U.S. Department of Homeland Security
Region VII
9221 Ward Parkway, Suite 300
Kansas City, MO 64114-3372

FEMA

March 6, 2013

Mr. Elmo E. Collins
Regional Administrator
U.S. NRC Region IV
1600 East Lamar Blvd.
Arlington, Texas 76011-4511

Dear Mr. Collins:

Enclosed is a copy of the final report for the November 7, 2012, medical services drill of the offsite radiological emergency response plans, site-specific to the Callaway Nuclear Power Plant. The participants in this drill were the Missouri State Emergency Management Agency, the University of Missouri Hospital and Clinics, and the University of Missouri Health Care Ambulance Service. The report was prepared by Federal Emergency Management Agency Region VII staff. The final report will be provided to the State of Missouri.

There were no deficiencies and one area requiring corrective action (ARCA) identified. After some training and re-demonstration, the ARCA is now closed. There were no ARCAs or deficiencies from previous exercises to be addressed in this drill.

Based on the results of the drill evaluation, the offsite radiological response plans and preparedness for the state of Missouri and the affected local jurisdictions, site-specific to the Callaway Nuclear Power Plant, can be implemented and are adequate to provide reasonable assurance that appropriate measures can be taken offsite to protect the health and safety of the public in the event of a radiological emergency at the site. Therefore, the Title 44 CFR, Part 350 approval of the offsite radiological emergency response plans and preparedness for the State of Missouri, site-specific to the Callaway Nuclear Power Plant, granted on March 21, 1984, will remain in effect.

If you have any questions or concerns regarding the report, please contact Mr. Ronald L. McCabe, Regional Assistance Committee Chair, at 816-283-7007 or by email ron.mccabe@fema.dhs.gov.

Sincerely,

Beth Freeman

Beth Freeman
Regional Administrator

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Enclosure

cc: Vanessa Quinn, HQ REP w/o enclosure (electronic)
Document Control Desk, NRC HQ
NRC NSIR (electronic)
Bill Maier, NRC IV w/o enclosure (electronic)
Lisa Hamilton, HQ REP w/o enclosure (electronic)

Callaway Nuclear Power Plant

After Action Report/ Improvement Plan

Drill Date - November 07, 2012

Radiological Emergency Preparedness (REP) Program

FEMA

Published February 28, 2013

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Callaway Nuclear Power Plant

After Action Report/Improvement Plan

Published February 28, 2013

Contents

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EXECUTIVE SUMMARY

On November 7, 2012, the Federal Emergency Management Agency (FEMA), Region VII, evaluated a medical services drill for the University of Missouri Hospital and Clinics, and the University of Missouri Health Care Ambulance Service. The purpose of the medical services drill was to assess the ability of the hospital and its associated ambulance service to respond to a radiological emergency involving a simulated medical injury to a member of the public with radioactive contamination. This drill was held in accordance with FEMA's policies and guidance concerning the exercise of State and local radiological emergency response plans and procedures.

The previous medical services drill at this site was conducted on November 9, 2010. The qualifying emergency preparedness exercise for this Power Plant was conducted on March 21, 1984.

FEMA wishes to acknowledge the efforts of the staffs of the University of Missouri Hospital and Clinics, the University of Missouri Health Care Ambulance Service and Missouri's State Emergency Management Agency (SEMA) who participated in this drill. The efforts of the state should also be commended for their work on training and drill preparation.

Protecting the public health and safety is the full-time job of some of the medical 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. A special thank you is once again extended to those wonderful volunteers. Cooperation and teamwork of all the participants were evident during this drill.

The University of Missouri Hospital and Clinics and the University of Missouri Health Care Ambulance Service demonstrated knowledge of their emergency response plans and procedures and adequately implemented them. There were no Deficiencies and one Area Requiring Corrective Action (ARCA) identified as a result of this medical drill. The ARCA was corrected during the drill and is closed. There were no previous ARCAs to be corrected during this medical drill from 2010.

