



Federal Emergency Management Agency

Region I

J.W. McCormack Post Office &
Courthouse Building, Room 442
Boston, MA 02109

February 14, 2001

Hubert J. Miller, Regional Administrator
USNRC, Region I
475 Allendale Road
King of Prussia, PA 19406

Dear Mr. Miller:

Enclosed is a copy of the final report for the September 27, 2000, Wentworth-Douglass Hospital, Dover, New Hampshire MS-1 Drill, and the October 1; 2000, Masconomet Reception Center Drill. This report addresses the evaluation of the plans and preparedness for the State of New Hampshire and the Wentworth-Douglass Hospital. Wentworth-Douglass Hospital is an alternate hospital for handling radiologically contaminated injuries from the Seabrook Nuclear Power Station. The report also addresses the evaluation of the Emergency Medical Services (EMS) provided by the Seabrook, NH, Fire Department EMS. Further, it addresses the evaluation of the plans and preparedness of the Commonwealth of Massachusetts and the Masconomet Reception Center, Boxford, Massachusetts. The final drill report was prepared by the Federal Emergency Management Agency, Region I staff. Copies of this report have been forwarded to the State of New Hampshire and the Commonwealth of Massachusetts.

There were no deficiencies identified during the September 27, 2000, MS-1 drill nor the October 1, 2000, Reception Center drill. No Area Requiring Corrective Action (ARCA) was identified at the New Hampshire MS-1 drill. One new ARCA was identified at the Masconomet Reception Center Drill and one previously identified ARCA was not resolved. The new ARCA was resolved with a re-demonstration held on January 20, 2001.

Based upon the results of the September 27, 2000, New Hampshire MS-1 Drill, the offsite radiological emergency response plans and preparedness for the State of New Hampshire and Wentworth-Douglas Hospital, that are site specific to the Seabrook Nuclear Power Station, can be implemented and are adequate to provide reasonable assurance that appropriate measures can be taken offsite to protect the health and safety of the public in the event of a radiological emergency at the site. Further, based upon the October 1, 2000, Massachusetts Reception Center Drill, the offsite radiological emergency response plans and preparedness for the Commonwealth of Massachusetts and Masconomet Reception Center that are site specific to the Seabrook Nuclear Power Station can be implemented and are adequate to provide reasonable assurance that appropriate measures can be taken offsite to protect the health and safety of the public in the event of a radiological emergency at the site.

If you should have any questions, please contact Daniel McElhinney, RAC Chair, at 617-223-9567.

Sincerely,

Kenneth L. Horak
Acting Regional Director

Enclosure

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**STATE OF NEW HAMPSHIRE
MS-1 DRILL
WENTWORTH-DOUGLAS HOSPITAL DOVER,
NEW HAMPSHIRE**

**MASCONOMET RECEPTION CENTER DRILL
BOXFORD, MASSACHUSETTS**

SEABROOK NUCLEAR POWER STATION

Licensee: *North Atlantic Energy
Services Corporation*

Exercise Date: *September 27, 2000*

Report Date: *February 7, 2001*

**FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION 1
JOHN W. McCORMACK POST OFFICE AND COURTHOUSE
BOSTON, MASSACHUSETTS 02109**

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I. EXECUTIVE SUMMARY

On September 27, 2000, a drill was conducted at the Wentworth-Douglass Hospital in Dover, New Hampshire. A Reception Center Drill was conducted on October 1, 2000, at the Masconomet Reception Center. Both drills were conducted by representatives of the Federal Emergency Management Agency (FEMA) Region I. The purpose of the drill was to assess the capability of the Wentworth-Douglass Hospital and the Masconomet Reception Center to respond to a radiological emergency at the Seabrook Nuclear Power Station (NPS). These drills were held in accordance with FEMA's policies and guidance concerning the exercise of state and local radiological emergency response plans (RERP) and procedures.

