



Federal Emergency Management Agency

Region I

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

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

Dear Mr. Miller:

Enclosed are the final drill reports for the Host Community Reception Center Drill conducted at the University of Connecticut (UCONN) on September 29, 2001, and the MS-1 Drill for Lawrence & Memorial Hospital in Waterford, CT, conducted on November 28, 2001. Lawrence & Memorial Hospital supports Dominion Nuclear Connecticut, Millstone NPS in Waterford, CT.

Copies of this report have been forwarded to NRC Headquarters and the State of Connecticut.

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

Sincerely,

Daniel A. Craig
Regional Director

Enclosure

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REGION I



**STATE OF CONNECTICUT
HOST COMMUNITY RECEPTION CENTER DRILL
UNIVERSITY of CONNECTICUT (UConn)
STORRS, CONNECTICUT**

MILLSTONE NUCLEAR POWER STATION

Licensee: *Dominion Nuclear Connecticut*
Exercise Date: *September 29, 2001*
Report Date: *November 9, 2001*

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

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I. EXECUTIVE SUMMARY

On September 29, 2001 a Host Community/Reception Center Drill was conducted at the University of Connecticut, (UCONN), Storrs, Connecticut. The purpose of this drill was to assess the capability of the UCONN Fire Department and volunteers to respond to a radiological incident involving the Millstone Nuclear Power Station. 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 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 drill.

This report contains the final evaluation of the Host Community/Reception Center Drill.

The UCONN Fire Department and volunteers 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. Two previously identified ARCAs were eliminated as a result of their performance.

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 Nuclear Power Station 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.

A Host Community/Reception Center drill was conducted on September 29, 2001 by FEMA Region I to assess the capabilities of the UCONN Fire Department in implementing their RERPs and procedures to protect the public health and safety during a radiological emergency involving the Millstone Nuclear Power Station. The purpose of this exercise report is to present the exercise 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;
- FEMA- "Radiological Emergency Preparedness: Exercise Evaluation Methodology," published in the Federal Register on, September 12, 2001.

Section III of this report, entitled "Drill Evaluation and Results," presents detailed information on the demonstration of applicable exercise evaluation areas at each jurisdiction or functional entity evaluated in a jurisdiction-based, issues-only format. There are no deficiencies or ARCAs identified in this report.

III. DRILL EVALUATION AND RESULTS

Contained in this section are the results and findings of the evaluation of the University of Connecticut, (UCONN) Host Community Reception Center Drill that was conducted on September 29, 2001. The purpose of the drill was to test the capabilities of the reception center staff and the adequacy of the reception center's response plans to be able to respond to an incident involving the Millstone Nuclear Power Station, (NPS).

Each functional entity was evaluated on the basis of its demonstration of criteria delineated in the Evaluation Areas published in the Federal Register on September 12, 2001.

The following is the status of functional entities evaluated.

A. UCONN Public Safety EOC

The UCONN EOC staff demonstrated their knowledge of the emergency response plan and procedures by responding to the alert and ensuring that the EOC was fully staffed and operational. The staff frequently referred to their procedures, kept the EOC Director informed as to the status of their tasks as well as to the current status of the reception center.

The UCONN EOC is located in the Department of Public Safety complex. It is a modern facility providing the state of the art of communications, adequate charts and graphs, to monitor reception center operation and status of evacuees. The EOC was well appointed with new furniture to accommodate approximately twenty staff personnel.

(a) MET: Criterion 1.a.1, 1.b.1, 1.c.1, 1.d.1, and 1.e.1

(b) DEFICIENCIES: NONE

(c) AREAS REQUIRING CORRECTIVE ACTION
(ARCA): NONE

B. UCONN Host Community Reception Center

The Reception Center Manager/Incident Commander demonstrated excellent direction and control through radio communications and personal supervision. The Reception Center Staff demonstrated their job knowledge and frequently referred to their procedures to ensure their duty performance was according to the reception centers plans and procedures.

(a) MET: Criterion 1.a.1, 1.b.1, 1.c.1, 1.d.1, 1.e.1, 3.a.1, and 6.a.1

- (b) **DEFICIENCIES: NONE**
- (c) **AREAS REQUIRING CORRECTIVE ACTION (ARCA): NONE**
- (d) **PRIOR ARCAs – RESOLVED:**

Issue No.: 38-95-A-14

Description: Only two of the three RC staff at the monitoring position was issued dosimetry.

Corrective Action Demonstrated: All reception center personnel were issued dosimetry, with the exception of Registration and Red Cross personnel, as specified in the extent of play.

Issue No.: 38-95-A-15

Description: Uncontaminated evacuees were not advised to bathe or shower and change clothes within three days.

Corrective Action Demonstrated: Evacuees were notified of the requirement to bathe and change clothes within three days at the registration area. Evacuees were also given a blue pamphlet with the same instructions.

