After Action Report

Grand Gulf Nuclear Station
Radiological Emergency Preparedness Exercise
Exercise Date: March 29, 2017

December 7, 2017

FEMA

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Executive Summary

On March 29, 2017, the U.S. Department of Homeland Security, Federal Emergency Management Agency Region IV, Radiological Emergency Preparedness Program staff evaluated a plume-exposure-pathway exercise for the 10-mile emergency planning zone of the Grand Gulf Nuclear Station. The evaluations of out-of-sequence activities conducted March 8 and the week of March 13 - 17, 2017, are also included in this report.

The Grand Gulf Nuclear Station, operated by the Entergy Corporation is located in Claiborne County, 29 miles south of Vicksburg and seven miles north of Port Gibson. The emergency planning zone encompasses Claiborne County, Mississippi and Tensas Parish, Louisiana; it also encompasses a small-unpopulated portion of Warren County, Mississippi, which is managed by Claiborne County.

The purpose of the exercise was to assess the level of state and local preparedness in responding to an incident at the Grand Gulf Nuclear Station. It was conducted in accordance with FEMA policies and guidance concerning the exercise of state and local radiological emergency response plans and procedures. The previous federally evaluated exercise at this site was conducted on October 21, 2015. The qualifying emergency preparedness exercise was conducted on November 4-5, 1981.

Officials and representatives from participating agencies and organizations demonstrated knowledge of their emergency response plans and procedures and successfully implemented them during the exercise. Out of sequence activities were also successfully demonstrated. Core Capabilities associated with this exercise included: Operational Coordination; Situational Assessment; Operational Communications; Public Information and Warning; Environmental Response/Health and Safety; On-Scene Security, Protection and Law Enforcement; Critical Transportation; Mass Care Services and Public Health, Healthcare & Emergency Medical Services. All jurisdictions met their exercise objectives and successfully demonstrated the corresponding core capabilities identified in Section 3.2 of this report. FEMA did not identify any level 1 findings. FEMA identified two plan issues and three level 2 findings during this exercise. The first plan issue (028-17-1.e.1-P-01) concerned: Radiation monitoring equipment was not appropriate or in sufficient supply to support emergency operations. The second plan issue (028-17-4.a.3-P-02) concerned: The Department of Radiological Health air sampling procedure needs revision to clarify methodology for collecting and analyzing quality air samples for dose assessment calculations and protective actions for the public. Level 2 Finding 028-17-2.b.1-L2-02 concerned: The State of Mississippi dose assessment team did not provide the State Emergency Operations Center staff with accurate results in a timely manner. Level 2 Finding 028-17-4.a.2-L2-03 concerned: The Mississippi Radiological Emergency Response Team Coordinator failed to instruct the field teams to utilize a silver zeolite cartridge for obtaining an air sample. Level 2 Finding 028-17-5.b.1-L2-01 concerned: Message preparation, including emergency alert system and supplemental news releases, were in conflict between the State and Claiborne County.

Highlights of the exercise included the State of Mississippi's emphasis on the Homeland Security Information Network, which provided a dedicated, teleconference-level, face-to-face information sharing platform for real-time situational awareness. This real-time information sharing greatly enhanced situational awareness for decision makers in making realistic response decisions. This highlight demonstrates the commitment of all of the jurisdictions involved to improve their preparedness. FEMA will provide an Improvement Plan to the State of Mississippi that details the strengths and areas for improvement observed during the exercise. The Improvement Plan is published under separate cover for official use only in accordance with HSEEP methodology.

FEMA wishes to acknowledge the efforts of the many individuals who participated in the exercise and made it a success. The professionalism and teamwork of the participants was evident throughout all phases of the exercise.

Section 1: Exercise Overview

1.1 Exercise Details

Exercise Name
2017 Grand Gulf Nuclear Station Radiological Emergency Preparedness Exercise

Type of Exercise
Full-Scale Exercise

Exercise Date
March 29, 2017

Exercise Off-Scenario/Out-of-Sequence Dates
March 8 and March 13 - 17, 2017

Locations
See the extent-of-play agreements in Appendix C for exercise locations.

Sponsors
Mississippi Emergency Management Agency
1 MEMA Drive
Pearl, Mississippi 39208

Grand Gulf Nuclear Station
7003 Bald Hill Rd,
Port Gibson, MS 39150

Program
U.S. Department of Homeland Security, Federal Emergency Management Agency, Radiological Emergency Preparedness Program

Mission
Response

Scenario Type
Full-Participation Plume-Phase Radiological Emergency Preparedness Exercise

1.2 Exercise Planning Team Leadership

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1.3 Participating Organizations

Agencies and organizations of the following jurisdictions participated in the 2017 Grand Gulf Nuclear Station exercise.

State Jurisdictions:

State of Mississippi
- Mississippi Emergency Management Agency
- Mississippi State Department of Health, Division of Radiological Health
- Mississippi State Department of Health, State Health Officer
- Mississippi Department of Public Safety
- Mississippi Department of Transportation
- Mississippi Department of Agriculture and Commerce
- Mississippi Department of Environmental Quality
- Mississippi Department of Finance and Administration
- Mississippi Department of Human Services
- Mississippi Fire Marshal's Office
- Mississippi Association of Public Works
- Mississippi Public Utilities Staff
- Mississippi Military Department/National Guard
- Mississippi Office of Homeland Security

State of Louisiana
- Louisiana Department of Environmental Quality/Radiological Services
- Louisiana Department of Environmental Quality Public Information
- Louisiana Governor's Office of Homeland Security and Emergency Preparedness