FEMA wishes to acknowledge the efforts of the individuals in the Seabrook Fire Department's Emergency Medical Services ambulance, and the Wentworth-Douglass Hospital Emergency Room, the Masconomet Reception Center volunteers and support staffs that participated in this drill.

Protecting the public health and safety is the full-time job of some of the drill participants and an additional assigned responsibility for others. Still others have willingly sought this responsibility by volunteering to provide vital emergency services to their communities. Cooperation and teamwork of all the participants were evident during these exercises.

This report contains the final evaluations of the Medical Services – 1 (MS-1) and Reception Center Drills.

The Seabrook Fire Department EMTs, the Wentworth-Douglass Hospital Emergency Room staff, and the volunteers that staffed the Masconomet Reception Center demonstrated knowledge of their emergency response plans and procedures and adequately implemented them.

II. INTRODUCTION

On December 7, 1979, the President directed FEMA to assume the lead responsibility for all offsite nuclear planning and response. FEMA's activities are conducted pursuant to 44 Code of Federal Regulations (CFR) Parts 350, 351 and 352. These regulations are a key element in the Radiological Emergency Preparedness (REP) Program that was established following the Three Mile Island Nuclear Station accident in March 1979.

FEMA Rule 44 CFR 350 establishes the policies and procedures for FEMA's initial and continued approval of State and local governments' radiological emergency planning and preparedness for commercial nuclear power plants. This approval is contingent, in part, on State and local government participation in joint exercises with licensees.

FEMA's responsibilities in radiological emergency planning for fixed nuclear facilities include the following:

- Taking the lead in offsite emergency planning and in the review and evaluation of RERPs and procedures developed by State and local governments;
- Determining whether such plans and procedures can be implemented on the basis of observation and evaluation of exercises of the plans and procedures conducted by State and local governments;
- Responding to requests by the U.S. Nuclear Regulatory Commission (NRC) pursuant to the Memorandum of Understanding between the NRC and FEMA dated June 17, 1993 (Federal Register, Vol. 58, No. 176, September 14, 1993); and
- Coordinating the activities of Federal agencies with responsibilities in the radiological emergency planning process:
 - U.S. Department of Commerce
 - U.S. Nuclear Regulatory Commission
 - U.S. Environmental Protection Agency
 - U.S. Department of Energy
 - U.S. Department of Health and Human Services
 - U.S. Department of Transportation
 - U.S. Department of Agriculture
 - U.S. Department of the Interior and
 - U.S. Food and Drug Administration

Representatives of these agencies serve on the FEMA Region I's Regional Assistance Committee (RAC), which is chaired by FEMA.

Formal submission of the RERPs for the Seabrook Nuclear Power Station (NPS) to FEMA Region I by the State of New Hampshire and the Commonwealth of Massachusetts and their involved local jurisdictions occurred on September 1987 and May 1992, respectively.

A MS-1 Drill was conducted on September 27, 2000, by FEMA Region I to assess the capabilities of the Seabrook Fire Department Emergency Medical Services in implementing their RERPs and procedures. The purpose of this drill report is to present the drill results and findings on the performance of the offsite response organizations (ORO) during a simulated radiological emergency.

A Reception Center Drill was conducted on October 1, 2000, by FEMA Region I to assess the capabilities of the Masconomet Reception Center in implementing their RERP and procedures to protect the public health and safety during a radiological emergency involving the Seabrook NPS.

The findings presented in this report are based on the evaluations of the Federal evaluator team, with final determinations made by the FEMA Region I RAC Chairperson, and approved by the Regional Director.

The criteria utilized in the FEMA evaluation process are contained in:

- NUREG-0654/FEMA-REP-1, Rev. 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980;
- FEMA-REP-14, "Radiological Emergency Preparedness Exercise Manual," September 1991; and
- FEMA-REP-15, "Radiological Emergency Preparedness Exercise Evaluation Methodology," September 1991.

