



South Texas Project

# After Action Report/ Improvement Plan

Drill Date - March 11, 2010

Radiological Emergency Preparedness (REP) Program



**FEMA**

*Published April 05, 2010*

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## EXECUTIVE SUMMARY

On March 11, 2010, an out-of-sequence medical drill was conducted for the South Texas Project (STP) located near Wadsworth, Matagorda County, Texas. Personnel from the U.S. Department of Homeland Security/Federal Emergency Management Agency (DHS/FEMA), Region VI, evaluated the drill. The purpose was to assess the level of preparedness of state and local responders to react to a simulated radiological emergency at STP. The previous medical drill at this site was conducted February 20, 2008. Personnel from Matagorda County Emergency Medical Services, Matagorda County Hospital District and Palacios Community Medical Center, the Department of State Health Services, and STP participated in the drill.

Personnel from the Texas Department of State Health Services, South Texas Project, Matagorda County Emergency Medical Services, and Palacios Community Medical Center participated in the drill. Evaluation Areas demonstrated included: Emergency Operations Management, Protective Action Implementation, and Support Operations/Facilities. Cooperation and teamwork of all the participants was evident during these drills, and DHS/FEMA wishes to acknowledge these efforts.

This report contains the final written evaluation of this out-of-sequence drill. The participants demonstrated knowledge of their emergency response plans and procedures and adequately implemented them. There were no Deficiencies, one Area Requiring Corrective Actions (ARCA), and no Plan Issues identified during these drills.

## **SECTION 1: EXERCISE OVERVIEW**

### **1.1 Exercise Details**

**Exercise Name**

South Texas Project

**Type of Exercise**

Drill

**Exercise Date**

March 11, 2010

**Program**

Department of Homeland Security/FEMA Radiological Emergency Preparedness Program

**Scenario Type**

Radiological Emergency

### **1.2 Exercise Planning Team Leadership**

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## 1.3 Participating Organizations

Agencies and organizations of the following jurisdictions participated in the South Texas Project drill:

State Jurisdictions

Texas Department of State Health Services

Risk Jurisdictions

Palacios Community Medical Center

Matagorda County Emergency Medical Services

Private Organizations

South Texas Project

## **SECTION 2: EXERCISE DESIGN SUMMARY**

### **2.1 Exercise Purpose and Design**

The DHS/FEMA Region VI Office evaluated the drill on March 11, 2010 to assess the capabilities of local emergency preparedness organizations in implementing their Radiological Emergency Response Plans and procedures to protect the public health and safety during a radiological emergency involving the South Texas Project (STP). The purpose of this report is to present the results and findings on the performance of the offsite response organizations during a simulated radiological emergency.

### **2.2 Exercise Objectives, Capabilities and Activities**

Exercise objectives and identified Capabilities/REP Criteria selected to be exercised are discussed in the Exercise Plan (EXPLAN), Appendix E.

### **2.3 Scenario Summary**

The drill scenario was developed to evaluate the response of drill participants to an incident at the South Texas Project requiring the transportation, treatment and decontamination of a radiologically contaminated injured individual. The drill scenario provided for the evaluation of the Matagorda County Emergency Medical Services and Palacios Community Medical Center staff .



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## **SECTION 3: ANALYSIS OF CAPABILITIES**

### **3.1 Drill Evaluation and Results**

Contained in this section are the results and findings of the evaluation of all jurisdictions and functional entities that participated in the March 11, 2010 drill to test the offsite emergency response capabilities of state and local governments in the 10-mile emergency planning zone (EPZ) surrounding the South Texas Project (STP).

Each jurisdiction and functional entity was evaluated on its demonstration of criteria contained in the exercise evaluation areas as outlined in the Federal Register, Vol. 67, No. 80, "FEMA-Radiological Emergency Preparedness: Evaluation Methodology" (April 25, 2002). Detailed information on the exercise evaluation area criteria and the extent of play agreements used in these drills is included as an appendix to this report.

### **3.2 Summary Results of Drill Evaluation**

The matrix presented in Table 3.1, on the following page, presents the status of all exercise evaluation area criteria that were scheduled for demonstration during the drill by all participating jurisdictions and functional entities. Exercise criteria are listed by number and the demonstration status is indicated by the use of the following letters:

M - Met (No Deficiency or Areas Requiring Corrective Actions [ARCAs] assessed and no unresolved ARCAs from prior exercises)

D - Deficiency assessed

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

N - Not Demonstrated

P - Plan Issue

Table 3.1 - Summary of Drill Evaluation

| <p style="text-align: center;">DATE: 2010-03-11<br/>SITE: South Texas Project, TX<br/><br/>M: Met, A: ARCA, D: Deficiency, P: Plan Issue, N: Not Demonstrated</p> |     |                      |                  |
|---|-----|----------------------|------------------|
|   |     | Matagorda County EMS | Palacios Medical |
| Emergency Operations Management   |     |                      |                  |
| Mobilization  | 1a1 |                      |                  |
| Facilities  | 1b1 |                      |                  |
| Direction and Control   | 1c1 |                      |                  |
| Communications Equipment  | 1d1 |                      |                  |
| Equip & Supplies to support operations  | 1e1 | M                    | M                |
| Protective Action Decision Making   |     |                      |                  |
| Emergency Worker Exposure Control   | 2a1 |                      |                  |
| Radiological Assessment and PARs  | 2b1 |                      |                  |
| Decisions for the Plume Phase -PADs   | 2b2 |                      |                  |
| PADs for protection of special populations  | 2c1 |                      |                  |
| Rad Assessment and Decision making for the Ingestion Exposure Pathway   | 2d1 |                      |                  |
| Rad Assessment and Decision making concerning Relocation, Reentry, and Return   | 2e1 |                      |                  |
| Protective Action Implementation  |     |                      |                  |
| Implementation of emergency worker exposure control   | 3a1 | M                    | M                |
| Implementation of KI decision   | 3b1 |                      |                  |
| Implementation of protective actions for special populations - EOCs   | 3c1 |                      |                  |
| Implementation of protective actions for Schools  | 3c2 |                      |                  |
| Implementation of traffic and access control  | 3d1 |                      |                  |
| Impediments to evacuation are identified and resolved   | 3d2 |                      |                  |
| Implementation of ingestion pathway decisions - availability/use of info  | 3e1 |                      |                  |
| Materials for Ingestion Pathway PADs are available  | 3e2 |                      |                  |
| Implementation of relocation, re-entry, and return decisions.   | 3f1 |                      |                  |
| Field Measurement and Analysis  |     |                      |                  |
| Adequate Equipment for Plume Phase Field Measurements   | 4a1 |                      |                  |
| Field Teams obtain sufficient information   | 4a2 |                      |                  |
| Field Teams Manage Sample Collection Appropriately  | 4a3 |                      |                  |
| Post plume phase field measurements and sampling  | 4b1 |                      |                  |
| Laboratory operations   | 4c1 |                      |                  |
| Emergency Notification and Public Info  |     |                      |                  |
| Activation of the prompt alert and notification system  | 5a1 |                      |                  |
| Activation of the prompt alert and notification system - Fast Breaker   | 5a2 |                      |                  |
| Activation of the prompt alert and notification system - Exception areas  | 5a3 |                      |                  |
| Emergency information and instructions for the public and the media   | 5b1 |                      |                  |
| Support Operations/Facilities   |     |                      |                  |
| Mon / decon of evacuees and emergency workers, and registration of evacuees   | 6a1 |                      |                  |
| Mon / decon of emergency worker equipment   | 6b1 |                      |                  |
| Temporary care of evacuees  | 6c1 |                      |                  |
| Transportation and treatment of contaminated injured individuals  | 6d1 | M                    | A                |

## 3.3 Criteria Evaluation Summaries

### 3.3.1 Private Organizations

#### 3.3.1.1 Matagorda County EMS

##### **Criterion 1.e.1:**

Matagorda County Emergency Medical Services (MCEMS) located at 1300 7th St., Bay City, Texas had sufficient equipment and supplies to respond to and transport a contaminated injured patient from the South Texas Project (STP) facility. There was also a sufficient supply of medical equipment to provide adequate medical treatment.

There are seven ambulances that operate out of the building. Each ambulance is equipped with a kit, labeled A-G, which contained the following equipment:

- 4 AA Batteries
- 3 Electronic Personal Dosimeters (EPD) with a calibration date of 7/08/09
- 1 EPD Battery Removal Key
- 5 Panasonic Thermoluminescent Dosimeters (TLD) , 2 control and 3 issue
- 3 Matagorda County Emergency Worker Badges containing exposure control limits and monitoring
- A South Texas Project (STP) site map
- Copy of Attachments C, H, and G from the Matagorda Regional Medical Center Radiological Emergency Plan, Revision 8, dated September 1, 2006. (EMS kit did not contain the current revision, which is Revision 11, dated February 24, 2010)
- Dosimetry Issue Log

Potassium Iodide (KI) tablets are no longer stored in the ambulance kits. However, the KI is stored in the Medical bag on each of the seven ambulances. There are 14 IOSAT tablets in a blister pack with an expiration date of 04/2011 on each ambulance.

Communication between the ambulance crew, consisting of one Emergency Medical Technician (EMT) and one Paramedic, with the Palacios Community Medical Center (PCMC) was accomplished by cellular phone. Both individuals were also equipped with portable 800 MHz radios.

A Radiation Protection Technician (RPT) from STP accompanied the contaminated injured patient to PCMC to provide assistance. The RPT had the following equipment that was utilized during the transport of the patient:

- 1 Thermo Scientific RO 20 Ion Chamber, calibrated 10/25/09 due 04/25/10, and daily source check 03/10/10
- 1 Ludlum 3 with a pancake probe, calibrated 10/09/09 due 06/09/10, daily source check 03/10/10
- 1 Ludlum 14c with hot dog probe, calibrated 12/15/09 due 06/15/10, daily source check 03/11/10

Prior to arrival on site at STP, MCEMS personnel completed operational checks on the EPDs. TLDs were also issued and log forms were utilized for all dosimetry as well.

