



**FEMA**

January 15, 2008

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 Quad Cities Nuclear Power Station Medical Services (MS-1) Drill Report. The drill was conducted in Morrison, Illinois, on November 30, 2007. Participants included members from the Illinois Emergency Management Agency, Morrison Community Hospital Ambulance Service, and the Morrison Community Hospital.

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 Delwyn Kinsley at (312) 408-5558.

Sincerely,

A handwritten signature in black ink that reads "William E. King".

William E. King, Chairman  
Regional Assistance Committee

Enclosure

CC: Mr. Anthony McMurtray, 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**

### **Quad Cities Nuclear Power Station**

Licensee: Exelon Corporation

Exercise Date: November 30, 2007

Report Date: January 15, 2008

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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 November 30, 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 Quad Cities Nuclear Power Station (QCNPS). 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), Morrison Community Hospital Ambulance Service, and the Morrison Community Hospital who participated in the MS-1 drill.

The scenario for the MS-1 Drill was developed by personnel from the State of Illinois. The QCNPS has declared a general emergency. The emergency alert sirens had been sounded; the public was directed to evacuate the affected areas and to report to the reception center. The scenario is based on a member of the public that had celebrated his birthday a little too much the night before. After a late night of drinking and celebrating his birthday at home with friends, the birthday boy finally passes out and his friends leave. He does not hear the alert sirens that had been going off for several hours. When he finally wakes up, he tunes his T.V. into the local news channel. The first thing he hears is that a radioactive release has occurred from the QCNPS and that members of the public living in his area are to report to the reception center located at Morrison High School, Morrison, Illinois. The individual still feels a little under the influence of alcohol, but gets into his car and drives to the Morrison Reception Center. As he pulls into the Reception Center he drives into a ditch. His old model car does not have air bags and he bangs his head against the steering wheel causing a 1" laceration on his forehead. When reception center personnel assist him they recognize that he is in the need of medical assistance and call for an ambulance to transport him to Morrison Community Hospital. When the staff questions him, they discover he evacuated from a potentially radioactive area and may be contaminated. While waiting for the ambulance the IEMA Radiological Monitor (RM) surveys the individual and discovers that he is radiologically contaminated. When EMS arrives, the patient is bleeding from a 1 inch laceration on his forehead and is feeling a little queasy.

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 – Morrison Community Hospital Ambulance Service

On Friday, November 30, 2007, a Medical Services (MS-1) Drill was conducted at the Morrison Community Hospital, 303 North Jackson Street, Morrison, Illinois. In accordance with the extent of play agreement, the ambulance and crew from the Morrison Community Hospital Ambulance Service, Morrison, 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 Quad Cities Nuclear Power Station (QCNPS) had declared a general emergency. The emergency alert sirens had been sounded; the public was directed to evacuate the affected areas and to report to the reception center. The scenario is based on a member of the public that had celebrated his birthday a little too much the night before. After a late night of drinking and celebrating his birthday at home with friends, the birthday boy finally passes out and his friends leave. He does not hear the alert sirens that had been going off for several hours. When he finally wakes up, he tunes his T.V. into the local news channel. The first thing he hears is that a radioactive release has occurred from the QCNPS and that members of the public living in his area are to report to the reception center located at Morrison High School, Morrison, Illinois. The individual still feels a little under the influence of alcohol, but gets into his car and drives to the Morrison Reception Center. As he pulls into the Reception Center he drives into a ditch. His old model car does not have air bags and he bangs his head against the steering wheel causing a 1" laceration on his forehead. When reception center personnel assist him they recognize that he is in the need of medical assistance and call for an ambulance to transport him to Morrison Community Hospital (MCH). When the staff questions him they discover he evacuated from a potentially radioactive area and may be contaminated. While waiting for the ambulance the IEMA staff surveys the individual and discovers that he is radiologically contaminated. When EMS arrives, the patient is bleeding from a 1 inch laceration on his forehead and is feeling a little queasy.

For the purpose of the exercise, the Morrison High School Reception Center (simulated) was set up at the MCH in the bay outside the hospital. The IEMA RM arrived 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 operationally checked 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: Bicon 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. The operability check, exposure rate and count rate were recorded on a label 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 k cpm).

The IEMA RM was questioned about his knowledge to manage radiological exposure for emergency workers. 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 Direct-Reading Dosimeter (DRD) every 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 Reception Center was aware of local conditions and could advise MCH personnel of changes in readings, if any. Only a very low level of exposure was expected at this facility and in the ambulance. 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 Agency Office, Region V, personal dosimetry was not issued to MCH personnel by IEMA.