C. UCONN Congregate Care Centers

The local chapter of the American Red Cross demonstrated that shelter surveys were completed and that the following designated shelters. Were adequate to support sheltering needs of personnel evacuated from the Millstone Nuclear Power Station Emergency Planning Zone (EPZ).

UCONN Greer Field House & Guyer Gym
Gampel Pavilion
E.O. Smith High School
Mansfield Middle School

- (a) **MET: Criterion 6.c.1**
- (b) **DEFICIENCIES: NONE**
- (c) **AREAS REQUIRING CORRECTIVE ACTION (ARCA): NONE**

APPENDIX 1.

DRILL EVALUATORS

The following is a list of the personnel who evaluated the UCONN Host Community/Reception Center Drill for the Millstone Nuclear Power Station on September 29, 2001.

<u>EVALUATION SITE</u>	<u>CRITERION</u>	<u>EVALUATOR</u>	<u>ORGANIZATION</u>
UCONN EOC	1.a, 1.b, 1.c, 1.d, 1.e	Wanda Gaudet	FEMA Region I
UCONN Host Community/ Reception Center	1.a, 1.b, 1.c, 1.d, 1.e	Robert J. Swartz	FEMA Region I
Dosimetry	3.a	Michael Brazel	FEMA Region I
Portal & Secondary Monitoring	6.a	Robert Poole	FEMA Region I
Female Decontamination & Evacuee Registration	6.a	Erica D'Avanzo	FEMA Region I
Male Decontamination	6.a	James Gibbons	FEMA Region I
Vehicle Monitoring	6.a	Michael Brazel	FEMA Region I
Congregate Centers (Evaluated September 28, 2001)	6.c	Robert Swartz James Gibbons	FEMA Region I FEMA Region I

APPENDIX 2

Extent-of-Play

*-Millstone Station 2001 Off-line Evaluated Host Community Exercise-
UCONN, September 29, 2001*

July 1, 2001

Evaluation Area 1 – Emergency Operations Management Sub-element 1.a – MOBILIZATION (Old #1)
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Intent

This sub-element provides that the Host Community should have the capability to alert, notify, and mobilize emergency personnel and to activate and staff emergency facilities.

Criterion 1.a.1: Off-site Response organization (Host Community) use effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner. (NUREG-0654, A.4., D.3., 4., E.1., 2., H.4)

Extent of Play - General

Local emergency staff should demonstrate the capability to receive notification of an emergency situation from the State (OEM Area 3 Office), verify the notification, and contact, alert, and mobilize key emergency personnel in a timely manner. At each facility, a roster and/or procedures indicating 24-hour staffing capability for **key** positions (those emergency personnel necessary to carry out critical functions), as indicated in the plan and/or procedures, should be provided to the evaluator (**demonstration of a shift change is not required**). In addition, responsible Host Communities should demonstrate the activation of facilities for immediate use by mobilized personnel when they arrive to begin emergency operations. Pre-positioning of staff for an out-of-sequence demonstration is appropriate in accordance with the extent of play agreement.

Extent of Play - Specific

1. The Host Community EOC and Reception Center will be pre-positioned and demonstrated off-line at UCONN on September 29, 2001.
 2. Drill play will be initiated by a phone call from Area 3 to the UCONN Fire Dispatcher. Fire Service, Public Safety and Civilian personnel manning various facilities will respond to a simulated call-up and be on-site at approximately 0800 for the EOC and at approximately 0900 for the Reception Center. A copy of the sign-in roster and a copy of the second shift roster will be provided to the evaluator/s.
 3. Activation of Congregate Care facilities will be simulated
-

Appendix 2
Extent-of-Play

*-Millstone Station 2001 Off-line Evaluated Host Community Exercise-
UCONN, September 29, 2001*

July 1, 2001

Evaluation Area 1 – Emergency Operations Management
Sub-element 1.b – FACILITIES (Old #2)

Intent

This sub-element provides that the Host Community have facilities to support the emergency response.

Criterion 1.b.1: Facilities are sufficient to support the emergency response. (NUREG-0654, H)

Extent of Play - General

Facilities will only be specifically evaluated for this criterion if they are new or have substantial changes in structure or mission. The Host Community should demonstrate the availability of facilities that support the accomplishment of emergency operations. Some of the areas to be considered are: adequate space, furnishings, lighting, restrooms, ventilation, backup power and/or alternate facility (if required to support operations).

Extent of Play - Specific

1. This objective will be demonstrated by the participating Host Community since it is the first evaluation using the new criteria and the first evaluation of the new six-year cycle. Both the EOC and Reception Center will be evaluated to include: plans, procedures and communications equipment. The facility activation will be appropriate for a one-shift operation.
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Appendix 2
Extent-of-Play

*-Millstone Station 2001 Off-line Evaluated Host Community Exercise-
UCONN, September 29, 2001*

July 1, 2001

Evaluation Area 1 – Emergency Operations Management
Sub-element 1.c – DIRECTION AND CONTROL (Old #3)

Intent

This sub-element provides that the Host Community have the capability to control their overall response to an emergency.