**Criterion 3.a.1:**

The Matagorda County Emergency Medical Services (MCEMS) personnel donned Electronic Personal Dosimeter (EPDs) and a Thermoluminescent Dosimeter (TLDs) from the ambulance kit while en route to South Texas Project (STP). Dosimetry was donned shortly after MCEMS Dispatch briefed the EMS crew that the patient was injured and contaminated.

The EPD is pre-programmed to alarm first at 200 mR and again at 1Rem, the administrative limits set for emergency workers in Matagorda County. These limits were displayed on the Liquid Crystal Display (LCD) of the EPD when the operational check was performed at 1018.

The Matagorda County personnel were very knowledgeable of their turn back limits and procedures if they reached those limits. The Radiation Protection Technician (RPT) from South Texas Project (STP) was also very knowledgeable of those limits and procedures. The RPT advised the MCEMS personnel of the readings being recorded while surveying the patient and the MCEMS personnel as well. MCEMS personnel were aware that levels of 300 counts per minute (CPM) and higher determined contamination.

MCEMS personnel read their EPDs every thirty minutes and recorded their readings on the Dosimetry Issue Log. The Dosimetry Issue Log was implemented at 1018 immediately after the operational checks were performed. The names, social security numbers, time issued, TLD

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number, EPD number, the initial and final readings, and time dosimetry was collected were all recorded on the Dosimetry Issue Log. The final readings were taken at 1111. All dosimetry was turned in to the RPT at the conclusion of the patient transfer to Palacios Community Medical Center along with the Dosimetry Issue Log.

**Criterion 6.d.1:**

The initial call for the drill was received by Matagorda County Emergency Medical Services (MCEMS) Dispatch via landline (the primary means of notification) from South Texas Project (STP) at 1011. The Dispatcher recorded the information regarding a possibly contaminated injured patient at STP in the software program utilized by MCEMS. The log detailed the location and nature of the incident along with the time of notification. Immediately after receiving notification the response unit was dispatched utilizing the 800 MHz radio system. The ambulance was en route to the designated location and acknowledgement of dispatch information was completed by 1013.

At 1016, the MCEMS personnel notified Matagorda Regional Medical Center via cellular phone and were advised that the hospital was diverting all calls to Palacios Community Medical Center. At 1018, MCEMS notified Palacios Community Medical Center (PCMC) they were responding to a possibly contaminated injured patient at STP via cellular phone. At 1019, MCEMS personnel contacted dispatch to advise an estimated time of arrival of eleven minutes.

While en route the MCEMS personnel donned their latex gloves and issued dosimetry for exposure control. The dosimetry issued consisted of an Electronic Personal Dosimeter (EPD), a Thermoluminescent Dosimeter (TLD), Emergency Worker Badge with exposure limits and contamination level information, and lanyards. A Dosimetry Issue Log was also started with the proper areas filled in.

At 1026, MCEMS Dispatch briefed the responding unit that the female patient had received a laceration on the head resulting from a fall and that contamination was confirmed. MCEMS personnel promptly contacted PCMC to verify they had received the same information and to notify them that they would be transporting a contaminated injured patient to their location. The ambulance arrived at STP at 1030. Both MCEMS personnel checked their dosimetry and recorded their readings before exiting the vehicle.

Upon arrival at STP, the ambulance was met by utility personnel with the patient stabilized on a

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backboard and packaged for transport. The MCEMS Paramedic level Emergency Medical Technician received a detailed briefing from the utility personnel which included patient vitals, injuries, and chief complaints. The utility personnel also informed the Medic that the patient did have confirmed contamination. The STP Radiological Protection Technician (RPT) also briefed the ambulance crew of contamination levels of 1000 counts per minute (CPM) on the right and left wrists, 800 CPM on the chest, and 500 CPM on the head. The RPT also advised the staff that there was a possibility of internal contamination due to the fact that the patient had fallen into the spent fuel pool. Prior to loading the pre-packaged patient onto the gurney, the Emergency Medical Technician (EMT) placed two blankets over the top and draped the edges down the sides. The patient was then loaded onto the gurney and wrapped with the blankets to ensure one more layer of exposure control was in place. An RPT from the utility accompanied the ambulance crew and patient to the hospital. Prior to departure of the ambulance, an STP employee surveyed the outside steps and door handles and found them to be free of contamination.

Upon completion of the patient transfer briefing at the plant, the ambulance departed for the hospital at 1041. The EMT notified PCMC they were en route and provided patient information along with an estimated time of arrival of fifteen minutes via cellular phone. The patient vitals were reassessed by the Medic continuously during transport. The Medic also verbally described what medical treatment he would be providing to the patient and stated that there were no life threatening injuries at the time. The RPT continued to survey the patient as well as the hands and forearms of the Medic. The Medic and EMT were very thorough in contamination control measures by consistently changing gloves on a regular basis in addition to any time they came in contact with the patient. All gloves were discarded into a plastic bag and treated as if they were contaminated.

The ambulance arrived at PCMC at 1057 and proceeded to the rear of the building where the Emergency Room entrance was located. The hospital staff finished setting up the receiving area by positioning barrier rope and signage up to isolate the ambulance. While waiting, the Medic performed a final assessment of the patient's condition. Both MCEMS personnel also read and recorded their EPD readings. The MCEMS staff transferred the patient to the hospital staff and provided a detailed briefing to them including vital medical information as well as the contamination levels and locations.

The RPT that accompanied the MCEMS personnel was equipped with radiological monitoring

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and survey equipment and a "jump bag". The "jump bag" contained yellow masslin cloth, latex gloves, waste bags, and smears. Once the transfer of the patient was completed, the RPT surveyed both MCEMS personnel and found them to be free of any contamination and released them from the hospital receiving area. Prior to their departure the MCEMS personnel took a final reading of their dosimetry and completed their Dosimetry Issue Log. All dosimetry and log sheets were turned over to the RPT for further record keeping.

The RPT then proceeded to survey the ambulance starting with the rear step and the doors. The RPT was given readings of 300 CPM in the rear floor of the ambulance, by controller inject. Through demonstration the RPT used masslin cloth to wipe the floor, surveyed the area again, and took a swipe as well. No further contamination readings were found after these steps were taken. The thorough knowledge of protocol was demonstrated and satisfied the requirements in this single location and no other areas in the ambulance were asked to be demonstrated by the evaluator. The RPT also performed the same procedures on the gurney and continued to demonstrate excellent contamination control.

The MCEMS personnel were knowledgeable of the proper actions to be taken if further monitoring or decontamination was needed for them or the ambulance; they would notify dispatch and proceed to the designated location. The MCEMS demonstrated a very thorough knowledge of exposure control, contamination control, and patient care throughout the duration of the drill.

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

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

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### 3.3.1.2 Palacios Community Medical Center

#### **Criterion 1.e.1:**

Equipment and supplies available for staff at the Palacios Community Medical Center (PCMC) were sufficient to support the response activities of the assigned staff. After the initial call, housekeeping personnel repositioned the Radiation Emergency Supply Cart outside the buffer zone. In addition, staff members set up the Radiation Emergency Area (REA) and adjoining areas according to the hospital plan. This included posting instructions inside the REA to assist with the donning and disrobing procedures and guidance to help with the care of a radiologically contaminated injured patient. In addition, housekeeping also set up barrier ropes and radiation warning signs to secure the patient receiving area outside the hospital and restrict access between the buffer zone and the REA.

The Control Point Attendant issued, inspected and operationally checked all electronic personal dosimeters (EPDs) and survey equipment issued to the medical team. Additionally, each survey meter had a range of reading sticker placed on the side to show the acceptable range when the meter is checked against a known source.

The hospital's dosimetry and survey equipment included:

- 10 Merlin Gerin Electronic Dosimeters with current calibrations (due again on 9/7/10 and 8/22/10)
- 22 TLDs (including 2 control)
- 1 Bicron RSO-5 Ion Chamber Survey Meter (calibrated on 7/7/2009 and due on 9/7/2010) with range of reading sticker
- 2 Ludlum 14C Count Rate Survey Meter with GM Probe (calibrated on 7/6/2009 and due on 9/6/2010) with range of reading sticker
- Check sources
- Batteries with expiration dates
- Lanyards for dosimeters

Other medical equipment and radiological supplies used during the drill included:

- Personal protective clothing (gloves, caps, masks, gowns, and rubber booties)
- Medical equipment and supplies to treat the patient



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- Shampoo, lotion, soap, tweezers and brushes for decontamination purposes
  - Ziploc baggies, tape and Herculite
  - Yellow waste containers and liners for contaminated waste
  - Masslin Mop and masslin wipes
  - Step off pad and donning/doffing procedure
  - Stanchions, bungee cords, magnets, barrier tape and warning signs
  - Hospital procedures and forms

Potassium iodide (KI) for emergency workers is stored at the county emergency operations center and would be provided to the hospital if needed.

**Criterion 3.a.1:**

During the drill, the Control Point Attendant at Palacios Community Medical Center (PCMC) issued thermoluminescent dosimeters (TLDs) as their permanent record dosimeter. The Control Point Attendant also issued electronic personal dosimeters (EPDs) that were used to monitor the responder's accumulated exposure during a radiological response. The EPDs were set to alarm at 200 mR, which is the allowable dose per shift according to the hospital plan.

Once operational checks were completed, initial readings and serial numbers were recorded on the Personnel Dosimetry Log, the Control Point Attendant inspected the equipment for current calibration prior to issuing the dosimeters to the medical team. The Control Point Attendant also checked the team for correct placement of dosimetry and proper donning of their protective clothing with assistance from the utility's Radiation Protection Technician (RPT).

Prior to the arrival of the patient, the RPT briefed the medical team about the contamination levels reported on the patient and their exposure limits. The Buffer Zone Nurse instructed the staff to read their dosimeters several times during the drill, as per the procedures, requesting readings at 30 minute intervals. At the end of the drill, the Control Point Attendant collected all dosimetry and recorded final readings on the dosimetry log. The batteries were taken out of the EPDs to be stored, and the TLDs were turned in to the utility RPT.

