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FEMA

February 7, 2005

Samuel Collins, Regional Administrator
Nuclear Regulatory Commission, Region I
475 Allendale Road
King of Prussia, PA 19406

Dear Mr. Collins:

In compliance with NUREG-0654, FEMA REP-1, Rev. 1 and FEMA Guidance Memorandum (MS-1), Region I staff evaluated a Medical Support MS-1 Drill involving offsite response to a simulated contaminated, injured individual. Ambulance transport and treatment of the individual were evaluated.

Enclosed is a copy of the final report for the November 10, 2004, MS-1 Drill of the offsite radiological emergency plans for Millstone Power Plant in Waterford, Connecticut. This report addresses the evaluation of the plans and preparedness for the State of Connecticut, Middlesex Hospital, Middletown, Connecticut and Waterford Fire Department, Goshen Station, Ambulance Service. The final exercise report was prepared by the Federal Emergency Management Agency Region I staff.

A copy of this report will be forwarded to NRC and FEMA Headquarters.

No Deficiencies or Areas Requiring Corrective Action (ARCA) were identified during the November 10, 2004, drill.

If you have any questions, please contact Robert J. Swartz, Technological Hazards Specialist at (617) 956-7578.

Sincerely,

A handwritten signature in black ink, appearing to read "DS Bell", with a long horizontal line extending to the right.

Deborah S. Bell, Chair
Regional Assistance Committee

Enclosure



FEMIA

Millstone Power Station
State of Connecticut, MS-1 Drill,
Middlesex Hospital, Middletown, Connecticut

Licensee: **Dominion Nuclear Connecticut Inc.**

Exercise Date: **November 10, 2004**

Report Date: **February 7, 2005**

**DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION I
99 High Street
Boston, Massachusetts 02110**

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I. EXECUTIVE SUMMARY

On November 10 2004, a Medical Services (MS) drill was conducted at the Middlesex Hospital, Middletown, Connecticut by the Federal Emergency Management Agency (FEMA), Region I. The purpose of the drill was to assess the capability of the Middlesex Hospital, Middletown, CT and the Waterford Fire Department, Goshen Station, Ambulance Service, Waterford, Connecticut in responding to a radiological emergency at the Millstone Power Plant (PP). 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 Middlesex Hospital Emergency Room and support staffs as well as the Waterford Fire Department, Goshen Station, Ambulance Service, 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.

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

The hospital and the fire department ambulance service demonstrated knowledge of their emergency response plans and procedures and adequately implemented them. There were no deficiencies and no Areas Requiring Corrective Action (ARCA) identified as a result of this 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
 - U.S. Food and Drug Administration

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

Formal submission of the RERPs for the Millstone Power Plant (PP) to FEMA Region I

by the State of Connecticut and involved local jurisdictions occurred on September 4, 1981. Formal approval of the RERP was granted by FEMA on October 9, 1984, under 44 CFR 350.

An MS-1 Drill was conducted on November 10, 2004, by FEMA Region I, to assess the capabilities of the Middlesex Hospital, Middletown, Connecticut and the Waterford Fire Department, Goshen Station, Ambulance Service, Waterford, Connecticut, in implementing their RERPs and procedures to protect the public health and safety during a radiological emergency involving the Millstone PP. 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 revised April 25, 2002.

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, issues-only format. This section also contains: (1) descriptions of all Deficiencies and ARCAs assessed during this drill, recommended corrective actions, and the State and local Governments' schedule of corrective actions for each identified drill issue and (2) descriptions of unresolved ARCAs assessed during previous drills and the status of the ORO's efforts to resolve them.

III. DRILL EVALUATION AND RESULTS

Participating Agencies:

Waterford Fire Department, Goshen Station, Ambulance Service
Middlesex Hospital Emergency Department, Middletown, CT

Contained in this section are the results and findings of the evaluation of the Waterford, CT, Fire Department, Goshen Station, Ambulance Service and the Middlesex Hospital, Middletown, CT that participated in the November 10, 2004, MS-1 Drill to test the medical service capabilities to respond to an incident involving the Millstone PP.

Each functional entity was evaluated on the basis of its demonstration of criteria delineated in the exercise criterion contained in the "Radiological Emergency Preparedness: Exercise Evaluation Methodology," published in the Federal Register on September 12, 2001, and amended April 25, 2002.

The following is the status of functional entities evaluated.