Criterion 1.c.1: Key personnel with leadership roles for the Off-Site Response Organization (Host Community) provide direction and control to that part of the overall response effort for which they are responsible. NUREG-0654, A.1.d., 2.a.,b.)

Extent of Play - General

Direction and Control activities will be demonstrated by the Host Community organization in accordance with the Radiological Emergency Response Plan (RERP).

Extent of Play - Specific

(No site-specific modifications.)

Appendix 2 *Extent-of-Play*

*-Millstone Station 2001 Off-line Evaluated Host Community Exercise-
UCONN, September 29, 2001*

July 1, 2001

Evaluation Area 1 – Emergency Operations Management Sub-element 1.d – COMMUNICATIONS EQUIPMENT (Old #4)
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Intent

This sub-element is derived from NUREG-0654, which provides that the Host Community should establish at least two reliable communication systems to ensure communications with key emergency personnel at locations such as the following: the UCONN EOC, the State OEM Area 3 Office, Reception Center, and other supporting departments in the town.

Criterion 1.d.1: At least two communication systems are available, at least one operates properly, and communication links are established and maintained with appropriate locations. Communications capabilities are managed in support of emergency operations. (NUREG-0654, F.1., 2.)

Extent of Play - General

Communications systems will only be evaluated for this criterion if there have been substantial changes in equipment or mission, unless a communications breakdown adversely impacts the exercise.

Communications equipment and procedures for facilities and field units should be used as needed for the transmission and receipt of exercise messages. All facilities should have the capability to access at least one communication system that is independent of the commercial telephone system and uses a separate power source. The Host Community should demonstrate the capability to manage the communication systems and ensure that all message traffic is handled without delays that might disrupt the conduct of emergency operations. The Host Community should ensure that a coordinated communication link for fixed and mobile medical support facilities exist. The specific communications capabilities of the Host Community should be commensurate with that specified in the response plan and/or procedures.

Extent of Play - Specific

1. Communications will be demonstrated as follows by the participating Host Community since it is the first evaluation using the new criteria:
 - A communications check will be conducted between the OEM Area 3 office and the UCONN EOC and also between the Reception Center and the UCONN EOC.
 - Other Communications will be limited to the Reception Center.
 - Radio Communications is primary with cell-phone and/or regular telephone as back-up.
 - Separate power sources for communications equipment are not required.

Appendix 2 *Extent-of-Play*

*-Millstone Station 2001 Off-line Evaluated Host Community Exercise-
UCONN, September 29, 2001*

July 1, 2001

Evaluation Area 1 – Emergency Operations Management Sub-element 1.e – EQUIPMENT AND SUPPLIES TO SUPPORT OPERATIONS (Old #2)
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Intent

This sub-element is derived from NUREG-0654, which provides that the Host Community have emergency equipment and supplies adequate to support the emergency response.

Criterion 1.e.1: Equipment, maps, displays, dosimetry, potassium iodide (KI) (not applicable to Host Community), and other supplies are sufficient to support emergency operations. (NUREG-0654, H., J.10.a.b.e.f.j.k., 11, K.3.a.)

Extent of Play

Equipment within the facility(ies) should be sufficient and consistent with the role assigned to that facility in the Host Community's plans and/or procedures in support of emergency operations. Use of maps and displays is encouraged.

Sufficient quantities of appropriate direct-reading and permanent record dosimetry should be available for issuance to all categories of emergency workers that could be deployed from that facility. Appropriate direct-reading dosimeters should allow individual(s) to read the administrative reporting limits and maximum exposure limits contained in the Host Community plans and procedures. Dosimeters should be inspected for electrical leakage at least annually and replaced, if necessary. This leakage testing will be verified during the exercise, through documentation submitted in the Annual Letter of Certification, or through a staff assistance visit. Quantities of dosimetry available and storage location(s) will be confirmed by physical inspection at storage location(s) or through documentation of current inventory submitted during the exercise or provided in the Annual Letter of Certification submission.

Extent of Play - Specific

1. Displays applicable to the Host Community Reception Center:
 - Shelter Status,
 - Shelter Locations
 - Radiation Background Readings
2. Dosimetry will only be issued to radiological emergency workers at the Reception Center and not to other emergency workers such as Registration, Red Cross and etc. that are not exposed to potential contamination.
3. Each Direct Reading Dosimeter has a sticker with the date of the last calibration/electrical leakage test.

Areas Requiring Corrective Action (ARCA)

38-95-05-A-14: Only two of the three RC staff at the monitoring position were issued dosimetry.