SECTION 1: EXERCISE OVERVIEW

1.1 Exercise Details

Exercise Name
Callaway Nuclear Power Plant

Type of Exercise
Drill

Exercise Date
November 07, 2012

Program
Department of Homeland Security/FEMA Radiological Emergency Preparedness Program

Scenario Type
Radiological Emergency

1.2 Exercise Planning Team Leadership

Judy Dodgen
Site Specialist
Federal Emergency Management Agency / US Dept of Homeland Security
Technological Hazards Program Specialist
9221 Ward Parkway
Suite 300
Kansas City, Missouri, 64114
816-283-7091
judy.dodgen@fema.dhs.gov

Tom Mohr
Controller-Communications
State Emergency Management Agency (SEMA)
SEMA REP Program Manager (Callaway/Cooper)

2302 Militia Drive
P.O. Box 116 (mailing address)
Jefferson City, Missouri, 65102
573-526-9245
tom.mohr@sema.dps.mo.gov

James Kammerer
Controller - Ambulance
State Emergency Management Agency
Radiological Systems Maintenance Supervisor
2302 Militia Drive
Jefferson City, Missouri, 65102
573-526-9264
jim.kammerer@sema.dps.mo.gov

John Bassford
Utility Representative
Ameren UE - Callaway Nuclear Power Plant
Emergency Response Coordinator, Protective Services
Junction CC & Hwy O
P.O.Box 620, CA - 460 (mailing address)
Fulton, Missouri, 65251
314-974-8945
jbassford@ameren.com

Darrell Chute
Controller-On-Scene Control
SEMA
REP Planning/Training
2302 Militia Drive
Jefferson City, Missouri, 65102
573-526-9139
darrell.chute@sema.dps.mo.gov

1.3 Participating Organizations

Agencies and organizations of the following jurisdictions participated in the Callaway Nuclear Power Plant drill:

State Jurisdictions

SEMA

Support Jurisdictions

University of Missouri Hospital and Clinics

University of Missouri Hospital Health Care Ambulance Service

SECTION 2: EXERCISE DESIGN SUMMARY

2.1 Exercise Purpose and Design

The purpose of the Medical Services drill conducted in association with the Callaway Nuclear Power Plant (CNPP) was to demonstrate the adequacy of the University of Missouri Hospital and Clinics and the University of Missouri Health Care Ambulance Service emergency plans, associated implementing procedures, facilities, and equipment of the emergency responders and supporting entities in the communities in the immediate vicinity of the CNPP, specifically within the 10-mile emergency planning zone (EPZ).

Further, this drill was to test the CNPP emergency response community's ability to assess and respond to emergency conditions and coordinate efforts with other agencies for protection of the health and safety of the public.

The conduct and evaluation of this drill provides additional training for emergency response organization personnel as a means to enhance CNPP emergency response capability. The purpose of this particular medical services drill was to activate and evaluate portions of the University of Missouri Hospital and Clinics and the University of Missouri Health Care Ambulance Service Emergency Plans, and associated implementing procedures, in accordance with 44 CFR 350.

The scenario for the medical services drill was developed by SEMA, then was reviewed and approved for use by FEMA Region 7. The scenario was utilized by the exercise controllers and evaluators as the control mechanism for the conduct of the drill.

The scenario for the drill at the University of Missouri Hospital and Clinics was designed to depict a simulated vehicle accident in which a woman was injured and potentially contaminated. The University of Missouri Health Care Ambulance Service responded to the accident scene and followed their procedures for handling a contaminated injury, and transported the victim to the University of Missouri Hospital and Clinics. The University of Missouri Hospital and Clinics established a Radiological Emergency Area (REA), treated the injury, and decontaminated the victim.

The scenario design provided the basis to observe and evaluate the capabilities and effectiveness of the Emergency Response Plans for the University of Missouri Hospital and Clinics and the

University of Missouri Health Care Ambulance Service.

2.2 Exercise Objectives, Capabilities and Activities

The Callaway Nuclear Power Plant (CNPP) Emergency Preparedness Exercise & Drill Program objectives are based on the Federal requirements delineated in 44 CFR 350, as well as on the priorities and procedures detailed in the Radiological Emergency Preparedness plans for the State of Missouri, University of Missouri Hospital and Clinics and University of Missouri Health Care Ambulance Service. Additional guidance provided in NUREG-0654, NUREG-0696, and NUREG-0737, was utilized in developing these objectives.

The objective of this medical services drill was to test the implementation of the plans and procedures of the participating agencies, and the capability of these agencies to conduct operations in accordance with these plans. This objective is further defined by the criteria evaluated for each participant. These criteria are listed in Table 3.1.

