spot, assessment of the patient's medical condition. While the assessment was underway, the Medical Center staff received a briefing from the EMTs. The briefing

covered the information relayed on the incoming call, and reiterated that the patient was contaminated. As the patient's hands were contaminated, plastic bags were put on both hands to prevent the spread of contamination before the patient was moved into the REA.

Throughout the Medical Center portion of the drill, monitoring of the patient was conducted in a low radiation background area. The patient was examined using a Ludlum Model 2241-3 survey instrument equipped with a pancake probe, speaker and set-able alarm. The monitoring techniques used were slow and methodical, with proper positioning of the probe for personnel monitoring. As monitoring occurred, contamination readings found on the patient were verbally given to the buffer nurse/radiation safety officer, who recorded the information on a Radiation Safety Officer Attachment III-B form.

The patient was rolled into the REA with the medical team accompanying the patient. The buffer nurse/radiation safety officer staffed a station just outside of the REA in the clean entryway. Upon entering the REA, a bootie accidentally slipped off of the shoe of one nurse. The IEMA RM and nurse made sure the shoe was surveyed, found clean, and covered with a clean bootie.

At this time, the senior nurse/physician conducted a physical assessment of the patient's injuries and medical condition. Priority was given to ensuring that the patient was medically stable and the injury was treated prior to treatment for the exposure to radiation. Medical treatment was administered. The injury site was cleaned. All supplies used during treatment were properly disposed of in a yellow container marked with a hazardous waste sign. As a precautionary measure, the injury site was surveyed to ensure that it had not become contaminated. After the site was cleaned, treated, surveyed, and found clean, it was wrapped with a clean covering. During the process, medical personnel who touched the patient changed their gloves a number of times to ensure that the area inadvertently did not become contaminated.

While the injury was being treated, simulated contact was made with the State of Illinois for Radiological Technical Assistance. The senior nurse/physician was informed, by ad hoc controller inject, that due to the nature of contamination, the patient was in contact with gamma emitters – iodine and cesium. Discussing this information with the on scene IEMC RM, the senior nurse/physician ordered nasal and mouth smears taken. Also during the course of medical treatment, smears were taken from the injury site - the left forearm (anterior and interior portions) as a precautionary measure to ensure that the injury site had not become contaminated. All samples were handled in the same careful manner. The nurse taking the smear ensured that her hands were clean either by having them surveyed by the IEMA RM or by changing gloves. A smear was taken and carefully placed into a plastic zip bag held by another nurse. The bag was closed and the IEMA RM surveyed the outside of the bag. The clean bag was passed outside of the REA to the buffer nurse/radiation safety officer who double bagged the sample and marked the bag with patient information and the date the samples were taken. The bag was also marked - Caution – sample potentially radioactive - before sending it to the laboratory for analysis.

While samples were taken, the IEMA RM conducted a survey of the patient; the

following radiation readings were encountered and recorded: right palm 3000 cpm, left palm 2000 cpm, and left foot 0 cpm as the shoe was removed during transport to the RMC.

The medical team effectively decontaminated all areas. As the decontamination process was started on each contaminated area (left palm then right palm), the area was isolated to prevent the spread of contamination. A collection bucket was placed under the affected area. The protective plastic bag was removed and properly disposed in a yellow hazmat container. The area was gently washed with soap and tepid water three times; rinsed after each wash, and blotted dry. Care was taken to ensure that run off water was collected in the bucket. Wipes were carefully disposed of in a yellow hazmat container. At one point in the process, a wet wipe accidentally fell to the floor. A nurse picked up the wipe and properly disposed of it; changing her gloves afterward. The IEMA RM surveyed the floor where the wipe fell and the nurse's gloved hands. No contamination was found.

Nurses changed their gloves multiple times during the decontamination process. The IEMA RM was asked to resurvey the affected area and the nurse's hands during and after each decontamination attempt to ensure that contamination was contained. The left palm was determined to be clean with one decontamination attempt. After the right palm was decontaminated; survey results indicated that it was still contaminated at 600 cpm. Therefore, the process was conducted again. After the second decontamination attempt, the right palm was determined to be clean with a reading of less than two times background.

In addition to performing decontamination measures, medical personnel also readied the patient for transfer into the Medical Center. This process was carried out slowly and methodically as the medical staff and the IEMA RM wanted to ensure that no contamination haphazardly was overlooked. A nurse removed the patient's right shoe. The shoe was carefully bagged and the nurse was mindful to change gloves multiple times - after touching the patient, bagging the shoe, and then returning to help the patient. The IEMA RM surveyed the right foot and it was deemed clean. Periodically during the decontamination process, individual nurses would request that the IEMA RM survey their gloved hands to ensure that they were not spreading contamination.