A. Waterford Fire Department, Goshen Station, Ambulance Service, Waterford, CT

The Emergency Medical Technicians from Goshen Station demonstrated their knowledge and expertise in caring for the injured contaminated worker. They accurately followed the guidance of the Millstone Health Physics Technician which minimized the possibility of radioactive cross contamination.

(a) MET: Criterion 6.d.1

(b) DEFICIENCIES: NONE

(c) AREAS REQUIRING CORRECTIVE ACTIONS: NONE

(d) NOT DEMONSTRATED: NONE

(e) PRIOR ARCAs RESOLVED: NONE

(f) PRIOR ARCAs UNRESOLVED: NONE

B. Middlesex Hospital, Middletown, CT

The Emergency Radiological Team at the Middlesex Hospital demonstrated their knowledge and expertise of the hospital's radiological response plan. When the notification came into the emergency room various supporting departments arrived to prepare a portion of the emergency room into a radiological emergency area. The medical team provided excellent medical care to the injured worker. The attending physicians assistant and nursing

team promptly attended to the contamination on the worker's body then cared for his injuries.

(a) MET: Criterion: 6.d.1

(b) DEFICIENCIES: NONE

(c) AREAS REQUIRING CORRECTIVE ACTIONS (ARCAs): NONE

(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 Millstone Power Plant (PP) on November 10, 2004.

<u>EVALUATION SITE</u>	<u>CRITERION</u>	<u>EVALUATOR</u>	<u>ORGANIZATION</u>
Waterford Fire Department, Goshen Station, Ambulance Service	6.d.1	James Gibbons	FEMA Region I
Middlesex Hospital	6.d.1	Robert J. Swartz	FEMA Region I

APPENDIX 2
Extent of Play
Millstone Station / Middlesex Hospital / Waterford Ambulance
2004 MS-1 Contaminated Patient Exercise

November 10, 2004

August 17, 2004

EVALUATION AREA 6: SUPPORT OPERATION/FACILITIES Sub-element 6.d - Transportation and Treatment of Contaminated Injured Individuals

Intent

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to transport contaminated injured individuals to medical facilities with the capability to provide medical services.

Criterion 6.d.1: The facility/ORO has the appropriate space, adequate resources, and trained personnel to provide transport, monitoring, decontamination, and medical services to contaminated injured individuals. (NUREG-0654, F.2, H.10., K.5.a.b., L.1., 4.)

Extent of Play - General

ORO's should demonstrate the capability to transport contaminated injured individuals to medical facilities. However, to avoid taking an ambulance out of service, any vehicle (e.g., car, truck, or ambulance) may be utilized to transport a simulated victim to the medical facility. If an ambulance is used, normal communications between the ambulance/ dispatcher and the receiving medical facility should be demonstrated. This would include reporting radiation monitoring results, if available. Additionally, the ambulance crew should demonstrate, by interview, knowledge of where the ambulance and crew would be monitored and decontaminated, if required, or whom to contact for such information.

Monitoring of the simulated victim may be performed prior to transport, done enroute, or deferred to the medical facility. Prior to using a monitoring instrument(s), the monitor(s) should demonstrate the process of checking the instrument(s) for proper operation. All monitoring activities should be completed as they would be in an actual emergency. Appropriate contamination control measures should be demonstrated prior to and during transport and at the receiving medical facility.

The medical facility should demonstrate the capability to activate and set up a radiological emergency area for treatment. Equipment and supplies should be available for the treatment of contaminated injured individuals.

The medical facility should demonstrate the capability to make decisions on the need for decontamination of the individual, to follow appropriate decontamination procedures, and to maintain records of all survey measurements and samples taken. All procedures for the

collection and analysis of samples and the decontamination of the individual should be demonstrated or described to the evaluator.

Monitoring, decontamination, and contamination control efforts will not delay urgent medical care for the simulated victim.

All activities associated with this criterion must be based on the ORO's plans and procedures and completed as they would be in an actual emergency, unless otherwise indicated in the extent of play agreement.

