



Grand Gulf Nuclear Station Trinity Medical Drill After Action Report/Improvement Plan

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Executive Summary

On June 24, 2022, the Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA), Region 6, evaluated the Trinity Medical hospital medical services drill for the Grand Gulf Nuclear Station, located in Port Gibson, Mississippi.

During the medical services drill, FEMA assessed the ability of state and local officials to implement plans and procedures to protect the public in the event of a radiological incident. This drill is part of the FEMA Radiological Emergency Preparedness Program. This program ensures that adequate capabilities exist to prevent, protect against, mitigate the effects of, respond to, and recover from incidents involving commercial nuclear power plants. This drill implemented the revised NUREG 0654/FEMA-REP-1, Rev. 2 document and the 2019 Radiological Emergency Preparedness Program Manual (RPM). This is the first medical services drill conducted at Trinity Medical.

This report contains the final written evaluation of the drill. The state and local organizations demonstrated knowledge of their emergency response plans and procedures and adequately implemented them. There were no Level 1 Findings or Plan Issues identified. One Level 2 Finding was observed during the drill.



Section 1: Drill Overview

Drill Name	2022 Grand Gulf Nuclear Station Drill
Dates	June 24, 2022
Purpose	The purpose of the medical services drill was to assess the level of preparedness of Trinity Medical and Northeast Louisiana Ambulance Service to respond to a simulated radiological emergency.
Mission Area(s)	Protection Response
Core Capabilities	Operational Coordination Environmental Response/Health and Safety Planning
Objectives	Exposure Control Operate
Threat or Hazard	Release of radiological materials from a commercial nuclear power plant.
Scenario	Medical Services Drill
Participating Organizations	A complete list of participating agencies and organizations is attached in Appendix A.

Section 2: Analysis of Capabilities

2.1 Summary Results of Assessment

Table 1 below lists the assessment activity objectives, capability targets, selected core capabilities, and status of each capability target evaluated.

Each jurisdiction and functional entity were evaluated based on the demonstration of core capabilities and capability targets. The demonstration status of the capability targets are indicated using the following terms:

- **Met (M):** The jurisdiction or functional entity performed all activities under the objective/capability target to the level required per the work plan and/or the extent of play agreement, with no Level 1 or Level 2 Findings evaluated under that objective/capability target during the current activity and no unresolved prior Level 2 Finding(s).
- **Level 1 Finding (L1):** An observed or identified inadequacy of organizational performance during an assessment activity that could cause a determination that offsite emergency preparedness is not adequate to provide reasonable assurance that appropriate protective measures can be taken in the event of a radiological emergency to protect the health and safety of the public living in the vicinity of a Nuclear Power Plant.
- **Level 2 Finding (L2):** An observed or identified inadequacy of organizational performance during an assessment activity that is not considered, by itself, to adversely impact public health and safety.
- **Plan Issue (P):** An observed or identified inadequacy in the OROs emergency plan/implementing procedures, rather than in that of the OROs performance.
- **Not Demonstrated (N):** For a justifiable reason, the jurisdiction or functional entity did not perform assessment activities under the objective/capability target as specified in the extent of play agreement.
- **Not Applicable (N/A):** The objective/capability target does not apply to the jurisdiction.

Table 1. Summary Results of Capability Targets

Venue	Capability Target	Core Capabilities	Status
Objective 2: Exposure Control			
Trinity Medical	2.2	Operational Coordination, Environmental Response/Health and Safety, Planning	M
Northeast Louisiana Ambulance Service	2.2	Operational Coordination, Environmental Response/Health and Safety, Planning	M
Objective 5: Operate			
Trinity Medical	5.3	Operational Coordination, Environmental Response/Health and Safety, Planning	L2
Northeast Louisiana Ambulance Service	5.3	Operational Coordination, Environmental Response/Health and Safety, Planning	M

2.2 Results of Drill Evaluation

Trinity Medical Hospital

Objective 2: Exposure Control

Capability Target 2.2: Emergency Worker Exposure Control Management

Objective 5: Operate

Capability Target 5.3: Transportation and Treatment of Contaminated Injured Individuals

In summary, the status of DHS/FEMA capability targets for this location are as follows:

- a. MET: 2.2
- b. LEVEL 1 FINDING: None
- c. LEVEL 2 FINDING: 5.3

ISSUE NUMBER: 28-22-5.3-L-2

CAPABILITY TARGET: Transportation and Treatment of Contaminated Injured Individuals

CONDITION: While surveying the patient, exact results from the contamination survey were not determined or recorded on form B-4, Patient Survey Form.