The patient was rolled onto a clean sheet. The potentially contaminated sheet was rolled, outside to the inside, before it was put into the yellow hazmat waste receptacle. The senior nurse/physician asked the IEMA RM to survey the patient's back as he was moved onto the clean sheet to ensure that no contamination remained. During this process, nurses changed their gloves and had their hands surveyed. The backboard was removed from under the patient and placed against a wall in the REA for later survey. The senior nurse/physician verified that the laboratory results from the swabs taken were processed (simulated) with a report of no contamination present. The patient was transferred to a clean gurney, the IEMA RM conducted a final survey of the patient, and the patient was transferred out of the REA for continued treatment in the Medical Center.

For demonstration purposes, the IEMA RM performed a survey of one ED nurse as he

exited the REA. The nurse 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 yellow hazmat waste container. The inside gloves/hands were surveyed and found clean.

The face mask was removed and accidentally fell on the floor. A nurse, who had not started the REA exit process, picked up the mask and placed it in the yellow hazmat container. The floor was surveyed quickly with no contamination found. Next, the nurse removed his gown; rolling the outside to the inside, and put the gown in the yellow hazmat container.

The IEMA RM performed a slow and methodical full body survey with the probe held about one-half to one inch away from the survey area. This was the same technique used for all survey attempts conducted during the drill. The probe was moved along the right shoulder, down the outside of the arm, around the hand, back up the inside of the arm, and then down the right side of the torso and along the right leg to the foot. Continuing on, the probe was moved along the inside contour of the legs, and then followed the left body contour from the foot to the head, and around the head to the starting point on the right shoulder. The head and body, front and back, were surveyed. All surveyed areas were determined to be clean. The IEMA RM instructed the nurse to remove the left bootie and dispose of it in the yellow hazmat container. After this occurred, the nurse's left foot was surveyed. It was found clean and the nurse stepped back out of the REA onto a clean step off pad. This process was repeated with the other foot. Finally, the nurse was told to take off the final pair of gloves and put them in the yellow hazmat container.

The IEMA RM stated that he would follow the same procedures to clear and release the rest of the medical team from the REA. Afterwards, he would survey the REA for contamination, paying attention to the door jam and used equipment (gurney, backboard, scissors, stethoscope, etc). A sweep of the floor, following a grid patten, would clear the REA. 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 REA would be closed off until more thorough decontamination efforts could be done. Radioactive waste would be double bagged and sealed. Bags would be labeled with information identifying the contents of the bag and level of contamination, if known. The IEMA RM would provide advice on waste disposal that would come down to him from other IEMA officials.

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

III. EXTENT OF PLAY AGREEMENT

EXTENT OF PLAY AGREEMENT FOR THE MEDICAL SERVICES (MS-1) DRILL October 16, 2007

Location: Riverside Medical Center Transportation: Riverside Ambulance Service
650 North Wall Street
Kankakee, IL 60901

Participants: Players - Riverside Ambulance Service and Riverside Medical Center
Victim - Volunteer
Controllers - IEMA
Evaluators - DHS/FEMA RV

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.

The Riverside Ambulance Service will use 2-way radios to communicate with Riverside Medical Center. 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.

Riverside Medical Center 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.

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.

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.

Riverside Ambulance Service will demonstrate the capability to transport contaminated, injured individuals to Riverside Medical Center in Kankakee. The ambulance crew will pick up a contaminated injured patient near the grounds of Riverside Medical Center (simulating pick-up of a patient from Kankakee Community College, a designated Reception Center). The ambulance crew will be met by IEMA staff that will perform initial radiation monitoring, and will provide information regarding contamination levels on the patient. Riverside Ambulance Service will utilize universal precautions and good housekeeping practices to minimize the spread of contamination, and will focus on treating the patient's medical condition.

Riverside Ambulance Service will call in the information regarding the patient to Riverside Medical Center in Kankakee so they can prepare for receipt of a contaminated patient. IEMA personnel will accompany the patient to the hospital along with the ambulance, bringing instrumentation to provide radiation readings and guidance to the hospital.

Riverside Medical Center 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. 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 this 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.

For purposes of this exercise, another IEMA staff member will be dispatched to Riverside Medical Center with radiation detection and measurement equipment in advance of the ambulance arriving. The purpose of having two separate individuals for this exercise is to facilitate monitoring the ambulance and ambulance personnel so they are not kept out of

service for an extended period of time.

Riverside Medical Center also has a Nuclear Medicine Department, and Nuclear Medicine personnel maybe available to assist with radiation surveys and monitoring.

The drill will conclude with the hospital representative and IEMA personnel 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.