Section III of this report, entitled "Drill Evaluation and Results," presents detailed information on the demonstration of applicable exercise objectives at each jurisdiction or functional entity evaluated in a jurisdiction-based, issue only format. This section also contains, if required, (1) descriptions of Deficiencies and ARCAs assessed during exercises, recommended corrective actions and (2) descriptions of unresolved ARCAs assessed during previous exercises and the status of the OROs' efforts to resolve them.

III. DRILL EVALUATION AND RESULTS

Contained in this section are the results and findings of the evaluation of:

1. Seabrook Fire Department Emergency Medical Services and the Wentworth-Douglass Emergency Room staff that participated in the September 27, 2000, MS-1 Drill to test the medical services capabilities to respond to an incident involving the Seabrook Nuclear Power Station (NPS).

2. Further, this section contains the results and findings of the evaluation of the Masconomet Reception Center and its staff that participated in the October 1, 2000, Reception Center Drill to test the capabilities to respond to an incident involving the Seabrook NPS.

Each functional entity was evaluated on the basis of its demonstration of criteria delineated in the Exercise objectives contained in FEMA-REP-14, REP Manual, September, 1991

The following is the status of functional entities evaluated.

1a. Seabrook Fire Department Emergency Medical Services unit

The two Emergency Medical Technicians (EMT) staffing the Seabrook Fire Department ambulance were professional and knowledgeable. Exhibiting good teamwork and coordination, they received the victim and carefully handled the patient to control contamination and not exacerbate the victim's injuries. The hospital was informed of the situation by the EMTs and periodically was provided with patient vital signs and estimated time of arrival. The EMTs performed patient transfer with care and efficiency at the Emergency Room entrance to the hospital.

a. MET: Objective 20

b. DEFICIENCY: None

c. AREA REQUIRING CORRECTIVE ACTIONS: None

d. NOT DEMONSTRATED: None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

1b. Wentworth-Douglass Hospital Dover, New Hampshire

The Radiological Emergency Area (REA) team and the health physics (HP) technicians demonstrated their knowledge, expertise, and abilities to work as a team to minimize the spreading of contamination. They showed a sincere concern and care for the patient. There was sufficient medical, administrative, and logistical support to properly care for a radiologically contaminated injured person. Special note was made of the “Dirty Nurse.” She coordinated medical care, decontamination and monitoring of the victim with an exceptionally high degree of professionalism while remaining sensitive to the patient.

a. **MET:** Objective 21

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTIONS:** None

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2. Masconomet Reception Center

The Masconomet Reception Center Team demonstrated their knowledge and expertise of establishing and operating a reception center. Staff displayed a capability to communicate and cooperate and to function as a fully trained team.

a. **MET:** Objectives 3,4,5

b. **DEFICIENCY:** None

c. **AREA REQUIRING CORRECTIVE ACTIONS: (ARCA) Objective 18**

57-00-18-A-46 Initial screening of evacuees at the Masconomet Reception Center was demonstrated using three PPM-100A portal monitors (serial number 1025, 1026, and 1027). Each monitor was set up in accordance with plans and procedures. A centerline operations check of the portal monitors (FP-06AI, page 7 of 13, paragraph 5.2.6) using a .1 micro curie button source was not observed. While demonstrating the monitoring of six evacuees a portal monitor failed to alarm for one person holding a check source at chest level. For demonstration purposes all three portal monitors were used to determine the ability to monitor 20 percent of the population within 12 hours. A throughput capacity of not more than 60 seconds/ six individuals was required to be maintained to meet this requirement, this was successfully accomplished with these results: Portal #1 6/53, Portal #2 6/49, and Portal #3 6/55 seconds.

Recommendation: Re-calibrate the instrument and perform a complete systems diagnostics, then re-demonstrate operation of equipment at the location used during the drill. Run a test with a representative sample of evacuees (with and without check sources) to determine a performance standard baseline.