Appendix 2 *Extent-of-Play*

*-Millstone Station 2001 Off-line Evaluated Host Community Exercise-
UCONN, September 29, 2001*

July 1, 2001

Evaluation Area – Protective Action Implementation Sub-element 3.a – IMPLEMENTATION OF EMERGENCY WORKER EXPOSURE CONTROL (Old #5)
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Intent

This sub-element is derived from NUREG-0654, which provides that Host Communities should have the capability to provide for the following: distribution, use, collection, and processing of direct-reading dosimeters and permanent record dosimeters; provide for direct-reading dosimeters to be read at appropriate frequencies by emergency workers; maintain a radiation dose record for each emergency worker; and provide for establishing a decision chain or authorization procedure for emergency workers to incur radiation exposures in excess of protective action guides, always applying the ALARA (As Low As is Reasonably Achievable) principle as appropriate.

Criterion 3.a.1: The Host Community issues appropriate dosimetry and procedures, and manage radiological exposure to emergency workers in accordance with the plans and procedures. Emergency workers periodically, and at the end of each mission, read their dosimeters and record the readings on the appropriate exposure record or chart. (NUREG-0654, K.3.)

Radiation exposure limits for emergency workers are defined in the Host Community plans and procedures. Emergency workers must be able to determine their cumulative radiation exposure with direct-reading dosimetry and know what to do when administrative exposure limits are reached while carrying out a mission to protect the health and safety of the public.

Extent of Play - General

The Host Community should demonstrate the capability to provide appropriate direct and permanent record dosimetry to emergency workers. **For evaluation purposes, appropriate direct-reading dosimetry is defined as dosimetry that allows individual(s) to read the administrative reporting limits (that take into consideration Total Effective Dose Equivalent and maximum exposure limits) contained in Host Community plans and procedures.**

Each emergency worker should have the basic knowledge of radiation exposure limits as specified in the Host Community plan and/or procedures. Procedures to monitor and record dosimeter readings and to manage radiological exposure control should be demonstrated. Emergency workers should demonstrate the procedures to be followed when administrative exposure limits and turn-back values are reached. The emergency worker should report accumulated exposures during the exercise as indicated in the plans and procedures. The Host Community should demonstrate the actions described in the plan and/or procedures by determining whether to replace the worker, to authorize the

Appendix 2 *Extent-of-Play*

-Millstone Station 2001 Off-line Evaluated Host Community Exercise-
UCONN, September 29, 2001

July 1, 2001

worker to incur additional exposures or to take other actions. Evaluators should interview at least two emergency workers, to determine their knowledge of whom to contact in the

<p>Evaluation Area – Protective Action Implementation Sub-element 3.a – IMPLEMENTATION OF EMERGENCY WORKER EXPOSURE CONTROL (Old #5) (Continued)</p>
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event authorization is needed and at what exposure levels. Emergency workers may use any available resources in providing responses (e.g. written procedures, "Radiation Exposure Guidelines for Emergency Workers" card and etc.).

All activities must be based on the Host Community 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. Each community has been provided with emergency worker dosimetry packets. These packets include: a Permanent Record dosimeter (PRD), and two self-reading dosimeters (SRD) in the 0R (Roentgen) to 5R and the 0R to 200R ranges.
2. Dosimetry packets will be issued to all Reception Center radiological emergency workers. Evaluators will observe dosimetry turn-in and necessary paperwork.
3. Radiological emergency worker exposure control training, including a basic knowledge of exposure control procedures (turn-back values, call-in values and periodic monitoring), will be demonstrated through evaluator interviews.
4. Host Community emergency workers do not need to use or wear the 0R to 200R self-reading dosimeters.
5. Dosimetry will only be issued to radiological emergency workers at the Reception Center and not to other emergency workers such as Registration, Red Cross and etc. that are not exposed to potential contamination

Areas Requiring Corrective Action (ARCA)

38-95-05-A-14: Only two of the three RC staff at the monitoring position were issued dosimetry.

Appendix 2 *Extent-of-Play*

*-Millstone Station 2001 Off-line Evaluated Host Community Exercise-
UCONN, September 29, 2001*

July 1, 2001

Evaluation Area – Support Operations/Facilities Sub-element 6a – MONITORING AND DECONTAMINATION OF EVACUEES AND REGISTRATION OF EVACUEES (Old #18)

Intent

This sub-element is derived from NUREG-0654, which provides that the Host Community have the capability to implement radiological monitoring and decontamination of evacuees while minimizing contamination of the facility, and registration of evacuees at reception centers.

Criterion 6.a.1: The reception center/emergency worker facility has appropriate space, adequate resources, and trained personnel to provide monitoring, decontamination, and registration of evacuees. (NUREG-0654, J.10.h.; K.5.b.)

Extent of Play - General

Radiological monitoring, decontamination, and registration facilities for evacuees should be set up and demonstrated as they would be in an actual emergency or as indicated in the extent of play agreement. Expected demonstration should include 1/3 of the monitoring teams/portal monitors required to monitor within 12 hours 20% of the population allocated to the facility. Prior to using a monitoring instrument(s), the monitor(s) should demonstrate the process of checking the instrument(s) for proper operation.