POSSIBLE CAUSE: The scenario provided for injects of radiological survey results by showing pictures of Ludlum 12 meter faces for the simulated results. Two of the pictures used, indicated the meter was “pegged.” The lead Radiological Emergency Area (REA) nurse recognized that this was over the contamination trigger levels and continued with decontamination of the impacted area. Once the area was clean, the nurse read the meter properly and reported the result. No exact results were taken or recorded.

PLANNING REFERENCES: NUREG0654/FEMA-REP-1. REV.2: L.1, FEMA REP Program Manual, dated 12/2019: L.1.iii;

Hospital Emergency Department Management of Radiation Accidents, Trinity Medical, Rev. 1, 5/27/2022: 6.8.1.f

EFFECT: If maximum results of the radiological survey are not determined, even if known to be above the trigger level, there would be no record as to the level of contamination realized on the patient. Initial contamination levels prior to treatment may be needed for medical purposes or dose assessment calculations. Record of these readings are important to maintain.

RECOMMENDATION: If an instrument pegs on the meter face, indicating an area is contaminated, the multiplier switch should be used, and the maximum reading



should be recorded. A scribe could be located in the Buffer Zone and record readings on the contamination survey form as read aloud by the surveyor.

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

Northeast Louisiana Ambulance Services

Objective 2: Exposure Control

Capability Target 2.2: Emergency Worker Exposure Control Management

Objective 5: Operate

Capability Target 5.3: Transportation and Treatment of Contaminated Injured Individuals

In summary, the status of DHS/FEMA capability targets for this location are as follows:

- a. MET: 2.2, 5.3
- b. LEVEL 1 FINDING: None
- c. LEVEL 2 FINDING: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

Appendix A: Participating Organizations

Participating Organizations

State Organizations
Louisiana Department of Environmental Quality
Support Organizations
N/A
Private Organizations
Trinity Medical Center
Northeast Louisiana Ambulance

Appendix B: Planning and Evaluation Team

Planning Team

Planners		
Title/Position	Name	Agency
Regional Assistance Committee Chair	Oscar Martinez	FEMA Region 6
Federal Planning Team Lead/Sr. Site Specialist	Linda Gee	FEMA Region 6
State Planning Team Lead Environmental Scientist 3	Cliff Acosta	LDEQ
Licensee Planning Team Lead Emergency Preparedness	Dennis Coulter	GGNS

Evaluation Team

Team Leaders and Evaluators		
Venue/Location	Evaluation Team/Team Lead	Agency
Trinity Medical Hospital	Bart Ray (Team Lead)	ICF
	Marcy Campbell	ICF
Northeast Louisiana Ambulance Service	PJ Nied	ICF

Appendix C: Acronyms and Abbreviations

Acronym	Description
CPM	Counts Per Minute
DRD	Direct Reading Dosimeter
ED	Emergency Director
EMS	Emergency Medical Services
EMT	Emergency Medical Technician
EPZ	Emergency Planning Zone
EW	Emergency Worker
FEMA	Federal Emergency Management Agency
GGNS	Grand Gulf Nuclear Station
GOHSEP	Louisiana Governor's Office of Homeland Security and Emergency Preparedness
KI	Potassium Iodide
LDEQ	Louisiana Department of Environmental Quality
MSD	Medical Services Drill
NELA	Northeast Louisiana Ambulance
ORO	Off-site Response Organizations
PPE	Personal Protective Equipment
R	Roentgen
REA	Radiological Emergency Area
SOP	Standard Operating Procedure
TLD	Thermoluminescent Dosimeter