The IEMA RM took background readings in the area of the reception center that would be used for patient transfer and treatment. Using a Bicon Micro-R meter, readings of 48 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.

An additional 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 1032 hours, reception center workers placed a call to the 911 center. At 1035 hours, the ambulance crew from the Morrison Community Hospital 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. The drill records indicate that the ambulance crew contacted the Morrison Community Hospital at 1045 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 operationally checked 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: left forearm - 3000 cpm; left palm - 2000 cpm; on the front of shirt - 2400 cpm; left cheek - 2000 cpm; and background - 48 cpm. Personal information and comments containing information regarding the injury also were recorded on the form.

At 1043 hours, personnel from the Morrison Community Hospital 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's level of consciousness, level of pain and vital signs and removed the patient's clothing (simulated by cutting off a Tyvek suit). The patient was immobilized using a KED and was placed onto the Long Back Board (LBB) which was prepared using two sheets for contamination control. The ambulance crew stated this was a load and go situation. The patient was wrapped with the sheets and strapped to the LBB. 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 1051 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. The patient's medical treatment received the highest priority. The ambulance crew requested orders from the hospital to administer pain medication. After receiving the authorization, the EMT simulated pulling the drug box out of the cabinet and simulated administering the pain medication.

At 1055 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. One of the ambulance personnel changed gloves and placed them, and all used equipment, into a bag that indicated that the contents contained contaminated items before determining this was a load and go patient. The patient's contaminated shirt and pants were cut down the center and rolled inside to the outside to contain the contamination.

The EMT Paramedic communicated the patient's condition with Morrison Community Hospital Emergency Department staff by radio. This item was simulated due to a real life event; the radio transmission was conducted by telephone. The EMT Paramedic reported the ambulance was in route with the patient's chief complaint (a head wound and altered level of consciousness), 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 medical treatment in progress. The EMTs gave an estimated time of arrival of two minutes.

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

The Morrison Community Hospital Ambulance Service arrived at the Morrison Community Hospital at 1104 hours. The Emergency Department Staff and a second IEMA RM met the ambulance personnel in the receiving area. The ambulance was directed into an area which would be used to monitor the ambulance crew and equipment. This area also prevented unauthorized entry and was a controlled 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 Morrison Community Hospital Staff and IEMA RM assigned to the Center.

During the MS-1 Drill the ambulance was dispatched to a real world event and patient transportation simulation was cancelled. The patient was removed from the ambulance and placed onto the ground to simulate the final portion of the transport to the hospital. The ambulance left the scene with the standby staff. The patient was transferred to the hospital personnel and given the patient report. The EMTs, equipment, and ambulance were surveyed for contamination by the IEMA RM. Portions which could not be demonstrated were discussed at length to determine the knowledge and effectiveness of the IEMA RM and the Morrison Community Hospital Ambulance Service. The ambulance crew and IEMA RM displayed awareness for the potential contamination.

The IEMA RM demonstrated the process of surveying the Morrison Community Hospital 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 hospital's receiving area and ambulance 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 were cleared and had readings of background.

The IEMA RM took a swab of the transfer area and surveyed the swab to determine the transfer area to be clean and free of radiological contamination. The IEMA RM then established a hot and cold area, ensuring himself free of contamination and entered the cold side. 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 IEMA laboratory. The monitoring was performed slow and methodically by the IEMA RM.

The crew was aware of the location that the patient placed his hand during transport and treatment. The IEMA RM stated he would have surveyed all locations touched by the EMT during treatment and monitoring of the patient during transport to the hospital.

Through interview, a simulated survey of the ambulance by the IEMA RM indicated contamination survey measure and decontamination techniques would have been adequately performed. The proper collection of samples and cleaning of contamination was discussed at length. 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 the locations that are designated as monitoring and decontamination facilities in the local area. If required, 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. The EMT's were familiar with the hazards of radiation contamination and the precautions to take to avoid the spread of contamination. Through interview, the ambulance crew EMT's demonstrated that they were aware of the primary route to the Morrison Community Hospital and other hospitals in the area that could treat radiological exposed patients. The EMTs were able to identify and describe alternative routes to the Medical Center in the event that the primary route was blocked.

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 –**  
**Morrison Community Hospital, Morrison, Illinois**

The State of Illinois Medical Services (MS-1) Hospital Drill was performed out of sequence on November 30, 2007, commencing at 1032 hours, at the Morrison Community Hospital (MCH) in Morrison, Illinois. At that time, the MCH received a telephone call from the MCH Ambulance Service that they were responding to a request for services to pick up a contaminated injured patient (simulated) from the reception center established at the Morrison High School (simulated) for evacuees seeking shelter as the result of an incident (simulated) at the Quad Cities Nuclear Station. The MCH was advised to ready their facility for the receipt of the contaminated injured patient.