Staff responsible for the radiological monitoring of evacuees should demonstrate the capability to attain and sustain a monitoring productivity rate per hour needed to monitor the emergency planning zone (EPZ) population planning base within about 12 hours. This monitoring productivity rate per hour is the number of evacuees that can be monitored per hour by the total complement of monitors using an appropriate monitoring procedure. A minimum of six individuals per monitoring station should be monitored, using equipment and procedures specified in the plan and/or procedures, to allow demonstration of monitoring, decontamination, and registration capabilities. The monitoring sequences for the first six simulated evacuees per monitoring team will be timed by the evaluators in order to determine whether the twelve-hour requirement can be met. Decontamination of evacuees may be simulated and conducted by interview. The availability of provisions for separately showering should be demonstrated or explained. The staff should demonstrate provisions for limiting the spread of contamination. Provisions could include floor coverings, signs and appropriate means (e.g. partitions, roped-off areas) to separate clean from potentially contaminated areas. Provisions should also exist to separate contaminated and uncontaminated individuals, provide changes of clothing for individuals whose clothing is contaminated, and store contaminated clothing to prevent further contamination of evacuees or facilities. In addition, for any individual found to be contaminated, procedures should be discussed concerning the handling of potential vehicle contamination.

Appendix 2 *Extent-of-Play*

-Millstone Station 2001 Off-line Evaluated Host Community Exercise-
UCONN, September 29, 2001

July 1, 2001

Evaluation Area – Support Operations/Facilities Sub-element 6a – MONITORING AND DECONTAMINATION OF EVACUEES AND REGISTRATION OF EVACUEES (Old #18) (Continued)

The capability to register individuals upon completion of the monitoring and decontamination activities should be demonstrated. Monitoring personnel should explain the use of action levels for determining the need for decontamination. They should also explain the procedures for referring evacuees who cannot be adequately decontaminated for assessment and follow up in accordance with the Host Community plans and procedures. Contamination of the individual will be determined by controller inject and not simulated with any low-level radiation source. **All activities associated with this criterion must be based on the Host Community 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. UCONN will activate its Reception Center for demonstration of this objective. These activities will take place out of sequence from a regular exercise scenario. Demonstration is off-line on September 29, 2001.
2. The following will be demonstrated by the Reception Center:
 - The two Portal Monitors specified in the Plan will be set-up, operationally tested and demonstrated.
 - Since portal monitors are used during the demonstration, at least one staff radiological monitor will demonstrate hand-held instrument monitoring techniques for personnel.
 - Contamination control measures and decontamination techniques for at least one male and one female subject will be demonstrated.
 - Vehicle monitoring will be demonstrated as follows:
 - a. One vehicle monitoring lane, of the two specified in the plan, will be set-up and demonstrated.
 - b. One vehicle monitoring team, of the two in the plan, will be demonstrated.
 - d. Two vehicles will be externally monitored and parked in a designated "clean" or "contaminated" area. (The second/last car will be designated "contaminated by controller inject.")
 - A representative sample of replacement clothing resources available for decontaminated individuals will be shown.

Areas Requiring Corrective Action (ARCA)

38-95-18-A-15: Uncontaminated evacuees were not advised to bathe or shower and change clothes within three days.

Appendix 2 *Extent-of-Play*

*-Millstone Station 2001 Off-line Evaluated Host Community Exercise-
UCONN, September 29, 2001*

July 1, 2001

Evaluation Area 6 – Emergency Operations Management
Sub-element 6.c – TEMPORARY CARE OF EVACUEES (Old #19)

Intent

This sub-element is derived from NUREG-0654, which provides that the Host Community demonstrate the capability to establish relocation centers in host areas. Congregate care is normally provided in support of the Host Community by the American Red Cross under existing letters of agreement.

Criterion 6.c.1: Managers of congregate care facilities demonstrate that the centers have resources to provide services and accommodations consistent with American Red Cross planning guidelines. Managers demonstrate the procedures to assure that evacuees have been monitored for contamination and have been decontaminated as appropriate prior to entering congregate care facilities. (NUREG-0654, J.10.h., 12.)

Extent of Play - General

Under this criterion, demonstration of congregate care centers may be conducted out of sequence with the exercise scenario. The evaluator/s should conduct a walk-through of the center to determine, through observation and inquiries, the adequacy of physical facilities, equipment, personnel, supplies, and procedures for the acquisition and management of supplies. **In this simulation, it is not necessary to set up operations as they would be in an actual emergency.** This capability may be determined through an interview process. Since operations at the center will not be demonstrated, material that would be difficult or expensive to transport (e.g., cots, blankets, sundries, and large-scale food supplies) need not be physically available at the facility(ies). However, availability of such items should be verified by providing the evaluator a list of sources with locations and estimates of quantities. **All activities associated with this criterion must be based on the Host Community plans and procedures and completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.**

Extent of Play – Specific

1. Activation of Congregate Care facilities will be simulated on the day of the exercise.
2. A walk-through of UCONN/Mansfield Congregate Care facilities will be scheduled with dates TBD by advance coordination between FEMA, the American Red Cross and UCONN/Town of Mansfield.) The Red Cross retains shelter survey documentation and a copy will be provided to FEMA.