**Criterion 6.d.1:**

The transportation and treatment of a contaminated injured individual was successfully demonstrated at the Palacios Community Medical Center (PCMC). At 1018, a call was received by the Charge Nurse (CN) at PCMC from Matagorda County Emergency Medical Services

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(MCEMS) dispatch. The call came in over commercial telephone service. The caller stated that MCEMS was in route to pick up a contaminated injured worker at South Texas Project (STP). In accordance with the scenario and extent-of-play, the patient was redirected from Matagorda Regional Medical Center to PCMC. The CN waited a few minutes in order to receive an expected call from STP to verify that there was indeed an injured worker in route to PCMC. When no call from STP was received, the CN took the initiative to call STP at 1023 to verify the information. STP verified the call and stated that MCEMS had an Estimated Time of Arrival (ETA) at STP of eight minutes. All information was recorded by the CN on the Accident Information Form.

The CN then notified personnel using the Radiation Emergency Telephone Directory and activated "Code Eagle - Operation RAD" by announcement over the public address system at PCMC. Once PCMC staff mobilized near the Radiation Emergency Area (REA), the CN assigned one person as the Buffer Zone (BZ) Nurse, another person as the Control Point (CP) Attendant, and a physician's assistant as the Emergency Room (ER) Provider. The physician's assistant was assigned the role of ER Provider since a physician was not available on site at PCMC during the drill. The CN then briefed the REA staff on the patient, directed the CP Attendant to ready equipment for distribution, and directed PCMC maintenance staff to begin setup of the REA according to a diagram titled PCMC Radiation Emergency Area Layout. The REA staff (CN, BZ Nurse, and ER Provider) also began donning Personal Protective Equipment (PPE) in a dressing room directly across the hallway from the REA. Each member of the REA staff was issued a Thermoluminescent Dosimeter (TLD) which was worn under their outer gown and an Electronic Personal Dosimeter (EPD) which was clipped to the outside of their outer gown. REA staff also donned two pairs of latex gloves, shoes covers which were taped at the ankle, hood, and surgical mask with splash shield. A Radiation Protection Technician (RPT) arrived from STP, was issued dosimetry and a Ludlum 14-C survey meter, and donned PPE. Throughout the drill, the BZ Nurse assisted the medical team in the REA by communicating information back and forth, retrieving medical supplies as needed and recording patient information. The CP Attendant issued dosimetry, conducted operations checks on all equipment, recorded dosimeter readings, and collected the dosimetry from the REA staff.

The REA was set up according to plans. A stretcher with five sheets was placed in the REA. Two waste cans with plastic bags were placed in the REA, along with a biological waste can. A step-off pad was taped to the floor outside the exit door from the REA into the hallway. Radiation warning rope and signs were placed across the hallway to establish the Buffer Zone

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(BZ). The Radiation Emergency Supply Cart was placed in the hallway outside of the BZ and a small bedside table was placed in the hallway inside the BZ. PPE signage was posted on the wall in the REA and in the hallway, "Place Hand Here" signs were posted at the REA exit door, and "This Is A Drill" signs were posted on REA entrance and exit doors.

The parking lot outside of the REA was cordoned off to restrict access to only the MCEMS ambulance with the contaminated injured patient. Stanchions and barrier rope were used to cordon off the area and to create a pathway to control the spread of contamination.

At 1027, a second call was received at PCMC from STP. STP stated that the patient was indeed contaminated and had contamination readings of 1000 counts per minute (cpm) on the right and left wrists, 800 cpm on the chest area, and 600 cpm on the forehead. The RPT placed a piece of masking tape onto his wrist and drew a diagram of the patient's body noting areas and levels of contamination. MCEMS arrived at STP at 1038, departed STP with the patient at 1043, and had an ETA at PCMC of ten to twelve minutes.

The MCEMS arrived with the patient at 1100. Since the patient was still wet from the accident, the RPT instructed the REA staff to don extra gloves because they would initially be removing their gloves more often. The RPT frisked the MCEMS crew before they exited the ambulance. MCEMS briefed the PCMC staff on the patient status and the possibility of internal contamination. The patient was transferred on the backboard from the MCEMS stretcher to the PCMC stretcher. REA staff then took the patient's vitals, and began asking the patient questions to establish the patient's status since she had received a head injury, they also moved the patient into the REA.

Once in the REA, the RPT informed the REA staff that the REA floor was found to be contaminated and to consider anything dropped on the floor contaminated until he deemed otherwise. Upon interview by the evaluator, the RPT stated that a surface is considered contaminated when a reading of 300 cpm above background is found. The BZ floor was found to be clean upon survey by the RPT. The small bedside table was rolled into the REA from the hallway, so supplies could be readily available for the REA staff.

Since the patient did not have life-threatening injuries, the REA staff began decontamination of the patient. Bandages were removed from the patient's head. The patient's forehead and bandages were surveyed by the RPT and found to have readings of 500 cpm. REA staff changed

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gloves often, or had their hands frisked by the RPT to verify that their hands were not contaminated. REA staff then cleaned the forehead wound with saline and swabs. The swabs and patient's forehead were surveyed and found to have 200 cpm and 500 cpm, respectively. The forehead wound was decontaminated a second time, and both the swab and wound found to be clean. All survey and decontamination readings were documented by the CP Nurse.

The REA staff then removed the cervical collar from the patient's neck. The cervical collar was frisked and found to be clean. REA staff then rolled down the sheets covering the patient's body. The CP Attendant instructed the REA staff to check dosimeters at 1119. All dosimeters readings were 0.0 mR. The patient's ID tag lanyard was simulated to be cut from her neck, placed into a labeled plastic bag, surveyed for contamination, and sent out to the BZ. REA staff then cut the patient's clothes to survey the chest area. A reading of 200 cpm was found on the chest. The chest area was decontaminated by wiping with a damp swab.

The REA staff then cut the patient's clothes to reveal the left wrist. The wrist was found to have a reading of 450 cpm. The RP Tech surveyed the scissors used to cut the clothing and found 200 cpm on the scissors. The scissors were wiped with a damp swab, resurveyed, and found to be clean. The left wrist was then decontaminated by wiping with a damp swab, surveyed, and found to have 450 cpm. A second decontamination attempt was performed on the left wrist. The left wrist was then resurveyed and found to be clean.

The REA staff cut the patient's clothing to reveal the right wrist. The patient was wearing a glove on the right hand. The glove was removed, surveyed, and found to be clean. The right wrist was surveyed and found to be clean. The clothing around the right wrist area was found to have a reading of 500 cpm. The clothing was cut away and placed in the waste can. The scissors were then surveyed and decontaminated.

The REA staff then continued to cut away the remainder of the patient's clothing, and rolled the clothing down away from the patient. The RPT frisked the front of the patient's body and found it to be clean. The scissors were surveyed, found to have 200 cpm. The scissors were decontaminated, resurveyed, and found to be clean. The patient was then rolled to her right side in order to remove the backboard. The wet sheets were rolled in order to remove them from the stretcher. The backboard was placed on a simulated floor covering in the REA. The RPT surveyed the patient's back and found no contamination. The patient was then rolled on to her left side and the wet sheets removed from the stretcher. The RP Tech surveyed the patient and

the stretcher, and both were found to be free of contamination.

Before the patient was released from the REA, the RPT swabbed the floor of the REA exit doorway and found a reading of 200 cpm. White herculite was rolled into the REA to prevent the spread of contamination outside the REA, and the patient was allowed to exit the REA and admitted to the hospital for further treatment. The CP Attendant directed the REA staff to perform a dosimeter check and all dosimeters read 0.0 mR. The RPT rolled up the herculite and placed it into the waste can in the REA.

At 1153, final dosimeter checks were performed by REA staff with readings found to be 0.0 mR. The CN demonstrated the REA exit and PPE doffing procedures successfully. The CN followed the doffing procedure as posted and was assisted with the process by the RPT. The dosimetry was surveyed and collected by the CP Attendant. The CP Attendant also read and recorded the readings on the appropriate forms. A whole body frisk was completed and all contaminated waste was disposed of properly.

The REA decontamination was demonstrated by evaluator discussion with the RPT. The RPT stated that additional RPT would be dispatched from STP to aid in surveying and decontaminating the REA as needed to return the room back to pre-incident conditions. The walls and floor would be cleaned as necessary, and all waste materials would be brought back to STP for proper disposal.

No biological samples were taken. Upon interview, the REA staff stated that if samples had been taken, the samples would be placed into a labeled plastic bag, surveyed for contamination, sent out of the REA into the BZ, and then sent to STP for sample analysis.

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

- a. MET: 1.e.1, 3.a.1.
- b. AREAS REQUIRING CORRECTIVE ACTION: 6.d.1.

ISSUE NO.: 60-10-6d1-A-01

CRITERION: Facility/ORO has the appropriate space, adequate resources, and trained personnel to provide transport, monitoring, decontamination, and medical services to contaminated injured individuals. (NUREG-0654, F.2., H.10., K.5.a.b.,

L.1., 4)

CONDITION: There was no physician present during the drill as is required by DHS-FEMA REP Program guidance. A physician was in contact with the Palacios Community Medical Center but was not physically present to supervise or assist as required.

POSSIBLE CAUSE: Failure to follow the plan. The Matagorda Regional Medical Center Radiological Emergency Plan paragraph 5.4.1.2 requires the health care provider to ensure additional physician assistance is available to cover the emergency room. During the course of the drill, there was no physician physically present to provide this additional assistance or to supervise treatment of the contaminated injured patient.

REFERENCE: Krimm Memorandum "Clarification of Selected Provisions of Guidance Memorandum (GM) MS-1, Medical Services" dated February 9, 1988, and Interim REP Program Manual, August 2002, Section III.J - Evaluation of Emergency Medical Services Drills, page III-238.

EFFECT: The absence of the physician on site could result in a delay of advanced medical treatment for the patient if required.

RECOMMENDATION: Provide training to the medical center staff to ensure that a physician is physically present to supervise treatment of the contaminated injured patient as is required by the emergency plan and DHS/FEMA guidance.