An Illinois Emergency Management Agency (IEMA) Radiological Monitor (RM) dispatched (simulated) by his supervisor at the Morrison High School Reception Center arrived at the MCH to provide survey and verbal technical support to hospital personnel, and survey the areas used in patient treatment.

The IEMA RM arrived with a metal carrying case containing survey meters, personnel dosimetry, and other support supplies such as disposable gloves, booties, baggies, garbage bags, scissors, forceps, smears, sample envelopes, masking tape, yellow caution tape, contaminated item labels, pens, pad of paper, and forms. 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 Hospital IEMA RM during patient transfer. Monitoring equipment, personal dosimetry, potassium iodide supplies, and accompanying instructions and record keeping forms were operationally checked by the IEMA RM before the MS-1 drill began.

Personal dosimetry included a Dosimeter Corporation of America Model 622 Direct-Reading Dosimeter with a range of 0-20 R, leak tested on May 9, 2007, and a permanent reading Landauer Optically Stimulated Luminescent Dosimeter (LD) with an effective date of July 06 – June 08. Other equipment included: a pencil grip dosimeter charger, 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.

A Bicon Micro-R meter, last calibrated on 7/17/07, and due for calibration on 7/17/08; and a Ludlum 2241-3 digital scalar/rate meter with pancake probe 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 Morrison High School 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 (Bicron 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.

In addition, the IEMA RM was questioned about his knowledge to manage radiological exposure for emergency workers. 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 Landauer Optically Stimulated Luminescent Dosimeter (LD), check the Direct-Reading Dosimeter (DRD) every 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 hospital was aware of local conditions and could advise MCH 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 Agency Office, Region V, personal dosimetry was not issued to MCH personnel by IEMA.

Using a Bicron Micro-R meter, the IEMA RM conducted a background check in areas that would be used for patient treatment. A reading of 60 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. Throughout the drill, the IEMA RM played an active part in radiation monitoring activities and in advising the hospital staff on radiation safety protocols.

The MCH Ambulance Service maintains a communications center collocated in the hospital, near the Emergency Department (ED). At 1032 hours, when the ambulance service Emergency Medical Technician (EMT) received a call to respond to a radiation incident and pick up a patient contaminated by radioactive materials (simulated), this information was relayed to the ED personnel.

Through interview, it was noted that concurrent with the incoming call a MCH telephone tree would be activated with an announcement that a Code 100 was in progress. This would inform MCH personnel that a radiation decontamination incident was in progress. Hospital personnel would be requested to report to the ED. Personnel assigned to respond include: the Emergency Medical Services (EMS) Supervisor, ED personnel (physician and nurses), MCH Chief Executive Officer (CEO), and maintenance staff assigned for security. In addition, the Morrison Police Department and Whiteside County could be contacted to help provide offsite security, if needed. The MCH is a small 25 inpatient facility with a three bed Emergency Room and no surgical unit.

The MCH followed their procedures and established a secure Radiation Emergency Treatment Area (RETA) for receipt of a contaminated injured patient. Hospital personnel responding for the drill included personnel from Maintenance, the EMS Supervisor, MCH CEO, ED personnel (buffer nurse, two nurses to attend to the patient, and a physician who arrived at the end of the drill as he was attending to a real world patient brought into the ED, and ancillary staff.) It should be noted that persons assisting with the drill, along with other hospital and ambulance personnel, received Emergency Medical Services for Radiation Accidents training presented by the IEMA the Monday prior to the MS-1 Drill. About eight persons attended the training session.

The entrance road to the RETA and the RETA itself provided an area that could be controlled with minimal need for security personnel and traffic barriers. The entrance road ran along the back side of the hospital and could be secured at each end of the road at the corners of the hospital building and in front of the doors leading to the RETA. An enclosed maintenance garage was attached to the rear of the hospital. Patients could be off loaded in front of the back door leading into the hospital. Or, if the weather was inclement, vehicles could be pulled into the garage. During the drill, the patient was off loaded in the garage, transferred to a hospital gurney, and wheeled into the hospital through the back door to the building.

Just inside the double electronic sliding glass backdoors of the hospital, to the left, was the communications center for the MCH Ambulance Service. To the right, double wide swinging doors lead into the ED. The ED consisted of a short hallway that had three doorways, all leading into a large room. The large room could be partitioned off, using sliding cloth curtains, into three separate Emergency Room treatment areas. The first ER treatment area was designed as the RETA. During the drill, yellow caution tape was strung across the corridor leading into the main part of the hospital as a visual barrier and to control movement into the hospital.