Appendix 3

University of Connecticut (UCONN) Reception Center

Drill Scenario

- Message from Area 3 Coordinator to notify Host Community via telephone call.
- Dispatcher makes calls to key department heads to report to EOC and begins calling staff from call-out list.
- Staff begins to arrive at Public Safety building EOC.
- Communications check is conducted with Area 3 Office.
- Update message from Area 3, informs Director that an evacuation of EPZ is imminent.
- EOC provides support staff for activation of the Reception Center as directed.
- EOC Director, Facilities representative and/or Mansfield Town Representative and Red Cross Representative discuss plans for opening shelters.
- Red Cross calls out for Reception Center representative.
- Reception Center Staff begins to arrive at the field house to set up monitoring, decontamination, and registration areas.
- Communications check from Reception Center to EOC. Communication check at Reception Center between Reception Center Manager and remote locations throughout RC.
- Dosimetry is prepared and issued to emergency workers in accordance with HCP 4.3.
- Preparation/setup of monitoring Instruments (CDV-700 survey meters and Eberline PPM Portal Monitors) are set up and operationally checked per procedure. Survey Meters will be issued to staff ready for use.
- Set up Secondary Monitoring Area and staffed for pre-decon monitoring per procedure and diagram
- Set up two decontamination areas, one male and one female, per procedure and diagram.
- Vehicle Monitoring lanes and clean/contaminated parking areas are established per the extent of play, although players may set up two lanes.
- A registration area is set up and staffed according to the plan in the field house gymnasium, adjacent to the exit from the decontamination areas.
- Communication checks are conducted at the Reception Center between central control and remote locations throughout the Reception center, including the vehicle monitoring area.
- Reception Center Manager notifies EOC when Reception Center is fully staffed and operational.
- At least two vehicles will be externally monitored in one of two vehicle monitoring lanes and parked in a designated “clean” or “contaminated” area.

- Six individuals are assembled and consecutively monitored through each of the two portal monitors per controller inject.
- At least two individuals will be “contaminated” per controller inject, One female, one male. Both of these individuals are evacuated emergency workers and will be wearing dosimetry.
- Secondary Monitoring will survey individuals with hand-held survey meters
- Each of the two decontamination areas will demonstrate/discuss contamination control measures, decontamination and radiological monitoring techniques.
- Evacuees are directed from decontamination stations to registration area via clean path
- **Exercise is terminated.** Play ends and all area are returned to normal condition.



**STATE OF CONNECTICUT, MS - 1 DRILL
LAWRENCE & MEMORIAL HOSPITAL
WATERFORD, CONNECTICUT**

MILLSTONE NUCLEAR POWER STATION

Licensee: *Dominion Nuclear Connecticut*

Exercise Date: *November 28, 2001*

Report Date: *January 15, 2002*

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



Lawrence & Memorial Hospital



Millstone Nuclear Power Station

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I. EXECUTIVE SUMMARY

On November 28, 2001, an MS -1 Drill was conducted at Lawrence & Memorial Hospital, Waterford, Connecticut. The purpose of this drill was to assess the capability of and the plans and procedures of the Lawrence & Memorial Hospital and the Waterford Fire Department Ambulance Service to respond to a radiological incident involving the Millstone Nuclear Power Station. 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 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 drill.

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

The hospital, and the 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, and
 - 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 Nuclear Power Station 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 28, 2001, by FEMA Region I to assess the capabilities of the Lawrence & Memorial Hospital and the Waterford Fire Department Ambulance Service in implementing their RERPs and procedures to protect the public health and safety during a radiological emergency involving the Millstone Nuclear Power Station. The purpose of this exercise report is to present the exercise 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;
- FEMA—"Radiological Emergency Preparedness Exercise Evaluation Methodology", published in the Federal Register on, September 12, 2001.

Section III of this report, entitled "Drill Evaluation and Results," presents detailed information on the demonstration of applicable exercise criteria at each jurisdiction or functional entity evaluated in a jurisdiction-based, issues-only format. There are no Deficiencies or Areas Requiring Corrective Action (ARCA) as a result of this drill nor were there any previous ARCAs from previous drills.

III. DRILL EVALUATION RESULTS

Contained in this section are the results and findings of the evaluation of the Waterford Fire Department Ambulance Service and the Lawrence and Memorial Hospital MS-1 drill. The drill was conducted on November 28, 2001, to evaluate the plans and procedures and the capabilities of the Waterford Fire Department Ambulance Service and the Lawrence and Memorial Hospital to respond to an incident involving the Millstone Nuclear Power Station (NPS).