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

## **SECTION 4: CONCLUSION**

Based on the results of the drill, the offsite radiological emergency response plans and preparedness for the State of Texas and the affected local jurisdictions are deemed adequate to provide reasonable assurance that appropriate measures can be taken to protect the health and safety of the public in the event of a radiological emergency. Therefore, 44 CFR Part 350 approval of the offsite radiological emergency response plans and preparedness for the State of Texas site-specific to STP will remain in effect.

## APPENDIX A: IMPROVEMENT PLAN

| Issue Number: 60-10-6d1-A-01   |  | Criterion: 6d1 |
|--|--|----------------|
| <b>ISSUE:</b> There was no physician present during the drill as is required by DHS-FEMA REP Program guidance. A physician was in contact with the Palacios Community Medical Center but was not physically present to supervise or assist as required.            |  |                |
| <b>RECOMMENDATION:</b> Provide training to the medical center staff to ensure that a physician is physically present to supervise treatment of the contaminated injured patient as is required by the emergency plan and DHS/FEMA guidance.                        |  |                |
| <b>CORRECTIVE ACTION DESCRIPTION:</b> Same as recommendation. Matagorda County will train hospital staff to call a licensed Physician in the event there is a radiologically contaminated patient and will have them physically present at the next MS-1 exercise. |  |                |
| <b>CAPABILITY:</b><br>Medical Surge  | <b>PRIMARY RESPONSIBLE AGENCY:</b><br>Matagorda County |                |
| <b>CAPABILITY ELEMENT:</b><br>Personnel  | <b>START DATE:</b><br>2010-04-05                       |                |
| <b>AGENCY POC:</b><br>Doug Matthes, Matagorda Co. EMC 979-323-0707   | <b>COMPLETION DATE:</b><br>2012-04-05                  |                |



## APPENDIX B: BEST PRACTICES

### 1. Patient Contamination Diagram

**Summary:** The RPT placed a piece of masking tape onto his wrist and drew a diagram of the contaminated patient's body noting areas and levels of contamination.

**Description:** At 1027, a second call was received at PCMC from STP stating that the patient was indeed contaminated. STP stated that the patient had contamination readings of 1000 counts per minute (cpm) on the right and left wrists, 800 cpm on the chest area, and 600 cpm on the forehead. The RPT placed a piece of masking tape onto his wrist and drew a diagram of the patient's body noting areas and levels of contamination.

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## APPENDIX C: DRILL EVALUATORS AND TEAM LEADERS

DATE: 2010-03-11, SITE: South Texas Project, TX

| LOCATION                          | EVALUATOR                  | AGENCY               |
|-----------------------------------|----------------------------|----------------------|
| Matagorda County EMS              | Brad DeKorte               | DHS/FEMA             |
| Palacios Community Medical Center | Linda Gee<br>*Tim Pflieger | DHS/FEMA<br>DHS/FEMA |
| * Team Leader                     |                            |                      |

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## APPENDIX D: ACRONYMS AND ABBREVIATIONS

| Acronym  | Meaning   |
|----------|---|
| ARCA     | Areas Requiring Corrective Actions                                  |
| BZ       | Buffer Zone   |
| CN       | Charge Nurse  |
| CP       | Control Point   |
| cpm      | Counts Per Minute   |
| DHS/FEMA | Department of Homeland Security/Federal Emergency Management Agency |
| EMT      | Emergency Medical Technician  |
| EPD      | Electronic Personal Dosimeter                                       |
| ER       | Emergency Room  |
| ETA      | Estimated Time of Arrival   |
| GM       | Guidance Memorandum   |
| KI       | Potassium Iodide  |
| LCD      | Liquid Crystal Display  |
| MCEMS    | Matagorda County Emergency Medical Services                         |
| PCMC     | Palacios Community Medical Center                                   |
| PPE      | Personal Protective Equipment                                       |
| REA      | Radiation Emergency Area  |
| RPT      | Radiation Protection Technician                                     |
| STP      | South Texas Project   |
| TLD      | Thermoluminescent Dosimeter   |

## **APPENDIX E: EXERCISE PLAN**

## **2010 MS-1 MEDICAL EXERCISE PALACIOS COMMUNITY MEDICAL CENTER**

### **1.0 Scope and Participants**

The 2010 Palacios Community Medical Center MS-1 exercise will test and provide the opportunity to evaluate the plans and procedures utilized to respond to contaminated injuries. It will demonstrate the utilization of hospital, ambulance, and station procedures supporting emergency medical services.

Whenever practical, the exercise incorporates provisions for free play by the participants. The scenario simulates a sequence of events, which results in a medical accident with contaminated injuries. The degree of the simulated injuries requires immediate response by onsite and offsite emergency medical teams with offsite hospital support.

The scenario is sufficiently difficult to challenge participants; however, responses will be controlled to ensure the safety of personnel and plant equipment.

The exercise will be conducted with the following participants:

#### Exercise Participants

- STP Unit 1 Control Room (simulated via phone cell)
- STP Radiation Protection
- STP Plant Protection (EMTs)
- STP Emergency Response Division
- Matagorda County Emergency Medical Services (MCEMS)
- Palacios Community Medical Center (PCMC)

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## **2010 MS-1 MEDICAL EXERCISE PALACIOS COMMUNITY MEDICAL CENTER**

### **2.0 Exercise Evaluation Areas and Extent of Play**

*The Evaluation Areas applicable to this exercise are taken from the Federal Emergency Management Agency (FEMA) Evaluation Area Criterion for Medical Exercises. The extent of play follows the criterion in these documents. Any exception to the Evaluation Area is noted with the Evaluation Area and extent of play.*

#### **EVALUATION AREA 1.e.1 – EQUIPMENT, MAPS, DISPLAYS, DOSIMETRY, POTASIIUM IODIDE (KI), AND OTHER SUPPLIES ARE SUFFICIENT TO SUPPORT EMERGENCY OPERATIONS.**

Instruments are operationally checked before use. Instruments are calibrated in accordance with manufacturer's recommendations.

A label indicating calibration is on each instrument. Sufficient quantities of appropriate electronic personal dosimeters and permanent record dosimetry are available for issuance to all categories of emergency workers deployed by that facility.

Sufficient supplies, equipment, displays, and personal protective equipment are available.

#### **Extent of Play**

Donning and doffing of personal protective equipment will be demonstrated by one player.

Correction on the spot is requested for purposes of dressing out for local agencies.\*

#### **EVALUATION AREA 3.a.1 – IMPLEMENTATION OF EMERGENCY WORKER EXPOSURE CONTROL**

The Offsite Response Organizations (OROs) issue appropriate dosimetry and procedures and manage radiological exposure. Emergency Workers periodically and at the end of each mission read their dosimetry and record the readings on the appropriate exposure record or chart.

#### **Extent of Play**

Correction on the spot is permitted with issues related to dosimetry use, reading dosimetry, alarm set points and record keeping. Correction on the spot is requested.\*

#### **EVALUATION AREA 6.d.1 – TRANSPORTATION AND TREATMENT OF CONTAMINATED INJURED INDIVIDUALS**

## **2010 MS-1 MEDICAL EXERCISE PALACIOS COMMUNITY MEDICAL CENTER**

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

### **Extent of Play**

Correction on the spot is permitted with issues related to the adequacy of vehicles, equipment, and procedures, decontamination techniques, cross contamination issues for personnel transporting and treating contaminated injured or exposed individuals. Correction on the spot is requested.\*

### **Onsite Extent of Play**

Matagorda County EMS will be notified of the need to transport and treat a contaminated injured individual. Onsite medical responders will simulate initial treatment of the injured individual providing emergency care until the ambulance arrives to transport the injured individual to the hospital.

*\*Correction-on-the-spot is defined in FEMA Policy Paper, Strategic Review Steering Committee, Initiative 1.5, Correct Issues immediately, effective March 31, 2000, signed by Kay C. Goss, CEM, Associate Director for Preparedness, Training, and Exercises.*

## **2010 MS-1 MEDICAL EXERCISE PALACIOS COMMUNITY MEDICAL CENTER**

### **3.0 Conduct and Evaluation**

The Exercise will simulate a medical emergency at the South Texas Project, which will demonstrate the effectiveness of communications with offsite organizations, personnel, and activities to support the Emergency Plan and associated procedures.

Controllers may provide clarification that is necessary for participants to understand the intent of the message given by the controller or on a message sheet.

The medical emergency response at the South Texas Project will be situated at a simulated location. The patient will be packaged at the Nuclear Training Facility by the onsite EMTs. Matagorda County EMS is contacted to respond to the site for patient transfer to an offsite hospital.

A controller will be on the ambulance, to provide patient performance paths (vital signs) and contamination levels during the trip to the hospital.

The organization for this Exercise will consist of the Exercise Coordinator, Controllers, Evaluators, Participants, and Observers, as follows:

- The Exercise Coordinator is responsible for the coordination and the safe conduct of the exercise. This individual will provide resolution to scenario-related questions and ensure that the conduct of the exercise does not adversely impact the operation of the station and/or offsite agencies' actual emergency response activities.
- The Controllers will deliver event condition messages to designated participants at specified times and places during the Exercise, including contingency messages, as required, to keep the Exercise moving according to the scenario timeline.
- Controllers will also observe the scenario actions and prepare written evaluations of the Participants' performance. Controllers will be identified by wearing red badges labeled CONTROLLER.
- The Evaluators will judge the effectiveness of participating organizations, personnel, and activities. Evaluators will be identified by wearing blue EVALUATOR badges.
- The Observers will be authorized, on a limited basis, to watch Exercise activities for the purpose of personal education. Observers will be identified by wearing white OBSERVER badges.



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## 2010 MS-1 MEDICAL EXERCISE PALACIOS COMMUNITY MEDICAL CENTER

In the event of an actual emergency during the conduct of the exercise, all exercise activities will be immediately halted and response directed to the actual event.

The Controller is responsible for immediately intervening and terminating any action during the conduct of the exercise that would place either an individual or a plant component in an unsafe condition.

All telephone communications, radio transmissions and public address announcements related to the exercise will begin and end with the statement **THIS IS A DRILL**.

