



Federal Emergency Management Agency

Region I
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Boston, MA 02109

Frank J. Congel, Director
Incident Response Operations
U.S. Nuclear Regulatory Commission
Mail Stop T4D18
Washington, D.C. 20555

Dear Mr. Congel:

Enclosed is a copy of the final report for the November 15, 2002, Medical Support MS-1 Drill of the offsite radiological emergency plans for Pilgrim Nuclear Power Station in Plymouth, Massachusetts. This report addresses the evaluation of the plans and preparedness for the Quincy Medical Center and the Fallon Ambulance Service of Quincy, Massachusetts. The final exercise report was prepared by the Federal Emergency Management Agency, Region I staff. Copies of this report will be forwarded to the Commonwealth of Massachusetts, Quincy Medical Center and Pilgrim Nuclear Power Station.

No Deficiencies were identified during the November 15, 2002 drill. There were two Areas Requiring Corrective Action (ARCA) identified. Corrective action has already been completed for one of the ARCAs and the remaining one will be addressed through regularly scheduled training sessions.

Based on the results of the November 15, 2002 drill, the offsite radiological emergency plans for the Quincy Medical Center and the Fallon Ambulance Service of Quincy, Massachusetts, in support of Pilgrim Nuclear Power Station, can be implemented and are adequate to provide reasonable assurance that appropriate measures can be taken offsite to protect the public in the event of a radiological emergency at the site.

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

Sincerely,

Daniel A. Craig
Regional Director



COMMONWEALTH OF MASSACHUSETTS

MS-1 DRILL

QUINCY MEDICAL CENTER

QUINCY, MASSACHUSETTS

PILGRIM NUCLEAR POWER STATION

Licensee: *Entergy Nuclear Generation Company*

Exercise Date: *November 15, 2002*

Report Date: *December 16, 2002*

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

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I. EXECUTIVE SUMMARY

On November 15, 2002, a drill was conducted at Quincy Medical Center, Quincy, Massachusetts by the Federal Emergency Management Agency (FEMA) Region I. The purpose of the drill was to assess the capability of the Quincy Medical Center and Fallon Ambulance Service to respond to a radiological emergency at the Pilgrim Nuclear Power Station (PNPS). This drill was 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 many individuals in the Fallon Ambulance Service, the Quincy Medical Center Emergency Room and Support Staffs who 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 this exercise. The participants displayed a heightened awareness of the risks from radiological materials that are not handled properly. The Fallon Ambulance Service Emergency Medical Technicians and Quincy Medical Center Staff expressed their confidence in dealing with a radiological situation as a result of following the response plans and procedures.

This report contains the final evaluation of the MS-1 Drill.

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 Pilgrim Nuclear Power Station (PNPS) to FEMA Region I by the State of Massachusetts and involved local jurisdictions occurred on June 16, 1981. Formal approval of the RERP was granted by FEMA on March 3, 1982, under 44 CFR 350.

A MS-1 Drill was conducted on November 15, 2002, by FEMA Region I, to assess the capabilities of the staff of the Fallon Ambulance Service and Quincy Medical Center in implementing their RERPs and procedures to protect the public health and safety during a radiological emergency involving the PNPS. 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.

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;
- "Radiological Emergency Preparedness: Exercise Evaluation Methodology," published in the Federal Register on September 12, 2001, and amended April 25, 2002.

Section III of this report, entitled "Drill Evaluation and Results," presents detailed information on the demonstration of applicable exercise criterion at each jurisdiction or functional entity evaluated in a jurisdiction / based, issue only format. This section also contains (1) issues raised during this exercise, recommended corrective actions, and the State and local governments' schedule of corrective actions for each identified exercise issue 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 the Fallon Ambulance Service and the Quincy Medical Center that participated in the November 15, 2002, MS-1 Drill to test the medical services capabilities to respond to an incident involving the (PNPS).

Evaluation Area 6: Support Operations/Facilities

Sub-element 6.d. Transportation and treatment of contaminated injured individuals

Criterion 6.d.1: The facility 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.)

The following is a status of the criterion evaluated.

1. Fallon Ambulance Service Quincy, MA

When they arrived at the scene, the Quincy Fire Department Staff immediately began providing care to the (simulated) victim. The Fire Department Staff did an outstanding job preparing the (simulated) victim for transfer to the Fallon Ambulance Emergency Medical Technicians. Staff took precautionary actions to prevent the spread of possible contamination. Their sense of teamwork was reflected in the seamless transition to the EMT's.