Each functional entity was evaluated on the basis of its demonstration of criteria delineated in the FEMA – “Radiological Emergency Preparedness Exercise Evaluation Methodology,” published in the Federal Register on September 12, 2001.

The following is the status of functional areas evaluated.

Waterford Fire Department Ambulance Service

The Emergency Medical Technicians (EMT) from the Waterford Fire Department Ambulance Service demonstrated their knowledge and expertise in caring for injured contaminated patients. They showed care in not causing cross contamination while caring for the patient under their care.

- (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 – NOT RESOLVED: NONE**

Lawrence and Memorial Hospital

The emergency medical team at the Lawrence and Memorial Hospital adequately demonstrated knowledge of the hospital’s emergency plan and procedures. The team promptly got the Radiation Emergency Area (REA) in operation in a timely manner. When the injured contaminated worker arrived the emergency medical team immediately took action to determine the extent of contamination and injuries. The attending physician decided to attend to the contamination first then to the patient’s injuries. The emergency medical team

showed concern for preventing cross contamination by continually being monitored and changing their gloves. The emergency medical team methodically decontaminated the patient then attended to the patient's injuries. When the physician determined that the patient's condition was stable the emergency medical team transferred the patient to surgery where he could be better attended to in surgery.

- (g) MET: Criterion 6.d.1**
- (h) DEFICIENCIES: NONE**
- (i) AREAS REQUIRING CORRECTIVE ACTIONS (ARCAS): NONE**
- (j) NOT DEMONSTRATED: NONE**
- (k) PRIOR ARCAs: - RESOLVED: NONE**
- (l) PRIOR ARCAs – NOT RESOLVED: NONE**

**APPENDIX 1
DRILL EVALUATORS**

The following is a list of the FEMA Staff who evaluated the Medical Services Drill (MS-1 Drill) at the Lawrence and Memorial Hospital and the Waterford Fire Department Ambulance Service at Waterford, Connecticut for the Millstone Nuclear Power Station on November 28, 2001.

<u>EVALUATION SITE</u>	<u>CRITERION</u>	<u>EVALUATOR</u>	<u>ORGANIZATION</u>
Waterford Fire Department Ambulance Service	6.d.1	James Gibbons	FEMA Region I
Lawrence and Memorial Hospital	6.d.1	Robert Swartz	FEMA Region I

APPENDIX 2

Extent of Play

Millstone Station / L&M Hospital / Waterford Ambulance

2001 MS-1 Contaminated Patient Exercise

November 28, 2001

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

OROs 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

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2001 MS-1 Contaminated Patient Exercise

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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.

REGION EXTENT OF PLAY:

All responding station and offsite emergency response personnel, equipment and procedures will demonstrate response actions within the following limitations:

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

The simulated accident will be staged on November 28, 2001, in the Millstone Human Performance Enhancement Facility (HPEF - Building 532). The area will be a simulated Radiological Control Area (RCA). The parking area will be cordoned off to limit access/interference from non-participants. The area itself is not known to be contaminated.

One individual will role play a contaminated injured patient. The mechanism of injury will reflect actual operating experience from the nuclear industry. Simulated injuries will be assessed medically and radiologically. The patient will be moderately, externally contaminated. Priorities of care will be determined based on simulated injuries and the magnitude of radioactive contamination.

Transportation will be performed to a medical facility (Lawrence & Memorial Hospital) equipped to treat a radiologically contaminated/injured individual. Communications will be demonstrated between the vehicle (ambulance) crew and hospital via medical radio equipment (med patch).

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A Millstone HP Technician will accompany the patient and transport vehicle to the facility designated to receive the individual. Additional HP staff may travel to the hospital to provide support.

Transit to the medical facility will not be treated as an emergency. All normal traffic regulations will be followed enroute. (Neither Lifestar, nor any Trauma Center will be utilized for the drill.)

The exercise will be suspended if emergency responders are called upon for an actual emergency or L&M declares a diversion.

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The ground floor of the Human Performance Mock Up is simulated as a below grade level of the Unit 2 auxiliary Building. The area is a Radiological Control Area (RCA) containing Radiation, High Radiation, and Tech Spec Locked High Radiation Areas. The wall phone has been removed from the west wall. A worker is laying at the bottom of the ladder in the Contaminated, High Radiation Area (general area 50 - 400 mr/hr, 2-8 k dpm/100cm²). Two workers are signed in on RWP 444, Job Step 2. Both workers have received 10 mr prior to the accident. One worker is laying on the ground with an arm resting on a small pump. A scaffolding pic (large metal scaffold plank) is laying across the worker's legs

Initial Conditions assumed to have occurred prior to accident commencement:

Unit 2 and 3 are running at 100%, Unit 1 is permanently shutdown.

Two workers were attempting to set up scaffolding, one on the ladder wearing a safety harness, the other handing up parts. The ladder is properly tied off.