The communications center contained various 2-way radio units including a dedicated Emergency Medical Services call in line. The radio systems provide coordinated communication links between the hospital staff and personnel staffing ambulance field based units. Personnel from the ED could use one of the 2-way radios to listen to and speak with an EMT from the MCH Ambulance Service who was in the field. It should be noted, that as this is a small community hospital, ambulance personnel are also part of the hospital staff. They are considered to be ED personnel and provide treatment in the ERs or security to the ED area.

The RETA was a small room that contained space for a gurney, wall cabinets, and medical equipment. Patients would be brought into the RETA on a clean gurney, treated and decontaminated, and then moved out into other areas of the hospital as circumstances required. The hallway just outside of the RETA was used as a buffer zone. During the drill, tape was laid on the floor under the sliding cloth curtain to provide a visual barriers to secure the area. Security personnel and the buffer zone nurse controlled the ED area, corridor leading into the hospital, and the back door of the hospital; thereby, preventing non-essential or not approved persons from entering potentially contaminated areas.

During the drill, the buffer zone nurse stood on the other side of the doorway leading into the

RETA to control movement of persons and supplies into and out of the RETA. In addition to collecting all medical samples (after they were surveyed by an IEMA RM) before they were sent to a laboratory for analysis, the buffer zone nurse recorded medical and radiation survey information gathered during patient treatment. All information was recorded on the Morrison Community Hospital Emergency Department Nursing Record form. A draft copy of the hospital's Nuclear / Radiation Decontamination Plan revised: April 19, 2007, was provided to the evaluator for review.

The RETA was readied for patient arrival. The RETA was a small room filled with equipment and supplies used for routine emergency treatment. Hospital personnel visually surveyed the room and removed nonessential equipment into the main ED. Excess wall equipment or standing medical equipment (i.e.: heart monitor) that could not be removed was covered with sheets or encased in plastic. A sliding cloth privacy curtain was drawn to separate ER treatment rooms one and two. Tape was placed on the floor below the edge of the curtain to provide a visual barrier between treatment rooms one and two. A Radiation Emergency Response sign was posted on the wall just outside of the RETA. The sign also served and was used by hospital and IEMA personnel as a check off sheet to monitor actions taken during the drill. Action items included: notification, REA preparation, patient arrival, patient care and assessment, radiological assessment, sample collection, patient decontamination, patient exit, staff exit, and REA returned to services.

The RETA was 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 the ED, if needed. Red biohazard waste receptacles were placed in the RETA. These would be used to collect items.

In preparation to treat a contaminated patient, RETA personnel each donned Personnel Protective Equipment (PPE) to include a disposable gown, two pairs of gloves, face mask, booties, and hair cover. The IEMA RM was available and provided guidance to hospital personnel on how to secure their PPEs to maintain the highest level of contamination control possible.

At 1104 hours, ED personnel were called into the garage to care for a contaminated person that was being off load from the MCH ambulance. Two nurses, accompanied by the IEMA RM, wheeled a Stryker gurney from the ED into the garage and met with the ambulance crew. The patient had been mummy wrapped to control the spread of contamination. The patient was transferred to the hospital gurney and wheeled into the hospital and into the RETA.

While moving from one location to another, patient information (verbal and written) was shared between the ambulance crew, ED nurses, and the IEMA RMs (ambulance RM and hospital RM). This included the fact that the patient was contaminated on his left cheek (2000 cpm) and left forearm (3000 cpm). Contamination was found on the patient's shirt and the shirt had been removed. There could be residual contamination on the chest area. Shared information also included details on the patient's accident, his medical condition (pulse/respirations/blood pressure) and current medications and allergies. The medical team was able to talk with the patient and assess that the patient was medically stable, conscious, alert, and had a small

laceration on the forehead.

The first priority of the RETA team was to do a quick, on the spot, assessment of the patient's 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. While the assessment was under way, the buffer nurse recorded the information on a hospital form.

As the patient was wheeled into the RETA, the floor pathway was surveyed by an IEMA RM to ensure that no residual contamination was left on the floor of the hospital. When the patient and medical team entered the RETA, the buffer zone nurse stayed outside of the RETA and secured the doorway with yellow caution tape. The buffer zone nurse stayed on the clean side of the doorway and was able to hear and record medical and contamination information on a hospital form.

As soon as the patient arrived in the RETA, the hospital IEMA RM surveyed the wheels of the gurney and RETA floor to confirm that no cross contamination had occurred to the treatment room. He reported that all readings were at the established 100 cpm background levels. This allowed the nursing staff time to take smears from the left and right nasal cavities. It was discussed that smears also could be taken from the injury site - as a precautionary measure to ensure that the injury site had not become contaminated.