While participants are expected to inject as much realism into their response actions as possible, safety of personnel and plant equipment shall not be jeopardized.

After the Exercise is complete, the Exercise Coordinator will conduct a critique session. Potential issues with the emergency plan, procedures, training program, facilities, equipment, and/or other areas will be identified through the critique and evaluation process. The issues will be documented by the Exercise Coordinator and corrected by the individuals/organizations that have responsibility for the area of the identified issue(s).

### 4.0 Definitions

- Controller:** A member of the exercise organization assigned to one or more activities for the purpose of keeping the action going according to a scenario, resolving scenario discrepancies, and ensuring the safe deliberation of actions by the participants. A controller evaluates and makes recommendations for improvement and recognizes above average performance.
- Evaluator:** A member of the exercise organization assigned to one or more activities to evaluate and make recommendations for improvement or recognition of above average performance.
- Exercise:** An event which tests and provides the opportunity to evaluate the plans and procedures utilized to respond to contaminated injuries. It will demonstrate the utilization of hospital, ambulance, and station procedures supporting emergency medical services.
- Observer:** An individual who is authorized to observe the exercise, but is not authorized to interact with the participants.
- Participants:** All individuals assigned to perform functions of the emergency response organization as a participant in the exercise.

**2010 MS-1 MEDICAL EXERCISE  
PALACIOS COMMUNITY MEDICAL CENTER**

**5.0 References**

1. Title 10, Code of Federal Regulations, Part 50, Appendix E
2. STP Emergency Plan
3. Matagorda County Hospital District Radiological Emergency Plan
4. NUREG-0654/FEMA-REP-1, Criteria For The Preparation And Evaluation Of Radiological Emergency Response Plans And Preparedness In Support Of Nuclear Power Plants
5. FEMA Evaluation Area Criterion for Medical Exercises
6. STP Plant procedure, Emergency Medical Response Plan (OPGP03-ZA-0106)
7. FEMA General Memorandum MS-1, Medical Services
8. STP Plant Procedure, OPOP04-ZO-0004, Personnel Emergencies

**6.0 Controller Instructions**

**Instructions:**

Each Controller and Evaluator should be familiar with the following:

1. The applicable evaluation area and extent of play of the exercise.
2. The exercise conduct and evaluation guidelines and precautions.
3. The exercise scenario, including initiating events and expected course of action.
4. The facilities and locations that will be involved and the specific actions to be observed.
5. The evaluation checklists provided to document participant actions.

Controllers should be positioned at assigned locations at least 15 minutes prior to the activation of the facility or location.

Message sheet information should be delivered in sequence and as written, unless the Exercise Coordinator authorizes change.

## **2010 MS-1 MEDICAL EXERCISE PALACIOS COMMUNITY MEDICAL CENTER**

Controllers may provide information to the participants regarding scenario progression or the resolution of problems encountered in the course of the simulated emergency.

Each Controller/Evaluator shall take detailed notes regarding the progress of the Exercise (i.e., a chronology) and the response of the participants.

The Lead Exercise Controller in conjunction with the FEMA Evaluator may delay, suspend or cancel the exercise if an emergency situation requires use of the ambulance, hospital ER or personnel.

Controllers/Evaluators should carefully note the arrival and departure times of participants. Controllers/Evaluators should carefully note problem areas encountered and good practices. The chronology can be used to corroborate critique items that are questioned by participants. Refer to Attachment A for the Controller/Evaluator Forms.

Controllers for this Exercise shall include:

- Exercise Coordinator
- STP Control Room Controller (simulated phone cell)
- Palacios Community Medical Center Controller
- STP Emergency Medical Technician (EMT) Controller
- Radiation Protection Controller – Hospital
- Radiation Protection Controller – Ambulance

## **2010 MS-1 MEDICAL EXERCISE PALACIOS COMMUNITY MEDICAL CENTER**

### **7.0 Narrative Summary and Event Timeline**

The onsite narrative is provided as information to be used by controllers. Actual onsite response will occur at the South Texas Project on a limited basis. However, station EMTs and Radiation Protection personnel will be available to support offsite agency responses to the simulated medical emergency.

STP Unit 1 is in a refueling outage. An employee is working on the bridge of the refueling machine in the Fuel Handling Building. The employee slips on the bridge and falls into the spent fuel pool and hits her head. She is retrieved by co-workers and the onsite EMTs are called and respond to the scene.

The EMTs arrive, evaluate medical conditions and determine the injured worker needs to be transported to an offsite medical facility, as she is disoriented and has a bleeding gash on her eye and forehead. The EMTs contact the simulated Control Room to confirm the need for an ambulance to respond to the site for transfer to the hospital.

The simulated Control Room contacts Matagorda County Emergency Medical Services to request ambulance service to transport the potentially contaminated injured worker.

Matagorda Regional Medical Center will redirect the ambulance to the Palacios Community Medical Center due to the Matagorda Regional Medical Center being overwhelmed with patients from the collapse of the bleachers at the high school during a pep rally.

Radiation Protection evaluates radiological conditions and establishes contamination controls for the accident scene. All individuals that were on the bridge are contaminated and must go through personnel monitoring and decontamination.

The site ambulance will be maneuvered to a pickup point and await arrival of the injured individual from the MAB.

Once monitored by Radiation Protection, the injured worker is found to have 500 - 1000 cpm ( $\beta\gamma$ ) on clothing and exposed skin (refer to Figure 10.0-1.) If the patient's contaminated clothing is removed, skin contamination remains (refer to Figure 10.0-2.).

The worker is packaged, loaded on the site ambulance, and driven to the pick up location. They meet up with the offsite ambulance at the Nuclear Training Facility.

Upon arrival of the ambulance, STP EMTs provide a briefing to Matagorda County Emergency Medical Services crew regarding patient condition. A Radiation Protection technician

## **2010 MS-1 MEDICAL EXERCISE PALACIOS COMMUNITY MEDICAL CENTER**

accompanies the patient and provides radiological information and contamination control. A second Radiation Protection technician is called out and directed to the PCMC.

In route, the hospital is appraised of the patient's physical and radiological condition.

Upon hospital arrival, the Radiation Protection technician and ambulance attendants brief the emergency room staff. Upon completion of the briefing, the attendants turn the injured worker over to emergency room staff care. The Radiation Protection technician, who travels with the ambulance stays with the vehicle to monitor, and decontaminate, if required. Prior to the release of the ambulance, the Radiation Protection technician will survey the crew and their equipment. Results of the survey are in accordance with Figure 10.0-5, Matagorda County EMS Radiological Survey. A brief decontamination demonstration will be performed prior to releasing the ambulance.

The Radiation Protection technician, who responds, monitors the decontamination room, as well as performs contamination control duties and assists with decontamination, as necessary. (Refer to Figure 10.0-4 for Palacios Community Medical Center Radiological Survey and Layout).

The hospital staff provides initial treatment and decontamination. Medical treatment will take priority over contamination. Decontamination will be achieved with the assistance of the Radiation Protection technician. Once the patient is stabilized, treated, and decontaminated, the patient will be transferred out of the decontamination area using recognized transfer techniques for standard admittance to the hospital.

Once the patient is transferred, the hospital staff inside the decontamination area will carefully remove their protective clothing (with the support of the Radiation Protection technician) to ensure control of contamination.

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PALACIOS COMMUNITY MEDICAL CENTER**

| <b>TIME</b>   | <b>SEQUENCE OF EVENTS</b>   | <b>MESSAGE<br/>NUMBER</b> |
|---|---|---------------------------|
| 10:00   | Initial conditions established.   | 1                         |
| 10:05   | The telephone cell implements storyboard information.   | 2                         |
| <div><p style="text-align: center;"><b><u>CONTROLLER NOTE</u></b></p><p>Communications with offsite for support will be made to Matagorda County Emergency Medical Services.</p></div>  |   |                           |
| 10:10   | Unit 1 Control Room (simulated phone cell) contacts Matagorda County Emergency Medical Services at (979) 323-9020 and requests they respond for a transfer. | 3                         |
| 10:13   | Matagorda Regional Medical Center re-directs the patient to PCMC for treatment.   | 4                         |
| <div><p style="text-align: center;"><b><u>CONTROLLER NOTE</u></b></p><p>For more information on the injured worker's vital signs, refer to Table 10.0-1, Patient Performance Paths.</p><p>For more information on the injured worker's radiological conditions, refer to Figures 10.0-1, Patient's Contamination-with Clothing, and 10.0-2, Patient's Skin Contamination.</p></div> |   |                           |
| 10:40   | Site EMT(s) provide patient status and turn over care to Matagorda County EMS. Radiation Protection provides radiological status of the patient.            |                           |

**2010 MS-1 MEDICAL EXERCISE  
PALACIOS COMMUNITY MEDICAL CENTER**

| <b>TIME</b>  | <b>SEQUENCE OF EVENTS</b>  | <b>MESSAGE<br/>NUMBER</b> |
|--|--|---------------------------|
| 10:45  | MCEMS contacts PCMC with known patient information   | 5                         |
| 11:05  | Matagorda County EMS arrives at PCMC with the patient.   |                           |
| 11:08  | Patient is met by medical staff and Radiation Protection at the unloading area for radiological status, medical briefing, initial treatment and decontamination. |                           |
| 11:15  | Stabilization and decontamination of patient begins.   |                           |
| <div><p style="text-align: center;"><b><u>CONTROLLER NOTE</u></b></p><p>For more information on patient contamination, refer to Figure 10.0-3, Patient's Skin Contamination After Decontamination.</p></div>   |  |                           |
| 11:35  | Matagorda County Emergency Medical Services personnel, vehicle, and equipment are monitored, decontaminated as needed, and released.                             |                           |
| <div><p style="text-align: center;"><b><u>CONTROLLER NOTE</u></b></p><p>For more information on ambulance radiological conditions, refer to Figure 10.0-5, Matagorda County EMS Radiological Survey.</p></div> |  |                           |
| 11:45  | Patient decontamination is complete.   |                           |
| 11:50  | Patient is moved from emergency room area for final treatment and hospital admittance.   |                           |