57-00-18-A-47 While monitoring an evacuee prior to decontamination, the monitor requested the evacuee to remove her shoes, which were contaminated on the soles. When she did so she stepped onto the path she had just walked on. Additionally, the monitor put her instrument on the floor to put tape on her hands to remove the contamination from the shoe. Once completed, the tape stuck to her tyvek suit as she was removing it. When she picked up the instrument to recheck the shoe sole, she pushed the probe against her suit to adjust the plastic probe cover. All these actions contributed to the possible spread of contamination

Recommendation: Conduct additional training for the monitoring team and provide them with additional opportunities to demonstrate the mastery of the procedures.

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** ARCA

g. REMEDIAL ACTION DEMONSTRATED

ARCA # 57-00-18-A-46

Masconomet Reception Center staff, on January 20, 2001, re-demonstrated the portal monitoring of evacuees to correct ARCA # 57-00-18-A-46. This was the only area re-demonstrated and the ARCA was corrected.

Three portal monitors were set up completely and checked for proper operation, including reading of check sources. All were operable. A representative number of simulated evacuees, thirty (30), were processed through each portal. A percentage of each group carried check sources to ensure that contamination would be detected. The alarms triggered in all but one instance. The first time a simulated evacuee, carrying a check source, passed through PM 1026 the alarm failed to sound. Investigation uncovered that the reason for the failure was that the unit's volume key was still in the "Off" position. An additional step will be added to the procedures guide to assure the oversight will not reoccur.

All three portal monitors processed an average rate of six simulated evacuees per minute, thus ensuring that 20% of the population could be monitored in 12 hours.

57-96-18-A-33

Description: The secondary monitor, using a CDV-700 instrument, monitored the Evacuee too quickly, failing to meet the 2-3 minute estimate for whole body survey (noted in FP-04A1, Rev. 8, 11/96, page 14-33, under the Personnel Monitoring Checklist) and missed surveying the bottom of the evacuee's feet and right palm.

Reason Previous ARCA unresolved:

Female-The staff person monitoring evacuees prior to being released to registration monitored too rapidly and held the probe too far from the person, approximately six inches. Likewise, the probe was held approximately the same distance from the thyroid when that was checked. (POR 18.20 NUREG J.12)

Male- For the drill two teams demonstrated secondary monitoring in the male decontamination area. Both teams displayed a need for additional monitoring techniques training. Personnel performing the monitoring function held the probes too far away from areas being monitored; the probes were moved too rapidly to accurately detect contamination; also, when monitoring under the evacuee arms the probes were turned 90 degrees away from the surface being measured.

Recommendation: Conduct additional training for the monitoring teams and provide them with additional opportunities to demonstrate mastery of the procedures.

APPENDIX I

DRILL EVALUATORS

<u>EVALUATION SITE</u>	<u>OBJECTIVE</u>	<u>EVALUATOR</u>	<u>ORGANIZATION</u>
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MS-1 DRILL SEABROOK NPS/ WENTWORTH-DOUGLASS HOSPITAL SEPTEMBER 27,2000

Seabrook Fire Dept. EMS unit	20	Robert J. Waters	FEMA Region I
Wentworth-Douglass Hospital	21	Robert Poole	FEMA Region I

MASCONOMET RECEPTION CENTER DRILL OCTOBER 1, 2000

Reception Center EOC	3, 4	Robert J. Waters	FEMA Region I
Emergency Worker Exposure Control	5	Robert J. Swartz	FEMA Region I
Reception Cntr Activation	18	Robert J Waters	FEMA Region I
Traffic Control	18	Wanda Gaudet	FEMA Region I
Vehicle Monitoring & Decontamination	18	Robert Poole Jim Gibbons	FEMA Region I FEMA Region I
Portal Monitoring	18	Dan McElhinney	FEMA Region I
Male Decontamination	18	Dan McElhinney Jim Gibbons	FEMA Region I FEMA Region I
Female Decontamination	18	Deborah Bell	FEMA Region I
Evacuee Registration	18	Wanda Gaudet Robert J. Swartz	FEMA Region I FEMA Region I

APPENDIX II

Extent-of-Play

-Seabrook Fire Department/ Wentworth-Douglass MS-1 Drill-
September 27, 2000

Objective 3. DIRECTION AND CONTROL

Demonstrate the capability to direct and control emergency operations.