The Fallon Ambulance Emergency Medical Technicians (EMT's) demonstrated knowledge in the care of the (simulated) contaminated victim. They clearly had a comprehensive understanding of their plans and procedures and performed their duties successfully. The EMT's were compassionate and had genuine concern for the health and safety of the victim in their care. The attending EMT demonstrated excellent patient care, and contamination controls.

Upon arrival at the medical center, the ambulance parked in an area cordoned off as a contamination control measure. The EMTs stayed in this area and were monitored by a hospital Radiation Medicine Technician (RMT) who worked from outside the cordoned area. The outside RMT used a CDV 700 survey meter (last calibrated on February 8, 2002).

- a. **MET: 6.d.1**
- b. **DEFICIENCY: None**
- c. **AREAS REQUIRING CORRECTIVE ACTIONS: None**
- d. **PRIOR ARCAs – UNRESOLVED: None**

2. Quincy Medical Center, Quincy, MA.

The Radiological Emergency Area (REA) staff and two RMTs (One attending to the patient and one working outside the cordoned area) demonstrated their abilities to work as a team to treat a contaminated patient. The RMTs shared the responsibilities of the Radiation Safety Officer. All of the staff showed a sincere concern and care for the patient. There was sufficient medical, administrative, and logistical support to properly care for a contaminated injured person.

a. MET: None

b. DEFICIENCY: None

c. AREAS REQUIRING CORRECTIVE ACTIONS:

48-02-6.d.1-A-09

CONDITION: The outside RMT did not adequately demonstrate monitoring techniques using the CDV 700. While monitoring the ambulance crew and ambulance, the outside RMT held the probe further than an inch away and moved faster than a ½ inch per second.

POSSIBLE CAUSE: Not properly trained on the use of the CDV 700.

REFERENCE: NUREG- 0654,F.2, H.10, K.5a.b., L.1, 4.

EFFECT: Hospital or ambulance staff could have been contaminated and not known, thereby spreading contamination to the public.

RECOMMENDATION: Provide additional CDV 700 monitoring training to the RMT.

AREAS REQUIRING CORRECTIVE ACTIONS:

48-02-6.d.1-A-10

CONDITION: The REA staff were experiencing heat stress, with the attending RMT displaying the most affects in the performance of his tasks.

POSSIBLE CAUSE: The full body protective suits are not ventilated.

REFERENCE: NUREG- 0654,F.2, H.10, K.5a.b., L.1, 4.

EFFECT: The reduced efficiency as a result of the heat stress caused by protective suits will delay the decontamination procedure and could cause health issues for the staff. The attending RMT was showing difficulty in maintaining the survey probe at the proper distance and speed during monitoring of the patient.

RECOMMENDATION: Use protective clothing that does not create excessive heat for the REA workers.

CORRECTIVE ACTIONS DEMONSTRATED: Within a week of the drill new protective clothing was delivered to the medical center. The new protective gowns replace the full body protective suits. The gowns are worn over one's clothing and are open in the back. The ventilation of the gowns makes them cooler to wear.

- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ARCAs – RESOLVED:** None
- f. **PRIOR ARCAs – UNRESOLVED:** None

APPENDIX 1.

DRILL EVALUATORS

The following is a list of the personnel who evaluated the Medical Services Drill (MS-1 Drill) for the Pilgrim NPS on November 15, 2002.

<u>EVALUATION SITE</u>	<u>CRITERION</u>	<u>EVALUATOR</u>	<u>ORGANIZATION</u>
Fallon Ambulance Service	Criterion 6.d.1	Lauren Record	FEMA Region I
Quincy Medical Center	Criterion 6.d.1	James Gibbons	FEMA Region I

PARTICIPATING ORGANIZATION(S)

The following is a list of the participating organizations in the Medical Services Drill (MS-1 Drill) for the Pilgrim NPS on November 15, 2002.

Fallon Ambulance Service	Ambulance Service, Emergency Medical Technicians
Quincy Medical Center	Radiation Medicine Technicians, REA Doctor and Nurses
Quincy Fire Department	Firemen

APPENDIX 2

EXTENT-OF-PLAY AGREEMENT Quincy Medical Center EVALUATION CRITERIA MS-1 DRILL November 15, 2002

1. PURPOSE

To evaluate the emergency response capabilities of the Pilgrim Nuclear Power Station (PNPS) organization, the Fallon Ambulance Service, and the Quincy Medical Center to respond to a radiological contaminated injured individual. To meet the annual requirement for a Pilgrim NPS Emergency Plan Medical Service (MS-1 Drill) with the Quincy Medical Center.