Extent of Play - Specific:

1. All responding station and offsite emergency response personnel, equipment and procedures will demonstrate response actions within the following limitations:
2. All non-invasive medical protocol and contamination control (radiological and blood borne pathogen) measures will be demonstrated. Medical procedures will be conducted in accordance with Millstone Power Station, state, local and hospital protocols. Invasive protocols will not be demonstrated. Moulage, injured individual role-playing and scenario data will be used to simulate victim physical injuries as well as contamination levels.
3. The simulated accident will be staged on November 10, 2004 at a location near Middlesex Hospital. This area will be simulated to be a Radiological Control Area (RCA) within Millstone Station. The area itself is not contaminated.
4. One individual will role-play a contaminated injured patient. The mechanism of injury will be a fall against a sharp object. Simulated injuries will be assessed medically and radiologically. The patient will be highly contaminated externally, with moderate contamination levels in wound areas. Priorities of care will be determined based on simulated injuries and the magnitude of radioactive contamination.
5. Notification to the Millstone Control Room and dispatch of first responders (HP and Site Fire Protection) will be simulated by controller interaction. Telephone communications between the hospital and the control room will be simulated by controller telephone interaction with hospital personnel.
6. Site Fire Protection first responders and Health Physics staff will be pre-staged near the accident scene.
7. Controllers will contact the ambulance to respond when offsite assistance is requested by first responders.
8. The ambulance will be staged a short distance from the accident scene and will respond when dispatched

9. Transportation will be performed to Middlesex Hospital, which is equipped to treat radiologically contaminated/injured individuals.
10. A Millstone HP Technician will accompany the patient and transport vehicle to the hospital. Additional pre-staged HP staff/supervision will travel to the hospital to provide support. All scene personnel, facilities and equipment will be simulated “clean” and available upon departure of the patient.
11. Communications will be demonstrated between the vehicle (ambulance) crew and hospital via medical radio equipment (med patch).
12. Transit to the hospital from the nearby staged accident scene will not be treated as an emergency. All normal traffic laws will be followed. Neither Lifestar, nor any Trauma Center will be utilized for the drill.
13. Decontamination of ambulance personnel and emergency vehicles will be demonstrated through a discussion with players.
14. The exercise will be suspended if emergency responders are called upon for an actual emergency or Middlesex hospital declares a diversion.
15. The exercise will be terminated based on an agreement between the FEMA lead evaluator and the controller.
13. Immediate Correction will be allowed if after initially not being able to show proper equipment., supplies or documentation, the issue is corrected with further effort/instruction.

Areas Requiring Corrective Action (ARCA)

(None)

APPENDIX 3 DRILL SCENARIO - TIMELINE

Estimated
TIME
0745

MESSAGE
NUMBER
1a, 1b

The drill date is assumed to be Wednesday, November 10, 2004.

Location and Staging

A mock up of an RCA has been set up at Haddam Fire Department Station 1. The bay area is simulated to be the RCA with the counter outside the radio room, the RCA Control Point. Site Fire Protection (SFP) technicians, Health Physics (HP) technicians and HP supervisor will wait in the ready room. Prior to drill initiation, one or both HP techs will move to the control point. Waterford Ambulance will stage at Higganum Center. L&M Hospital has declared a diversion due to multiple vehicle accidents (MVAs) on I-95 – patient must be transported to Middlesex Hospital.

The Injury

The worker is conscious and alert. GCS is 15. he is complaining of Shoulder and neck pain. Shoulder is red with a minor abrasion and no deformity. There is a small laceration on the back of his head with moderate bleeding. His left arm is cut in two places with minor bleeding from one laceration and moderate bleeding from the other which has a piece of glass imbedded. Patient is stable. All vitals will be as found.

The Radiological Conditions

Area – The sink and floor are contaminated up to 5 mrad/100cm² (over 500k dpm/100cm²). Some of the contamination on the floor has been spread around the room. Dose rates in the room remain <2mr/hr at waist level. In the sink and on the floor, contact dose rates are 2 mr/hr, 5 mrad/hr. Some liquid splashed onto the table which is now uniformly 10k dpm/100-cm². There is no alpha contamination.

Worker – The workers lab coat is contaminated up to 5 mrad. The cut with imbedded glass is reading 1 mrad. The other cut on his arm is reading 10k CCPM. The cut on his leg and the area around it is reading 150 CCPM. Worker is not otherwise contaminated.

Worker has received 1 mrem DDE per his electronic dosimeter.