Extent of Play

Controllers will provide key information from non-participating locations, such as the Area I EOC. This information will be limited to that necessary to drive the exercise play; ECLs, protective action directives, notification of a radiological release, number of evacuees expected, etc.

Objective 4. COMMUNICATIONS

Demonstrate the capability to communicate with all appropriate emergency personnel at facilities and in the field.

Extent of Play

Primary and backup communication links to Area I EOC will be demonstrated once.

Objective 5 EMERGENCY WORKER EXPOSURE CONTROL

Demonstrate the ability to continuously monitor and control radiation exposure of emergency workers.

Extent of Play

No Exceptions

Objective 18 RECEPTION CENTER MONITORING, DECONTAMINATION, AND REGISTRATION

Demonstrate the adequacy of procedures, facilities equipment and personnel for registration, radiological monitoring, decontamination and registration of evacuees.

Extent of Play

Simulated evacuees will provide fictitious information to elicit responses from the reception center staff. Three portal monitors will be demonstrated. One personnel monitoring team and one male and female personnel decontamination team member will dress out. Seven evacuees will be

monitored and two males and two females will be found to be contaminated. Decontamination will be simulated through a discussion of methods and techniques.

Two vehicle-monitoring lanes will be demonstrated with three vehicles in each lane. One vehicle monitoring team and one vehicle decontamination team will dress out., One vehicle in each lane will be found to be contaminated. Decontamination will be simulated through a discussion of procedures.

Seven evacuees will be registered. Of these, three will require accommodation at a mass care shelter, one will require transportation to the mass care shelter and one will seek information about other family members who were also evacuated. Transportation provisions will be simulated through a discussion about available reception center transportation.

Monitoring of personnel and vehicles will be demonstrated with a CDV-700 or equivalent fitted with appropriate probe. Players will use a draft copy of FORM 406 in monitoring and in the demonstration.

APPENDIX III

ELAPSED
TIME

SCENARIO DESCRIPTION

MSG
NUMBER

A. Initial Conditions

The exercise date is Wednesday, September 27, 2000. Seabrook Station is currently in a General Emergency.

The incident required the activation of all NAESCO, Commonwealth of Massachusetts, and State of New Hampshire emergency response facilities.

B. Initial Meteorological Conditions

The initial condition meteorology will be used throughout the exercise.

C. Detailed Scenario Timeline

A number of station health physics technicians and radiation workers were injured in the station RCA. Exeter Hospital has already received a number of contaminated injured workers. Exeter Hospital has requested that any additional contaminated injured workers be sent to Wentworth-Douglass Hospital. The worker being transferred to Wentworth-Douglass fell injuring his head, arm, leg, and ankle. A general contamination survey of him was completed at the station. The individual was not decontaminated because the patient kept complaining about headaches and double vision. Due to the nature of the accident, the station is unable to immediately dispatch HP staff to support the hospital response. A level 2 hospital response is necessary.

07:00- 07:45	H-01:00- -00:15	The accident victim will be moulaged in the Seabrook Station Ambulance Facility during this period.	
07:45- 08:05	H-00:15- +00:05	The Seabrook Fire Dept will be requested to report to the Ambulance Facility. Once at the scene, the ambulance staff will be informed of the medical and contamination status of the injured worker.	1