2. EVALUATION AREA 6: Support Operations/Facilities

Sub-element 6.d. Transportation and treatment of contaminated injured individuals

Criterion 6.d.1: The facility 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.)

Extent-of-play-General Transportation

- Demonstrate control of the spread of contamination from individuals who may be contaminated and injured.
- Address priorities of care between control of contamination and the need for prompt transportation to a medical facility for care of an urgent condition.
- Transportation to a medical facility equipped to deal with a contaminated injured individual.
- Communications with the medical facility by the vehicle crew while in route.
- Monitoring of emergency vehicle and determination of the need for decontamination.
- Demonstrate adequacy of plans and procedures for the care and transportation of contaminated or exposed individuals.

Extent-of-play – Specific Transportation

Demonstrate the ability of the Fallon Ambulance Service personnel to respond to a request for assistance and to:

- Don protective clothing as necessary.
- Obtain information on the patient's condition.
- Prepare the patient for transfer to the hospital.
- Prepare the ambulance for receiving a radiological contaminated patient.
- Transfer the patient to the hospital.
- Brief the receiving hospital on the patient's condition via ambulance radio.

Extent-of-play – General Treatment

- Demonstrate the ability to control the spread of contamination from individuals who may be contaminated and injured.
- Demonstrate the setting priorities between the need to address radioactive contamination and the prompt diagnosis and treatment of medical conditions.
- Demonstrate the appropriate decontamination of individuals.

Extent-of-Play – Specific Treatment

Demonstrate the ability of Quincy Medical Center staff to respond in accordance with the Quincy Medical Center MS-1 Hospital Plan:

- Receive communications from the ambulance.
- Set up the REA and establish a radiological controlled area.
- Treat the patient's injuries.
- Decontaminate the patient prior to release from the REA.

Demonstrate the ability of the hospital Radiological Safety Officer to:

- Assist in radiological control at the hospital.
- Collect and maintain control of all contaminated materials for decontamination and release or disposal.
- Perform surveys of the ambulance and ambulance crew prior to release.

APPENDIX 3

EXERCISE SCENARIO

This appendix contains a summary of the simulated sequence of events -- Exercise Scenario -- which was used as the basis for invoking emergency response actions by OROs in the Pilgrim Nuclear Power Station (NPS) MS-1 Medical Drill held on November 15, 2002.

This exercise scenario was submitted by the State of Massachusetts and Entergy Nuclear Generation Company and approved by FEMA Region 1 on October 10, 2002.

SCENARIO SUMMARY:

A motor vehicle accident has occurred in Quincy involving a delivery vehicle running off the road and hitting a tree. The vehicle was carrying quantities of radioisotopes for delivery to Quincy Medical Center and other facilities in the area. Some packages of radioactive material, sustained damage during the accident and several vials of liquid has been broken. The driver of the vehicle sustained injuries consisting of lacerations to his left upper arm and left chest. He was found unconscious.

Quincy Fire Dept. responds and secures the accident scene. While on-scene the Quincy Fire Dept noted a radioactive placard in the vehicle. They set up a hot zone and a cold zone. The Fire Department notifies Fallon Ambulance and Quincy Medical Center of the possibility of a potentially contaminated individual.

Fallon EMT's respond to the scene and prepare to receive the patient from the hot zone. He/She is stabilized and prepared for transport to Quincy Medical Center.

The drill begins with the call to Quincy Medical Center indicating that the ambulance will be bringing a potentially contaminated and injured individual to the hospital. Normal radio communications from the ambulance to the hospital will be established and maintained during the period that the victim is in transit from the accident scene to the hospital.

The victim regains consciousness, but is upset and nervous during transport to the hospital. Upon arrival at the hospital, the victim is transferred to the Radiation Emergency Area (REA) for evaluation and treatment. A hospital Radiation Medicine Technician will assist the Emergency Department (ED) Staff in radiation monitoring and contamination control as needed. If done properly, the first decontamination attempt will reduce the contamination significantly. A hospital Nuclear Medicine Technician should survey the ambulance and crew for release, collect any simulated contaminated materials for proper disposal, and assist the staff as needed.

The attending physician will conduct a complete physical exam. He may order an x-ray of the skull and other x-rays as deemed necessary and tend to any other medical needs. Once the victim is decontaminated externally, and removed from the REA, the staff will exit the REA while demonstrating disrobing and monitoring and the exercise will terminate.