The nurse taking the smear ensured that her hands were clean either by having them surveyed by the IEMA RM or by changing her gloves. A smear was taken and carefully placed into a plastic zip bag. The bag was closed and the IEMA RM surveyed the outside of the bag and determined that no external contamination existed. The bag was passed across the buffer line to the buffer nurse who put the smear into another zip bag and closed the bag. The bag was labeled with the patient's information. The bag indicated that it contained a hazardous sample and would be sent to a qualified laboratory for analysis. All samples obtained were handled in the same careful manner.

The IEMA RM monitored the patient's face and found elevated counts on the left cheek (2000 cpm). Masking tape and saline solution were available for decontamination purposes. The simple decontamination technique of dabbing the area using these supplies was performed on the left cheek which brought the contamination level down to 500 cpm. The area was further decontaminated using this decontamination technique. This time these efforts reduced the reading to below twice background. It was reported that the left cheek was successfully decontaminated.

The nursing staff carefully unwrapped the patient. They took care to roll the outside of the coverings to the inside so as to contain any external contamination. After the mummy wrappings were removed, the IEMA RM performed a slow methodical survey of the patient including the patient's back. Contamination was noted on the patient's left forearm (3000 cpm). This area was decontaminated two times with soap and water before it was determined to be clean. Survey results indicated that all other areas on the patient were free of contamination. As the patient was considered clean and medically stable, he could be released from the RETA and the hospital.

Throughout the hospital 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, who recorded the information on a hospital form. The medical team and IEMA RM were aware that contamination could be spread from the patient to them and the hospital. They were diligent about changing their gloves frequently and having the IEMA RM monitor their hands and equipment that was brought into contact with the patient. All supplies used during medical treatment and decontamination efforts in addition to contaminated clothing were properly disposed of in a container marked with a hazardous waste sign.

For demonstration purposes, the IEMA RM performed a survey of a nurse as she exited the RETA. The buffer zone nurse put a step-off pad on the clean side of the RETA. A nurse stepped up to the buffer zone line and, while inside the RETA, started out by removing her face mask, hair covering, and gown, carefully rolling the inside of the gown to the outside. She put all articles in the waste 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 nurse's gloves were surveyed and found clean. The IEMA RM surveyed the doorway and found it to be clean. The nurse held on to the doorway frame for stability and removed a bootie after which the IEMA RM surveyed her foot and found it clean. The nurse was allowed to step over the buffer line on to the clean step-off pad with her clean foot. The nurse removed her other bootie and the same procedure was followed by the IEMA RM and nurse. The nurse carefully removed her gloves, rolling the outside of a glove to the inside during removal, and then putting the gloves into the hazmat waste container. When the gloves were removed, the IEMA RM surveyed the nurse's hands and found them to be clean. As the nurse was determined to be free from contamination, she was released from the RETA. The IEMA RM stated that he would follow the same procedures to clear and release the rest of the medical team from the RETA.

The IEMA RM stated that after medical personnel were cleared, he would survey the RETA for contamination, paying attention to the door jam and used equipment (gurney, backboard, scissors, stethoscope, etc). A sweep of the floor, following a grid pattern, would clear the RETA. 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 RETA would be closed off until more thorough decontamination efforts could be completed. 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 be directed 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.



**EXTENT OF PLAY AGREEMENT  
FOR THE  
MEDICAL SERVICES EXERCISE  
November 30, 2007**

**Location:** Morrison Community Hospital  
303 North Jackson Street  
Morrison, Illinois 61270

**Transportation Provider:** Morrison Community  
Hospital Ambulance

**Participants:**

Victim (volunteer)

Lead Controller: Larry Gerovac (IEMA)

IEMA ER Monitor: Greg Wos

IEMA Ambulance Monitor: Doug Cole

IEMA Hospital Controller: Ken Evans

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.

The Morrison Community Hospital Ambulance Service 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 during this exercise. 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.

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.

### **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.

Morrison Community Hospital Ambulance Service will demonstrate the capability to transport contaminated, injured individuals to Morrison Community Hospital in Morrison, Illinois. The ambulance crew will pick up a contaminated injured patient near the grounds of Morrison Community Hospital (simulating pick-up of a patient from the Morrison High School Reception Center. The ambulance crew will be met by IEMA staff that will provide information regarding contamination levels on the patient. Morrison Community Hospital 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.

Morrison Community Hospital Ambulance Service will call in the information regarding the patient to Morrison Community Hospital in Morrison 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.

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. 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, another IEMA staff member will be dispatched to Morrison Community Hospital 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.

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.