The medical services drill was designed to allow the University of Missouri Hospital and Clinics and University of Missouri Health Care Ambulance Service to demonstrate the ability to initiate, maintain, and show control and treatment of contamination in patients, and illustrate the adequacy of emergency vehicles, equipment and personnel for transporting and treating contaminated patients. Both the ambulance service and the hospital were evaluated based upon the plans and procedures which they have established for use in a radiological emergency.

This drill was performed out-of-sequence, which is not concurrent to a full scale exercise or in synchronized time with other sites. To compensate for the artificiality of an out-of-sequence drill, the activities for each evaluation accepted simulation of some tasks. This allowed for the evaluators to focus on the activities specified in the drill criteria, which are usually those least familiar to the exercise players. None of the simulations compromised the ability to demonstrate and evaluate the objective of the drill.

2.3 Scenario Summary

The scenario utilized for the University of Missouri Hospital and Clinics and the University of Missouri Health Care Ambulance Service medical services drill stemmed from a female living near Steedman, part of sub-area C6 on Route CC hearing about the evacuation of the area on her tone alert radio shortly after the release has started. While leaving her home with her pet, the dog panics and drags her a short distance on the ground. Her clothes and all exposed parts of her body become contaminated by deposition from the plume when she is dragged on the ground. Abandoning the pet and driving as quickly as possible out of the area, she starts experiencing chest pains and numbness on the left side of her body. She pulls to the side of Highway 94 just west of Mokane and calls 911. The pain in her chest, injuries and dizziness leaves her unable to move or to leave the area. Because she was immersed in the plume, the contamination is imbedded in the wounds.

SECTION 3: ANALYSIS OF CAPABILITIES

3.1 Drill Evaluation and Results

Contained in this section are the results and findings of the evaluation of all jurisdictions and functional entities, which participated in the November 7, 2012, out of sequence medical services drill. The drill event tested the offsite emergency response capability of the hospital and its associated ambulance service to respond to a radiological emergency, involving a simulated medical injury to a member of the public with radioactive contamination.

Each jurisdiction and functional entity was evaluated on the basis of its demonstration of criteria contained in the REP Program Manual dated, April 2012.

3.2 Summary Results of Drill Evaluation

The matrix presented in Table 3.1, on the following pages, presents the status of all exercise criteria, which were scheduled for demonstration during this medical services drill, at all participating jurisdictions and functional entities. Exercise criteria are listed by number and the demonstration status of those criteria is indicated by the use of the following letters:

M - Met (No Deficiency or ARCAs assessed and no unresolved ARCAs from prior exercises)

D - Deficiency assessed

A - Area Requiring Corrective Action (ARCA) assessed or unresolved ARCA(s) from prior exercises)

P - Planning Issues

N - Not Demonstrated (Reason explained in subsection B)

Table 3.1 - Summary of Drill Evaluation

DATE: 2012-11-07 SITE: Callaway Nuclear Power Plant, MO M: Met, A: ARCA, D: Deficiency, P: Plan Issue, N: Not Demonstrated		Univ. of MO Hosp.	Univ. of MO Amb.
Emergency Operations Management			
Mobilization	1a1		
Facilities	1b1		
Direction & Control	1c1		
Communications Equipment	1d1		
Equipment and Supplies	1e1	M	M
Protective Action Decision Making			
EW Exp. Control Decisions	2a1		
PARs	2b1		
PADs	2b2		
PADs for Disabled/Functional Needs	2c1		
Ingestion PADs	2d1		
RRR Decisions	2e1		
Protective Action Implementation			
EW Exp. Control Implementation	3a1	M	M
KI Public/Institutionalized	3b1		
PAD Imp. Disabled/Functional Needs	3c1		
PAD Imp. Schools	3c2		
TACP Establishment	3d1		
Impediments to Evacuation	3d2		
Implementation of Ingestion PADs	3e1		
Ingestion Strategies and Information	3e2		
Imp. of RRR Decisions	3f1		
Field Measurement and Analysis			
RESERVED	4a1		
Field Team Management	4a2		
Field Team Operations	4a3		
Field Team Sampling	4b1		
Laboratory Operations	4c1		
Emergency Notification and Public Info			
Initial Alert & Notification	5a1		
RESERVED	5a2		
Backup Alert & Notification	5a3		
Exception Area Alerting	5a4		
Subsequent Public Information	5b1		
Support Operations/Facilities			
Reception Center Operations	6a1		
EW Monitoring & Decon	6b1		
Congregate Care	6c1		
Contaminated Injured Transport & Care	6d1	M	M