Appendix D: Extent of Play Agreement and Scenario

OBJECTIVES, CAPABILITY TARGETS, AND EXTENT-OF-PLAY-OFFSITE

2. EXPOSURE CONTROL

2.2. Emergency Worker Exposure Control Management

- ❖ Capability Targets: Emergency workers manage radiological exposure and dose in accordance with the plans/procedures. (NUREG-0654/FEMA-REP-1, Rev. 2: C.2.c, H.11, H.11.b, K.2.b, K.3, K.3.a, M.1.b, O.1)
- ❖ Locations:
Trinity Medical and Northeast Louisiana Ambulance Service
- ❖ Extent of Play:
 - Dosimeters and a simulated TLD will be issued to participating ambulance crewmembers. Hospital personnel will be issued dosimeters and TLDs.
 - If the scenario does not warrant a discussion about KI, then the criteria will be accomplished through an interview with the evaluator.
 - **Correction-on-the-spot** will be considered at these locations at the discretion of and concurrence between the evaluator and the controller. Caution should be exercised to ensure that exercise play is not interrupted.
- ❖ Level 2 Findings: – None
- ❖ Core Capabilities: Operational Coordination; Environmental Response/Health and Safety; Planning

5. OPERATE

5.3. Transportation and Treatment of Contaminated, Injured Individuals

- ❖ Capability Targets: Transport contaminated, injured individuals to medical facilities with the capability to monitor and decontaminate. (NUREG-0654/FEMA-REP-1, Rev. 2: C.2.d, F.2, H.11, H.12, J.2, K.3, K.4, L.1, L.3, L.4, O.1)
- ❖ Locations:
Trinity Medical and Northeast Ambulance Service
- ❖ Extent of Play:
 - The ambulance service will pick up the victim at a pre-staged location at the hospital; travel time will be simulated.
 - Removal of victim's clothing will be simulated.



- Decontamination will be performed on and around wound areas that will be unclothed, and other areas if necessary. Intrusive bioassay samples will be simulated. No actual surgical procedures, X-rays, drawing of blood samples, etc. will be conducted.
- **Correction-on-the-spot** will be considered at these locations at the discretion of and concurrence between the evaluator and the controller. Caution should be exercised to ensure that exercise play is not interrupted.
- ❖ Level 2 Findings: – None
- ❖ Core Capabilities: Environmental Response/Health and Safety; Planning

GENERAL EXTENT-OF-PLAY (EOP):

1. With regard to last minute additions or changes to any previously approved Extent-of-Play, all suggested changes must be forwarded to the RAC Chair for approval.
2. The goal of all offsite response organizations (ORO) is to protect the health and safety of the public. This goal is achieved through the execution of appropriate plans and procedures. It is recognized that situations may arise that could limit the organizations in the exact execution of these plans and procedures.
3. In the event of an unanticipated situation, OROs are permitted to exercise flexibility in the implementation of their plans and procedures in order to successfully achieve the objective of protection of public health and safety and protection of the environment.
4. As a statement of fact, no ORO will deliberately deviate from its plans and procedures with the intent of avoiding responsibility.

References:

Radiological Emergency Preparedness Program Manual - FEMA P-1028 / December 2019

NARRATIVE SCENARIO

INITIAL CONDITIONS

Grand Gulf Station has declared a General Emergency based on Offsite Radiation Monitoring Team reports. An evacuation of all people within five miles of Grand Gulf has commenced. Since the wind direction is from 90 degrees (blowing into the West), section 12 is being evacuated to Tallulah and Ferriday, and many areas within five miles of the plant are expected to be contaminated. **(Refer to Attachment A.)**

A man fishing at Old River Lake (approximately 4 miles from Grand Gulf) was in the plume when he heard the evacuation sirens. It took him about 25 minutes to get his boat out of the lake, and get in his truck to evacuate. He travelled west on Highway 604 around the North Edge of Lake Bruin, and got to Highway 65 when his vehicle stalled. He opened the hood of his vehicle to try to get the engine running and the hood latch failed. His right hand was struck by the falling hood, and he suffered moderate bleeding and bruising