**2010 MS-1 MEDICAL EXERCISE  
PALACIOS COMMUNITY MEDICAL CENTER**

**8.0 Controller Data and Messages**

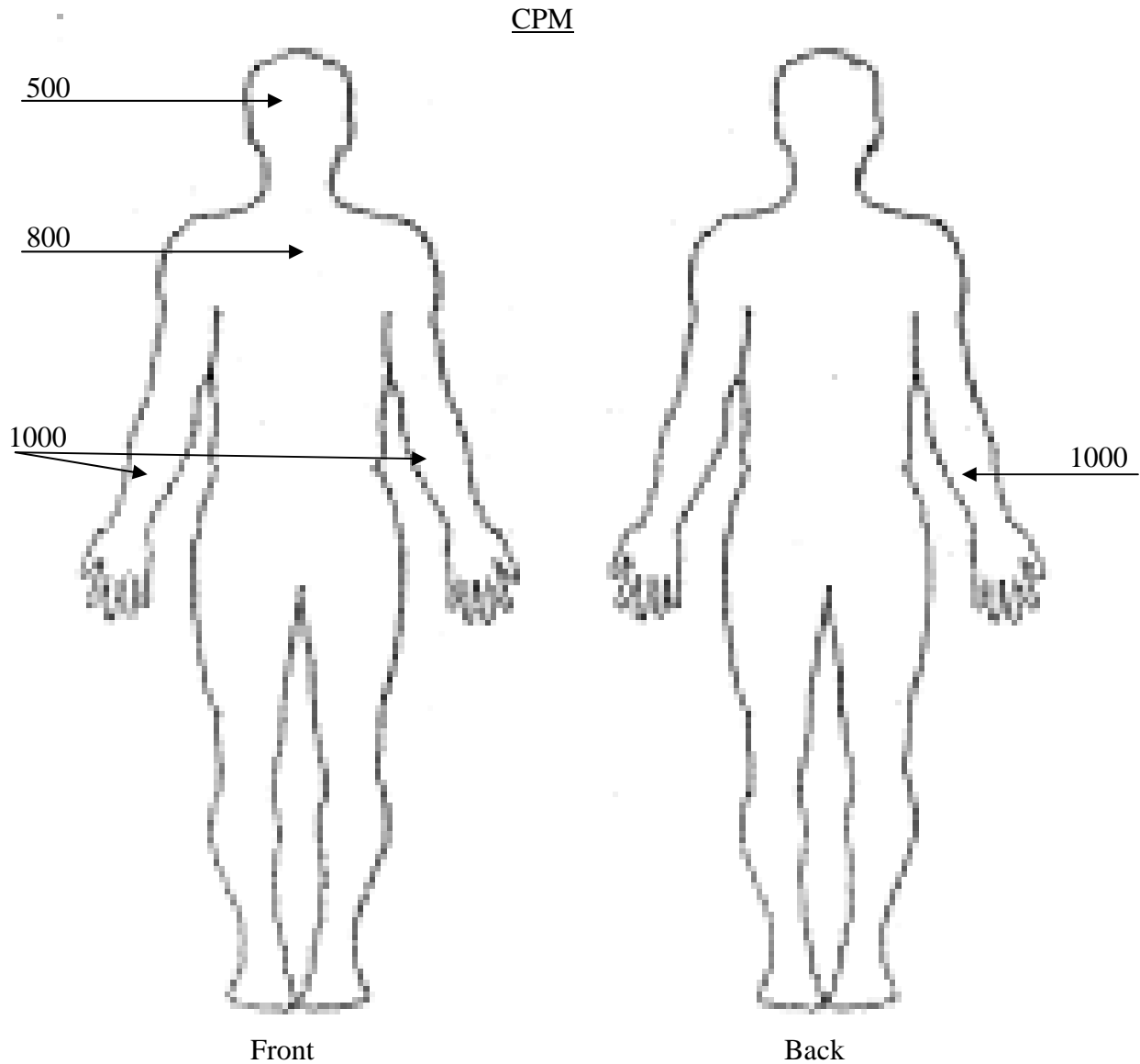
This section provides Controllers with patient data and messages that will be needed to relay injured worker data to participants who are responding to the medical emergency. Patient contamination levels are provided based on clothes on or off, and if decontamination attempts have been made. Refer to Patient Contamination Information (10.0-1 through 10.0-3).

The patient medical information is as if full treatment is provided and the patient is responding well.

**2010 MS-1 MEDICAL EXERCISE  
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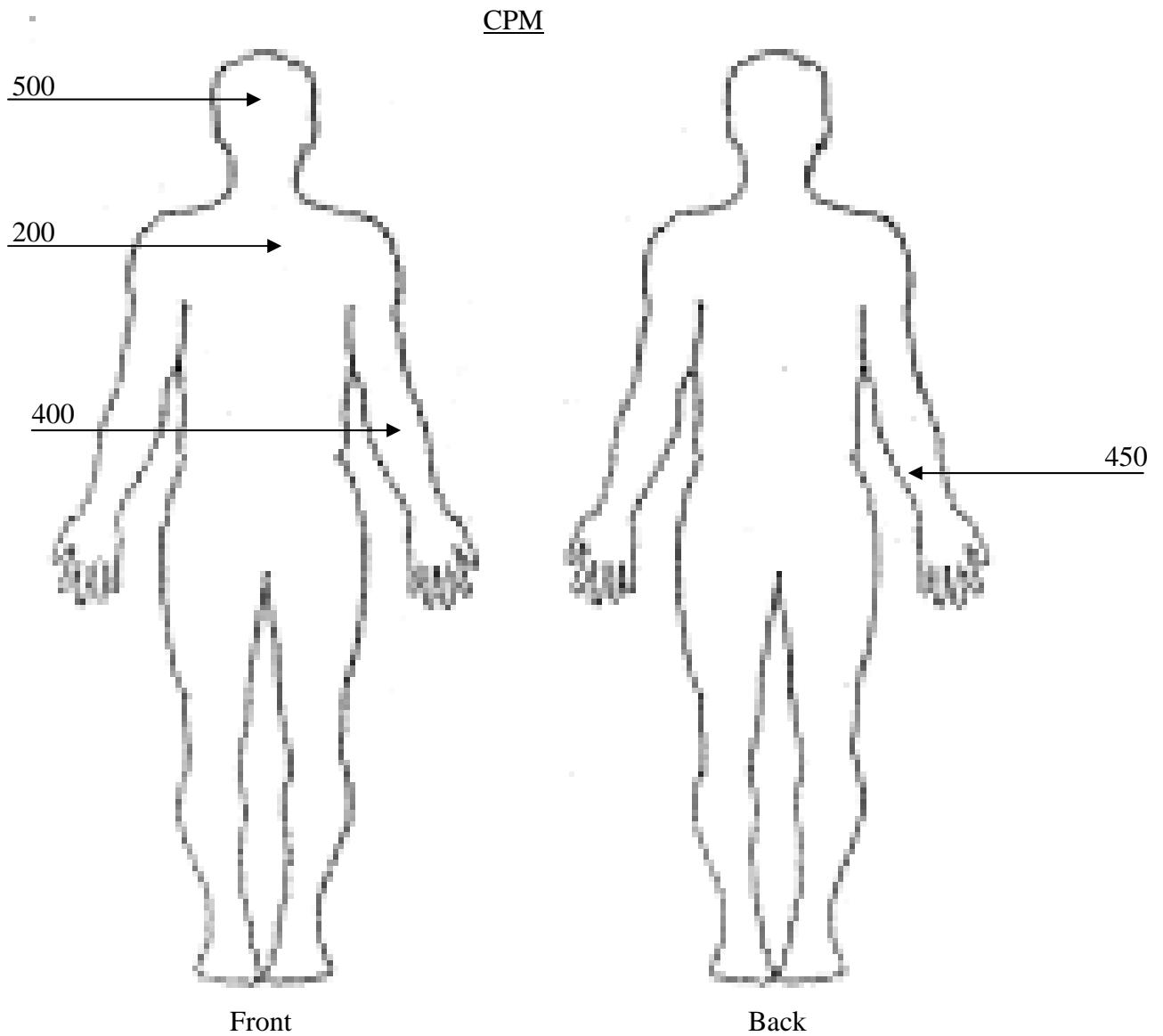
**Figure 10.0-1, Patient's Contamination - With Clothing**

8.1



**2010 MS-1 MEDICAL EXERCISE  
PALACIOS COMMUNITY MEDICAL CENTER**

**Figure 10.0-2, Patient's Skin Contamination**



**2010 MS-1 MEDICAL EXERCISE  
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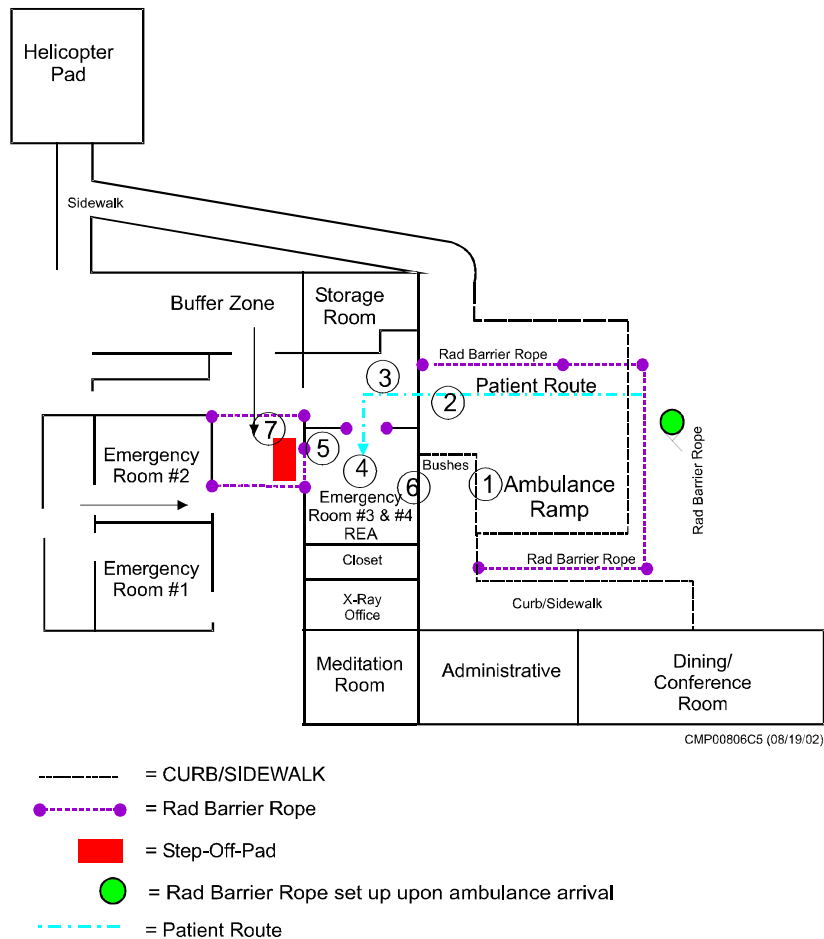
**Figure 10.0-3, Patient's Skin Contamination After Decontamination**