3.3 Criteria Evaluation Summaries

3.3.1 Support Jurisdictions

3.3.1.1 University of Missouri Hospital and Clinics

The University of Missouri Hospital and Clinics demonstrated excellent teamwork during preparation for receiving a contaminated patient.

In summary, the status of DHS/FEMA criteria for this location is as follows:

a. MET: 1.e.1, 3.a.1, 6.d.1.
b. AREAS REQUIRING CORRECTIVE ACTION: 6.d.1.

ISSUE NO.: 10-12-6d1-A-01

CRITERION: The facility/ORO has the appropriate space, adequate resources, and trained personnel to provide transport, monitoring, decontamination, and medical services to contaminated injured individuals.

CONDITION: Emergency room staff did not drape the contaminated wounds of the patient prior to proceeding with wet decontamination procedures.

POSSIBLE CAUSE: This step is clearly listed in their procedures (Radiation Incident: Code Orange dated 8/16/12 - page 10 of 24), but there was no one reviewing or reading off the steps in the procedure as decontamination was conducted. Evaluators had reminded participants prior to the demonstration that they were free to consult their written procedures during the demonstration.

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

EFFECT: Not draping the areas around the contaminated wounds prior to beginning wet decontamination procedures could have resulted in further contamination of clean areas of the patient's body.

CORRECTIVE ACTION DEMONSTRATED: Emergency room staff identified

their error immediately after being asked about the steps in their procedure by the evaluator. The wounds were properly draped and successful decontamination proceeded. It is recommended that someone be available to read the steps in the procedure as decontamination is conducted during future demonstrations. This issue is closed.

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

3.3.1.2 University of Missouri Health Care Ambulance Service

The University of Missouri Health Care Ambulance Service personnel demonstrated attention to detail in minimizing exposure control, and excellent knowledge of equipment preparation.

In summary, the status of DHS/FEMA criteria for this location is as follows:

a. MET: 1.e.1, 3.a.1, 6.d.1.
b. AREAS REQUIRING CORRECTIVE ACTION: None
c. DEFICIENCY: None
d. PLAN ISSUES: None
e. NOT DEMONSTRATED: None
f. PRIOR ISSUES - RESOLVED: None
g. PRIOR ISSUES - UNRESOLVED: None

SECTION 4: CONCLUSION

Based on the results of the November 7, 2012, medical services drill, the offsite radiological emergency response plans and preparedness for the State of Missouri and the affected local jurisdictions are deemed adequate to provide reasonable assurance that appropriate measures can be taken to protect the health and safety of the public in the event of a radiological emergency. Therefore, 44 CFR Part 350 approval of the offsite radiological emergency response plans and preparedness for the State of Missouri, the University of Missouri Hospital and Clinics and the University of Missouri Health Care Ambulance Service, site-specific to the Callaway Nuclear Power Plant, will remain in effect.

APPENDIX A: DRILL EVALUATORS AND TEAM LEADERS

DATE: 2012-11-07, SITE: Callaway Nuclear Power Plant, MO

LOCATION	EVALUATOR	AGENCY
University of Missouri Hospital and Clinics	*Rex Jennings	FEMA RVII
University of Missouri Health Care Ambulance Service	*Jeff Clark	FEMA RVII
* Team Leader		

APPENDIX B: ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
ARCA	Area Requiring Corrective Action
CNPP	Callaway Nuclear Power Plant
DHS	Department of Homeland Security
DRD	Direct Reading Dosimeters
EPZ	Emergency Planning Zone
FEMA	Federal Emergency Management Agency
KI	Potassium Iodide
NUREG	NRC Nuclear Regulatory Publication
PAD	Protective Action Decision
PAR	Protective Action Recomendation
REA	Radiological Emergency Area
REP	Radiological Emergency Preparedness
SEMA	State Emergency Management Agency
TLD	Thermoluminescent Dosimeters

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