08:00	H+00:00	The MS-1 Hospital (WD Hospital) is notified that a contaminated, injured worker is being transported to their facility.	2
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<u>REAL TIME</u>	<u>ELAPSED TIME</u>	<u>SCENARIO DESCRIPTION</u>	<u>MSG NUMBER</u>
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08:00-08:50	H+00:00-00:50	The WD Hospital begins preparations for a Level 2 response.	3c
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08:05	H+00:05-00:15	The injured/contaminated patient is prepared for transport and loaded into the ambulance.	4c
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As	Required	While in transit, the ambulance staff communicates patient's vitals and ETA information via the Emergency Medical Services (EMS) radio or cellular phone to the emergency room staff.	5c
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08:50-09:30	H+00:50-01:30	Upon arrival, the ambulance staff briefs the Emergency Room staff and turns the injured patient over to their care. The hospital staff will monitor the attendants and the vehicle (See Section 6 Mini-scenario for details).	
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		If the Hospital staff begin to ask questions concerning patient background data or request technical assistance with the evaluation, then the controller should provide the information provided in the message.	6
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08:50-09:30	H+00:30-01:30	In the Emergency Room, staff monitor the injured patient's physical and radiological condition, and perform medical and contamination control duties as necessary. (See Section 6 Mini-scenario for details).	
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10:00+	H+02:00	Exercise activities are terminated as directed by the Exercise Manager. A FEMA critique at the hospital facility is conducted.	7
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ELAPSED
TIME

SCENARIO DESCRIPTION MS-1 DRILL
SEPTEMBER 27, 2000

MSG
NUMBER

A. Initial Conditions

The exercise date is Wednesday, September 27, 2000. Seabrook Station is currently in a General Emergency.

The incident required the activation of all NAESCO, Commonwealth of Massachusetts, and State of New Hampshire emergency response facilities.

B. Initial Meteorological Conditions

The initial condition meteorology will be used throughout the exercise.

C. Detailed Scenario Timeline

A number of station health physics technicians and radiation workers were injured in the station RCA. Exeter Hospital has already received a number of contaminated injured workers. Exeter Hospital has requested that any additional contaminated injured workers be sent to Wentworth-Douglass Hospital. The worker being transferred to Wentworth-Douglass fell injuring his head, arm, leg, and ankle. A general contamination survey of him was completed at the station. The individual was not decontaminated because the patient kept complaining about headaches and double vision. Due to the nature of the accident, the station is unable to immediately dispatch HP staff to support the hospital response. A level 2 hospital response is necessary.

07:00- 07:45	H-01:00- -00:15	The accident victim will be moulaged in the Seabrook Station Ambulance Facility during this period.	
07:45- 08:05	H-00: 15- +00:05	The Seabrook Fire Dept will be requested to report to the Ambulance Facility. Once at the scene, the ambulance staff will be informed of the medical and contamination status of the injured worker.	1

08:00	H+00:00	The MS-1 Hospital (WD Hospital) is notified that a contaminated, injured worker is being transported to their facility.	2
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<u>REAL</u> <u>TIME</u>	<u>ELAPSED</u> <u>TIME</u>	<u>SCENARIO DESCRIPTION</u>	<u>MSG</u> <u>NUMBER</u>
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08:00- 08:50	H+00:00- 00:50	The WD Hospital begins preparations for a Level 2 response.	3c
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08:05	H+00:05- 00:15	The injured/contaminated patient is prepared for transport and loaded into the ambulance.	4c
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As	Required	While in transit, the ambulance staff communicates patient's vitals and ETA information via the Emergency Medical Services (EMS) radio or cellular phone to the emergency room staff.	5c
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08:50- 09:30	H+00:50 01:30	Upon arrival, the ambulance staff briefs the Emergency Room staff and turns the injured patient over to their care. The hospital staff will monitor the attendants and the vehicle (See Section 6 Mini-scenario for details).	
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		If the Hospital staff begin to ask questions concerning patient background data or request technical assistance with the evaluation, then the controller should provide the information provided in the message.	6
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08:50- 09:30	H+00:30- 01:30	In the Emergency Room, staff monitor the injured patient's physical and radiological condition, and perform medical and contamination control duties as necessary. (See Section 6 Mini-scenario for details).	
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10:00+	H+02:00	Exercise activities are terminated as directed by the Exercise Manager. A FEMA critique at the hospital facility is conducted.	7
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