| VICTIM CONDITION                                 | RADIOLOGICAL DATA IN CPM       |         |
|--|--------------------------------|---------|
| Clothes Survey                                   | Head                           | 500     |
|  | Back of the right arm          | 1000    |
|  | Front of the right & left arms | 1000    |
|  | Chest                          | 800     |
| Skin Survey                                      | Head                           | 500     |
|  | Back of the left arm           | 450     |
|  | Front of the left arm          | 400     |
|  | Chest                          | 200     |
| After first decontamination attempt at hospital  | Face                           | As Read |
|  | Back of the left arm           | As Read |
|  | Front of the left arm          | 400     |
|  | Chest                          | As Read |
| After Second decontamination attempt at hospital | All meter readings are as read |         |

NO DETECTABLE CONTAMINATION AFTER SECOND DECONTAMINATION ATTEMPT

## 2010 MS-1 MEDICAL EXERCISE PALACIOS COMMUNITY MEDICAL CENTER

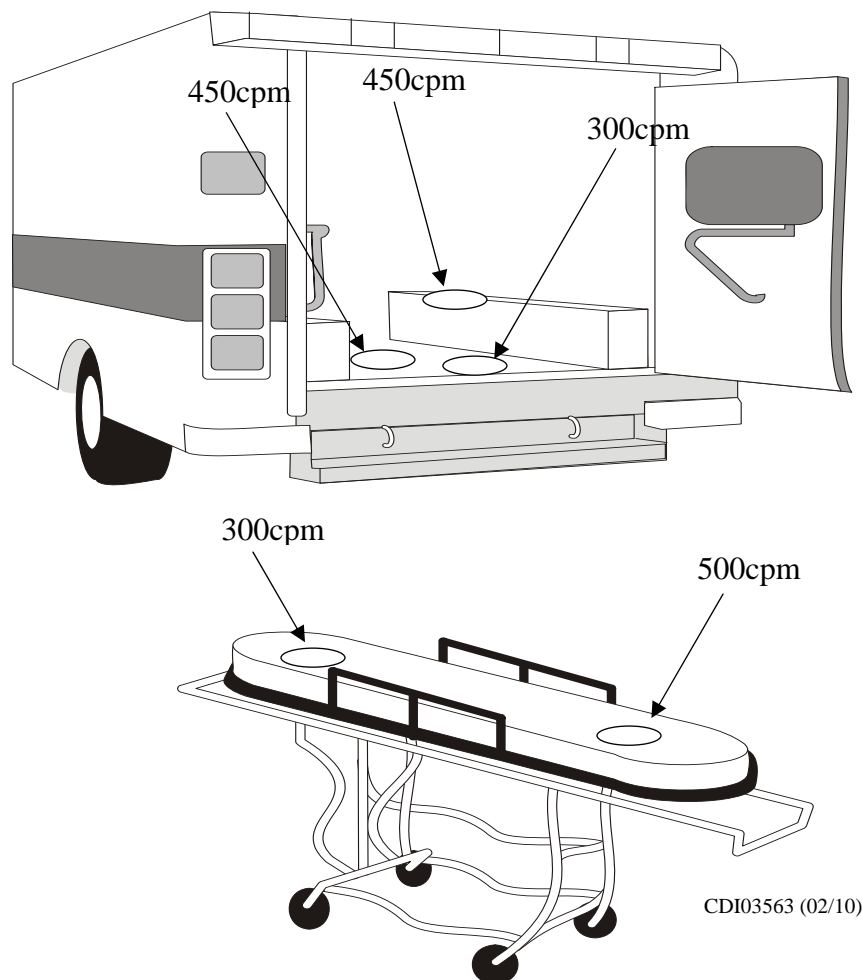
**Figure 10.0-4, Palacios Community Medical Center Radiological Survey and Layout**



| Location | Activity<br>CPM/100cm <sup>2</sup> |
|----------|------------------------------------|
| 1        | As Read                            |
| 2        | As Read                            |
| 3        | As Read                            |
| 4        | 400                                |
| 5        | 200                                |
| 6        | 250                                |
| 7        | As Read                            |

**2010 MS-1 MEDICAL EXERCISE  
PALACIOS COMMUNITY MEDICAL CENTER**

8.2 Figure 10.0-5, Matagorda County EMS Radiological Survey



**AMBULANCE ATTENDANTS ARE FOUND TO HAVE NO CONTAMINATION.**

**NO DETECTABLE CONTAMINATION ON AMBULANCE AFTER ONE DECON ATTEMPT.**

Discuss with the evaluator, how much monitoring and decontamination will be required to be demonstrated. The numbers are based on a direct frisk. This survey is assumed to have been completed after patient transfer.

## 2010 MS-1 MEDICAL EXERCISE PALACIOS COMMUNITY MEDICAL CENTER

**Table 10.0-1, Patient Performance Paths**

| <b>Approx. Time</b> | <b>PATH A<br/>Treat for shock and injuries</b>   | <b>PATH B<br/>Injuries treated, but is not treated for shock</b>  | <b>PATH C<br/>Victim is not treated for shock or injuries</b>  |
|---------------------|--|---|--|
| 10:10<br>Site       | Initial assessment – Disoriented, but somewhat responsive. Two inch laceration on the forehead, possible concussion. Wants to sleep.   | Initial assessment – Disoriented, but somewhat responsive. Two inch laceration on the forehead, possible concussion. Wants to sleep.. | Initial assessment – Disoriented, but somewhat responsive. Two inch laceration on the forehead, possible concussion. Wants to sleep. |
| 10:20<br>Site       | ABC's completed. Pressure dressing applied to the laceration. Oxygen administered. Inline cervical spine subligation with application of cervical collar. Patient log-rolled to place on backboard; patient is awake but confused, slowly responding to some commands. Patient is warmed with a blanket. | Omission of oxygen & warming blanket - patient remains disoriented and is not responsive. Pressure dressing applied to the forehead.  | No treatment. Patient becomes unresponsive.  |
| 10:40<br>Turnover   | Patient is more alert, complaining of pain on forehead.  | Patient is awake but groggy.  | Patient remains unresponsive. Skin is cool and clammy.   |
| 10:50<br>Ambulance  | Patient is stable, alert and oriented complaining of pain on forehead.   | Patient is awake but groggy   |  |
| 11:00<br>Ambulance  | Patient calm; but complains of pain on forehead.   | EMS personnel begin treating patient for shock.   |  |
| 11:10<br>Turnover   | Patient calm; but complains of pain on forehead.   | Patient feels better, more alert.   | Patient is stabilized.   |
| 11:15<br>Hospital   | Patient calm, but complains of pain on forehead.   | Patient is alert.   | Patient is responsive and becoming alert.  |
| 11:30<br>Hospital   | Patient complaining of pain during decontamination efforts.  | Patient complaining of pain during decontamination efforts.   | Patient complaining of pain during decontamination efforts.  |
| 11:45<br>Hospital   | Patient complains of pain on forehead.   | Patient complains of pain on forehead.  | Patient complains of pain on forehead.   |

## 2010 MS-1 MEDICAL EXERCISE PALACIOS COMMUNITY MEDICAL CENTER

**Table 10.0-2, Patient Vital Signs**

| <b>Approx.<br/>Time</b>        | <b>PATH A<br/>Treat for shock and<br/>injuries</b>  | <b>PATH B<br/>Injuries treated, but is<br/>not treated for shock</b>                                     | <b>PATH C<br/>Victim is not treated for<br/>shock or injuries</b>  |
|--------------------------------|---|--|--|
| 10:10<br>Site<br><br>GCS 13-14 | RESP - 18 B/P - 138/78<br>PULSE - 100, Regular/Strong<br>SKIN - Warm/Moist<br>PUPILS - Equal/Reactive   | Same as Path A.  | Same as Path A.  |
| 10:20<br>Site                  | RESP - 17 B/P - 136/78<br>PULSE - 92,<br>Regular/Strong<br>SKIN - Warm/Moist<br>PUPILS - Equal/Reactive   | RESP - 22 B/P - 128/80<br>PULSE - 126,<br>Regular/Strong<br>SKIN - Warm/Moist<br>PUPILS - Equal/Reactive | RESP - 24 B/P - 118/72<br>PULSE - 128,<br>Regular/Strong<br>SKIN - Warm/Moist<br>PUPILS - Equal/Reactive   |
| 10:30<br>Site                  | RESP - 17 B/P - 128/76<br>PULSE - 80,<br>Regular/Strong<br>SKIN - Normal<br>PUPILS - Equal/Reactive<br>Distal pulse is present,<br>capillary refill is immediate. | RESP - 28 B/P - 116/72<br>PULSE - 90,<br>Regular/Strong<br>SKIN - Warm/Moist<br>PUPILS - Equal/Reactive  | RESP - 29 B/P - 98/60<br>Pulse - 134, Regular<br>SKIN - Cool/A little<br>clammy<br>PUPILS - Equal/Reactive |
| 10:40<br>Turnover<br>GCS 14    | Same as above.  | Same as above.   | Same as above.   |
| 10:50<br>Ambulance             | RESP - 17 B/P - 130/80<br>PULSE - 88,<br>Regular/Strong<br>SKIN - Normal<br>PUPILS - Equal/Reactive   | RESP - 24 B/P - 120/75<br>PULSE - 90, Regular<br>SKIN - Warm Moist<br>PUPILS - Equal/Reactive            | RESP - 32 B/P - 90/55<br>PULSE - 150, Weak<br>SKIN - Cool/Clammy<br>PUPILS - Equal/Reactive                |
| 11:10<br>Turnover              | RESP - 17 B/P - 130/80<br>PULSE - 88,<br>Regular/Strong<br>SKIN - Normal<br>PUPILS - Equal/Reactive   | RESP - 24 B/P - 120/75<br>PULSE - 90, Regular<br>SKIN - Warm/Moist<br>PUPILS - Equal/Reactive            | RESP - 32 B/P - 90/55<br>PULSE - 140, Weak<br>SKIN - Cool/Clammy<br>PUPILS - Equal/Reactive                |
| 11:15<br>Hospital              | RESP - 16 B/P - 125/90<br>PULSE - 95,<br>Regular/Strong   | RESP - 24 B/P - 125/70<br>PULSE - 90, Regular<br>SKIN - Warm/Moist                                       | RESP - 26 B/P - 100/60<br>PULSE - 120, Regular<br>SKIN - Cool/Clammy                                       |