<u>Estimated TIME</u>	<u>Detailed Scenario Timeline</u>	<u>MESSAGE NUMBER</u>
	<p>If at anytime Advanced Life Support (Lifestar or Paramedic) is indicated, the appropriate Controller shall advise the player(s) that no helicopter is available.</p> <p>ALL TRAFFIC LAWS MUST BE OBEYED. No light or sirens, every transmission and phone call includes the phrase "This is a Drill".</p> <p>If performance errors are observed, controllers will consult with FEMA to determine if on the spot corrections are appropriate.</p>	
0755	SFP techs and then HP techs are notified by controllers that they must respond to an injured worker in the SCBA room. Technicians respond.	2a, 2b
0758	SFP techs assess patient and requests offsite assistance. Controller acts as Control Room and requests ambulance	3 4, 5
0758	HP techs assess radiological condition and determine the patient is contaminated or potentially contaminated. HP or SFP inform Control Room of contamination.	6
0759	Controller acts as Control Room and places a call to the Middlesex Emergency Department (ED) to report that a contaminated patient will be transported. The call will be by control cell simulated to be the Millstone Unit 3 Control Room using the numbers identified in Millstone procedure C-OP 220.3, "Response to Medical Emergencies."	7
0800	Middlesex Hospital makes verification call back to simulated Control Room (Controller).	8
0802	The Hospital ED staff should initiate their radiological emergency plan and Prepare the Radiological Emergency Area (REA) for contaminated/injured patient arrival.	
0805	HP may attempt limited decontamination; patient will remain above 50,000 CCPM.	
0810	SFP completes packaging of patient HP establishes radiological controls	

<u>Estimated TIME</u>		<u>MESSAGE NUMBER</u>
0810	Ambulance arrives, HP issues dosimetry from simulated security box as ambulance and or ambulance crew enters RCA. HP briefs ambulance crew on radiological conditions.	9
0815	Ambulance crew moves draped stretcher to either contaminated area or RCA boundary	
0815	SFP provides turnover of patient conditions to ambulance crew	
0820	Patient is transferred to ambulance crew and loaded	
0820	SFP notifies simulated Control Room that patient has been loaded and is being transported to Middlesex	
0820	Simulated Control Room makes second call to Middlesex Hospital to inform them ambulance is departing site.	10
0820	Prior to leaving Scene Controller contacts Hospital Controller to ensure ambulance is not going to arrive too early	11
0820	Ambulance departs, contacts KX on Med 4 or Med 5 (Eastern PL) to get a patch into Middlesex ED. Provides medical conditions, radiological information and estimated time of arrival.	12
0835	Upon arrival at the Hospital, a patient turn over should be performed between ambulance personnel and Hospital staff. Hospital ED staff should perform an evaluation of the patient's condition and be briefed by the HP Technician on the patient's radiological condition.	
0845	ED staff should perform wound area decontamination, based on the extent of injuries.	
0900	One decontamination attempt will be sufficient to remove contamination from the leg and laceration without imbedded glass. The second attempt will succeed in decontaminating the imbedded object injury. The physician should follow plan procedure regarding the taking of swipes or samples.	13
0900	EMS personnel (once "released" from patient care responsibilities) and the ambulance should be surveyed for contamination at this time or any time after, depending on the status and readiness of hospital and MP HP staff to perform this function.	

Estimated
TIME

MESSAGE
NUMBER

- 0900 – Neither the EMS personnel, nor the ambulance itself will be
0915 contaminated, unless contamination was spread during the
response/transit to the hospital. The Controller, who traveled in the
ambulance and observed contamination control measures, shall make
this determination based on the actual actions taken by ambulance
personnel during transit to the hospital. Ad hoc contamination levels
if appropriate assigned by the patient Controller should be 500 CCPM
for any contamination transferred from the patient.
- If contamination is identified during ambulance personnel or vehicle
monitoring/ surveying, the person surveying the vehicle should require
it be returned to the Station for decontamination. (The ambulance will
not actually be taken back to the Station) If the ambulance is clean it
can be immediately returned to service. 15
- REA ED staff radiological exposures should be periodically monitored
during and after patient receipt and care is provided.
- 0905 After successful patient decontamination is performed, the patient is
released from the REA. 16
- 0905- The medical staff should be monitored for contamination upon completion
0915 of patient decontamination and prior to exiting the REA. The REA and
equipment should also be surveyed for contamination.
Contaminated waste, such as, used bandages, etc. should be dispositioned/
gather appropriately as radiological waste. REA ED staff radiological
exposures should be checked and documented.
- 0915 Controllers will consult with FEMA to ensure all required actions have
been observed. Any required on the spot corrections will be conducted.
Drill is terminated.
- FEMA will conduct a debrief as appropriate 17