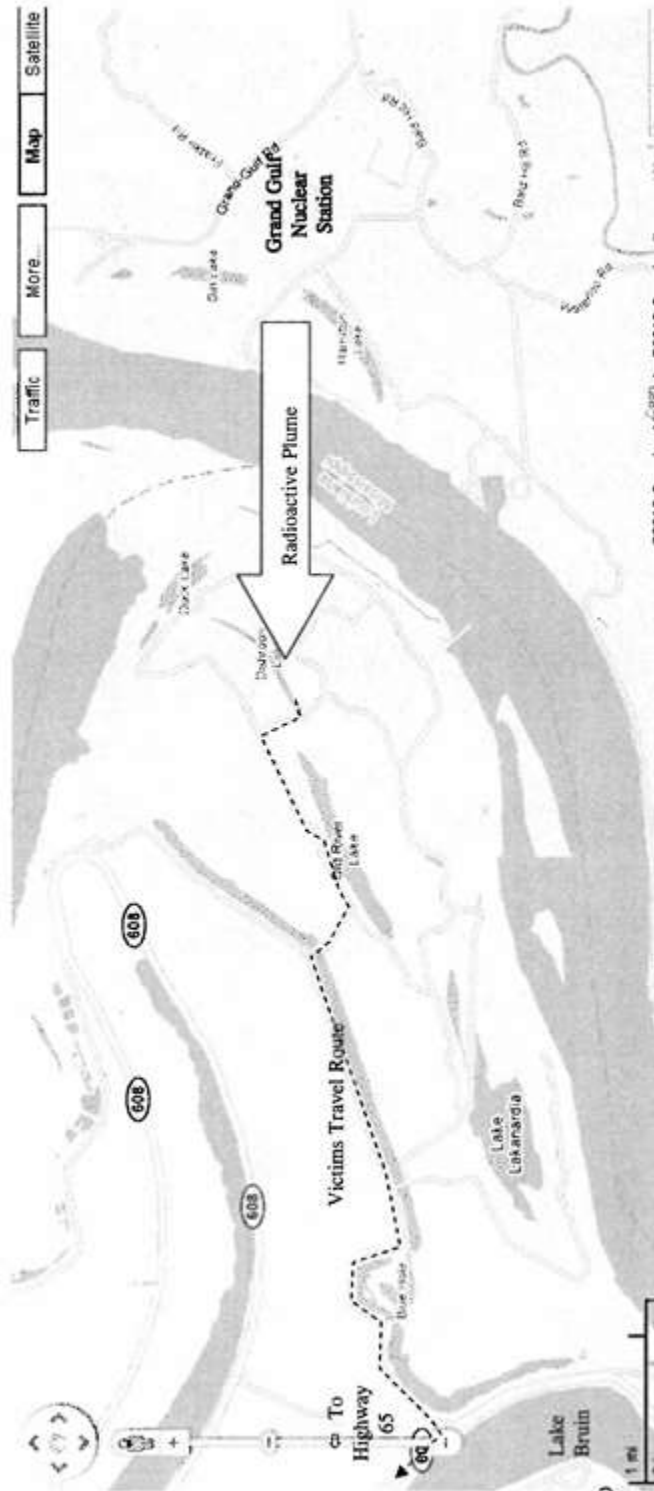
The fisherman wrapped his hand with a pressure dressing to stop the bleeding and was sitting on the ground in front of his car. An evacuee travelling North on Highway 65 called 911 to report the accident. The passerby did not stop but continued North toward Tallulah.

NOTE: The ambulance will pre-stage at the hospital, and a pause in ambulance play will take place to allow appropriate hospital preparations for the ambulance arrival.



ATTACHMENT A

STATE OF LOUISIANA / GRAND GULF NUCLEAR STATION
2020 MEDICAL RESPONSE DRILL
JUNE 24, 2022



Appendix E: Improvement Plan

This Improvement Plan has been developed as a result of the Grand Gulf Nuclear Station Medical Service Drill conducted on June 24, 2022.

Capability Target	Core Capabilities	Issue/Summary	Corrective Action	Primary Responsible Organization	Organization POC	Start Date	Completion Date
5.3	5: Operate	Issue No: 28-22-5.3-L-2 While surveying the patient, exact results from the contamination survey were not determined or recorded on form B-4, Patient Survey Form.		LDEQ	Cliff Acosta	09/23/2022	12/31/2024

Appendix G: Narratives

Reference the unabridged report.