**2010 MS-1 MEDICAL EXERCISE  
PALACIOS COMMUNITY MEDICAL CENTER**

|                     |   |   |  |
|---------------------|---|---|--|
| GCS 15              | SKIN - Normal<br>PUPILS - Equal/Reactive  | PUPILS – Equal/Reactive   | PUPILS- Equal/Reactive   |
| 11:30<br>Hospital   | RESP – 14 B/P - 120/80<br>PULSE – 90,<br>Regular/Strong<br>SKIN - Normal<br>PUPILS - Equal/Reactive | RESP - 18 B/P - 120/80<br>PULSE - 90,<br>Regular/Strong<br>SKIN – Normal<br>PUPILS - Equal/Reactive | RESP - 20 B/P – 120/80<br>PULSE - 90, Regular<br>SKIN - Cool A little<br>clammy<br>PUPILS – Equal/Reactive |
| 11:45<br>(Hospital) | Same as above.  | Same as Path A.   | Same as Path A.  |

**2010 MS-1 MEDICAL EXERCISE  
PALACIOS COMMUNITY MEDICAL CENTER**

MESSAGE NO: 1

Page 1 of 1

**THIS IS A DRILL**

**To:** All Participants and Controllers  
**From:** Controller  
**Location:** All Participants  
**Time:** 10:00

---

Initial conditions establish that the weather is as found on the day of the Exercise, however, is it extremely foggy in the area surrounding Houston and on the coast. Unit 1 is in a refueling outage and Unit 2 is as found.

(If inclement weather occurs move onsite portion of the exercise to the NSC under the front canopy)

---

**2010 MS-1 MEDICAL EXERCISE  
PALACIOS COMMUNITY MEDICAL CENTER**

MESSAGE NO: 2

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**THIS IS A DRILL**

**To:** Onsite Players

**From:** Onsite Controllers

**Location:** All

**Time:** 10:05

---

|   |
|---|
| <p><b>Controller Note: Communications with offsite support will be made to Matagorda County Emergency Medical Services.</b></p> |
|---|

A call has been made to the Unit 1 Control Room indicating a plant employee has been injured. Control Room staff in Unit 1 should implement procedure OPOP04-ZO-0004, Personnel Emergencies. STP medical responders should be called out to assess the scene and offer care to the patient.

When they get to the scene, they find an injured female who has fallen into the spent fuel pool and when extracted by co-workers, is found to have hit her head. She has a bleeding gash on her eye and forehead and is unresponsive, with a possible concussion. The STP EMT(s) should note that the injuries are severe enough to warrant transport to an offsite medical facility.

In the meantime, the patient will be packaged and transported out of the protected area for pickup.

A player/controller briefing should occur in the old Emergency Operations Facility with the following:

Radiation Protection (supervisor, players, controller)

EMTs

Onsite controllers

Victim

Patient will be moved to the usual site transfer area (front of the Nuclear Training Facility), where the turnover to Matagorda County EMS will be made.

---

**2010 MS-1 MEDICAL EXERCISE  
PALACIOS COMMUNITY MEDICAL CENTER**

MESSAGE NO: 3

Page 1 of 1

**THIS IS A DRILL**

**To:** Matagorda County Emergency Medical Services  
**From:** Control Room Phone Cell Controller  
**Location:** Phone Cell  
**Time:** 010:10

---

“THIS IS A DRILL. This is STP Unit One Control Room. We have a female who fell about 3 feet into water. She has suffered injuries and requires immediate transfer to an offsite medical center. She is probably contaminated and has a possible concussion.” If asked, tell them she has a 2 inch eye and forehead laceration. “THIS IS A DRILL.”

**Matagorda County Emergency Medical Services - (979) 323-9020 (Dispatcher)**

**Matagorda Regional Medical Center Emergency Department – (979) 241-3315**

**Palacios Community Medical Center (361) 972-2511 - (Operator)**

**Controller note: Provide the Dispatcher with your phone cell callback number to prevent actual contact with the Units.**

**After contacting Matagorda Regional Medical Center (MRMC), MRMC should determine to re-direct the patient to the Palacios Community Medical Center, due to MRMC’s emergency department’s ongoing response to handling a mass casualty event (bleachers at the high school collapsed during a pep rally.)**

**2010 MS-1 MEDICAL EXERCISE  
PALACIOS COMMUNITY MEDICAL CENTER**

MESSAGE NO: 4

Page 1 of 1

**THIS IS A DRILL**

**To:** Matagorda Regional Medical Center  
**From:** Matagorda Regional Medical Center Controller  
**Location:** Matagorda Regional Medical Center  
**Time:** 010:13

---

The Matagorda Regional Medical Center Controller inserts this message when the Matagorda County EMS calls to let the hospital know that potentially contaminated injured patient is in route. Below is the reason for the re-direct.

Palacios Community Medical Center (361) 972-2511

Matagorda Regional Medical Center redirects the Matagorda County EMS crew to the Palacios Community Medical Center due to MRMC's emergency department's ongoing response to handling a mass casualty event (bleachers at the high school collapsed during a pep rally.)

---

**2010 MS-1 MEDICAL EXERCISE  
PALACIOS COMMUNITY MEDICAL CENTER**

MESSAGE NO: 5

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**THIS IS A DRILL**

**To:** Palacios Community Medical Center  
**From:** Matagorda County Emergency Medical Services  
**Location:** En-route  
**Time:** ~ 10:45 (As patient information is known)

---

When the Matagorda County Emergency Medical Services (ambulance) contact the hospital, provide them with known patient information as listed below.

|      |   |
|------|---|
| + 10 | Patient Information as provided by the EMT at the scene.<br>RESP: 18<br>B/P: 138/78<br>Pulse: 100, Regular/Strong<br>Skin: Warm/Moist<br>Pupils: Equal/Reactive<br>Symptoms/injuries: falling and hitting head (e.g. concussion, bleeding laceration on face, etc.) |
|------|---|

---

**2010 MS-1 MEDICAL EXERCISE  
PALACIOS COMMUNITY MEDICAL CENTER**

MESSAGE NO: 6

Page 1 of 1

**THIS IS A DRILL**

**To:** All Players  
**From:** Lead Controllers  
**Location:** All Facilities  
**Time:** When medical emergency activities are concluded

---

**CONTROLLER NOTE**

Upon completion of medical emergency activities in your area/facility, read the following message.

The medical Exercise is now terminated.

Please organize the documentation generated by the exercise and fill out a player comment sheet.

Ensure your name is recorded on a player attendance sheet.

Restore the facilities to their original condition.

There will be a player critique beginning in the Hyatt Conference Room at \_\_\_\_\_ (~ 20 minutes after the conclusion of the Exercise.)

Have hospital emergency department contact Matagorda County EMS and tell them where and when the critique will begin.

**2010 MS-1 MEDICAL EXERCISE  
PALACIOS COMMUNITY MEDICAL CENTER**

9.0 Controller and Evaluator Organization and Assignments

**CONTROLLERS**

| LOCATION   | NAME           |
|--|----------------|
| Lead Controller  | Lurinda Barton |
| Matagorda County EMS /<br>Radiation Protection Ambulance | Scott Korenek  |
| Radiation Protection-Hospital                            | Steve Horak    |
| Hospital-Medical Response                                | Jessica Gann   |
| Hospital Buffer Zone                                     | Joe Enoch      |
| Accident Scene – Security / EMT<br>Response              | Steve Johnson  |
| Unit 1 Control Room                                      | Max Keys       |



**2010 MS-1 MEDICAL EXERCISE  
PALACIOS COMMUNITY MEDICAL CENTER**

**EVALUATION AREA ASSIGNMENTS**

| <i>Objective</i>                                       | <i>Location</i> | <i>Controller</i> |
|--|-----------------|-------------------|
| <b><i>1.e.1: Equipment and Dosimetry</i></b>           | MCEMS           | Korenek           |
|  |                 |                   |
|  | PCMC            | Enoch             |
|  |                 | Horak             |
|  |                 |                   |
| <b><i>3.a.1: Emergency Worker Exposure Control</i></b> | MCEMS           | Korenek           |
|  |                 |                   |
|  | PCMC            | Enoch             |
|  |                 | Horak             |
|  |                 |                   |
| <b><i>6.d.1: Transportation &amp; Treatment</i></b>    | MCEMS           | Korenek           |
|  |                 |                   |
|  | PCMC            | Gann              |
|  |                 | Enoch             |
|  |                 | Horak             |

MCEMS = Matagorda County EMS

PCMC = Palacios Community Medical Center

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