While the worker on the ladder was swinging the pic into place, it contacted a faulty light fixture causing the worker, who was also in contact with the steel structure, to receive a slight, but noticeable electrical shock. This caused the elevated worker to shout out and lose his grip on the pic. The startled ground man stumbled as he tried to move out of the way. The ground man fell hitting his arm on a small pump, snagged and tore his PCs on a bolt on a flange for valve MUS-16A also receiving a small laceration and was then struck across the legs by the falling pic.

The role playing worker walks across the clean floor and calls x2222 .

The worker who dropped the scaffolding insists he is fine, appears of sound mind and is refusing treatment. Controllers will ensure this person is not a patient.

The victim never lost consciousness and recalls the event completely. He did not strike his head.

Left wrist is painful and swollen

Left leg is slightly cut where the PCs are torn

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Left knee is painful and swollen

Right femur has swelling and deep bruising. Appears to be some shortening of the right leg

Vitals are unremarkable

The injured worker's wrist and cut initially are contaminated. The second worker is not contaminated. Equipment used by rescuers may become contaminated based on handling. Both workers have received 10 mr. All players in the area receive 1 to 7 mr/minute depending on location in the posted High Rad area. Upon exiting the High Rad Area, no significant additional dose is received by any player.

Drill initiation/response begins at this point in time:

The Unit 2 Control Room receives the 2222 call and initiates the medical response.

Health Physics Technician(s) should be staged and dispatched from the Mock Up Control Point.

Upon arrival, SFP-EMTs evaluate the patient and request offsite assistance.

Unit 2 Control Room requests dispatch of an ambulance.

SFP-EMTs stabilize patient and begin packaging. The patient's protective clothing may be cut away to expose the injuries. Application of the Hare traction device is likely.

Security prepares for arrival and delivery of incoming emergency vehicles to the scene and for patient transport to the hospital.

HP Technician(s) perform radiological surveys of the patient.

If at any time Lifestar is indicated, the appropriate Controller shall advise the player(s) that no helicopter is available.

The Control Room should contact L&M for transport of a contaminated-injured patient.

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Station HP Technician(s) may decide to perform an initial (limited) decontamination of the patient, if conditions and time permits.

Upon ambulance/Medic arrival at the Access Road, Security should coordinate and provide an escort(s) to the accident scene at building 532. Access is from the second floor. The elevator may be used for movement outside the RCA.

Health Physics Technician(s) should brief ambulance / Medic personnel on radiological conditions and escort them into the mock up RCA.

Upon arrival, offsite EMS personnel take patient turnover and provide treatment and packaging for transport and may decide to notify Lawrence & Memorial Hospital of the expected transfer of a contaminated injured patient.

Health Physics Technician(s) should brief EMTs regarding contamination control prior to moving the patient for transfer to the ambulance gurney. HP will provide guidance in exiting, removing the patient and removing equipment from the RCA

EMS personnel notify Lawrence & Memorial Hospital for the expected transfer of a contaminated injured patient. SFP or an HP Technician notify the Unit 2 Control Room of the decision to transfer the patient to L&M.

After the patient has been packaged and loaded and all preparations have been completed, including ambulance boarding of an HP Technician, the ambulance departs the Station for L&M - approximately a 10 minute transport.

All vehicle/traffic laws shall be observed and obeyed. Emergency vehicles shall travel no lights or siren.

The Hospital ED staff should initiate their radiological emergency plan and prepare the Radiological Emergency Area (REA) for contaminated/injured patient arrival.

The HP Tech should inform the ambulance crew of the contamination levels found. Per RPM 1.5.4, 5,000 - 30,000 cpm is considered "moderate."

During transit, ambulance personnel should contact the hospital and advise them of the patient's condition, contamination levels and Estimated Time of Arrival (ETA).

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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.

ED staff perform wound area decontamination, based on the extent of injuries. Two decontamination attempts will be necessary to sufficiently remove wound, hand and arm contamination. The physician should follow plan procedure regarding the taking of swipes or samples.

EMS personnel (once "released" from patient care responsibilities) and the ambulance may 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.

Neither the EMS personnel, nor the ambulance itself will be 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 actual actions taken by ambulance personnel during ambulance transit to the hospital.] Ad hoc contamination levels if appropriate assigned by the patient Controller should be 500 cpm for contact with the wrist, 3,000 cpm for contact with the cut, 100 cpm for contact with any other contaminated item.

If contamination is identified during ambulance personnel or vehicle monitoring/surveying; the person surveying the vehicle should require it to 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.

REA ED staff radiological exposures should be periodically monitored during and after patient receipt and care is provided.

After successful patient decontamination is performed, the patient is released from the REA.

The medical staff should be monitored for contamination upon completion 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/gathered appropriately as radiological

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waste. REA ED staff radiological exposures should be checked and documented.

The drill is terminated and a player/controller critique is conducted at both the Station and Lawrence & Memorial Hospital.