Risk Jurisdictions:

Claiborne County
- Claiborne County Emergency Management Agency
- Claiborne County Board of Supervisors
- Claiborne County Public Information Officer
- Claiborne County Fire Department
- Claiborne County Health Department
- Claiborne County Hospital
- Claiborne County Public Transportation
- Claiborne County Road Department
- Claiborne County Schools
- Claiborne County Sheriff's Office
- Claiborne County Welfare Department
- Claiborne County Cooperative Service/Regional Coordinator

Port Gibson Mayor's Office
Port Gibson Police Department

Tensas Parish
Tensas Parish Office of Homeland Security and Emergency Preparedness & Public Information Officer

Support Organizations
Adams County Emergency Management Agency
Adams County Department of Human Services
Adams County Department of Health
City of Natchez Police Department
City of Natchez Fire Department
Natchez Regional Hospital
Copiah County Emergency Management Agency
Copiah County Board of Supervisors
Copiah County Department of Transportation
Copiah County Fire Department
Copiah County Health Department
Copiah County Sheriff's Office
Crystal Springs Mayor's Office
Hazlehurst Mayor's Office
Hazlehurst Emergency Medical Services
Hazlehurst Police Department
Hazlehurst School Districts
Hinds County Community College Police Department
Hinds County Emergency Management Agency
Hinds County-Utica Volunteer Fire Department
Hinds County Public Works
Hinds County Public School District
Hinds County Health Department
Hinds County Sheriff's Office
Jackson Police Department
Raymond Fire Department
Warren County Emergency Management Agency
Warren County Volunteer Fire Department
Warren County Sheriff's Office
Warren County Department of Human Services
River Region Hospital
Vicksburg Police Department
Vicksburg Fire Department
Vicksburg Fire & Emergency Medical Services

Private Organizations:

- Alcorn State University
- American Red Cross, Southwest and Mississippi Region
- Salvation Army
- Entergy Incorporated

Federal Agencies:

- U.S. Nuclear Regulatory Commission, Region IV
- Federal Emergency Management Agency, Region IV
- Federal Emergency Management Agency, Region VI
- U.S. Coast Guard

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Section 2: Exercise Design Summary

2.1 Exercise Purpose and Design

FEMA administers the Radiological Emergency Preparedness (REP) Program pursuant to the regulations found in Title 44 Code of Federal Regulations (CFR) parts 350, 351, 352, 353 and 354. 44 CFR 350 codifies sixteen planning standards that form the basis for radiological emergency response planning for the licensee and for state, tribal, and local governments impacted by the emergency planning zones established for each nuclear power plant site in the United States. 44 CFR 350 sets forth the mechanisms for the formal review and approval of state, tribal, and local government radiological emergency response plans and procedures by FEMA. One of the REP Program cornerstones established by these regulations is the biennial exercise of offsite response capabilities. During these exercises, affected state, tribal, and local governments demonstrate their abilities to implement their plans and procedures to protect the health and safety of the public in the event of a radiological emergency at the nuclear plant.

The results of this exercise, together with review of the radiological emergency response plans, and verification of the periodic requirements set forth in NUREG-0654/FEMA-REP-1, Rev. 1 along with supplements through the annual letter of certification and staff assistance visits, enabled FEMA to provide a statement with the transmission of this final after action report to the U.S. Nuclear Regulatory Commission, that the affected state, tribal, and local plans and preparedness are: (1) adequate to protect the health and safety of the public living in the vicinity of the nuclear power facility by providing reasonable assurance that appropriate protective measures can be taken offsite in the event of a radiological emergency; and (2) capable of being implemented.

Formal submission of the radiological emergency response procedures for the Grand Gulf Nuclear Station to FEMA Region IV by the State of Mississippi occurred on May 22, 1981. In accordance with 44 CFR 350, formal approval of those procedures was granted on June 23, 1983.

2.2 Exercise Core Capabilities and Objectives

Core capabilities-based planning allows for exercise planning teams to develop exercise objectives and observe exercise outcomes through a framework of specific action items. Using the Homeland Security Exercise and Evaluation Program (HSEEP) methodology, the exercise objectives meet the REP Program requirements and encompass the emergency preparedness evaluation areas. The critical tasks to be demonstrated were negotiated with the State of Mississippi and the participating counties. The core capabilities scheduled for demonstration during this exercise were:

- Operational Coordination
- Situational Assessment
- Operational Communications
- Public Information and Warning
- Environmental Response/Health and Safety
- On-Scene Security, Protection and Law Enforcement
- Critical Transportation
- Mass Care Services
- Public Health, Healthcare & Emergency Medical Services

The definitions of each core capability is as follows:

Operational Coordination: Establish and maintain a unified and coordinated operational structure and process that appropriately integrates all critical stakeholders and supports the execution of core capabilities.

Situational Assessment: Provide all decision makers with decision-relevant information regarding the nature and extent of the hazard, any cascading effects, and the status of the response.

Operational Communications: Ensure the capacity for timely communications in support of security, situational awareness, and operations by any and all means available, among and between affected communities in the impact area and all response forces.

Public Information and Warning: Deliver coordinated, prompt, reliable, and actionable information to the whole community through the use of clear, consistent, accessible, and culturally and linguistically appropriate methods to effectively relay information regarding any threat or hazard and, as appropriate, the actions being taken and the assistance being made available.

Environmental Response/Health and Safety: Ensure the availability of guidance and resources to address all hazards including hazardous materials, acts of terrorism, and natural disasters in support of the responder operations and the affected communities.

On-Scene Security, Protection and Law Enforcement: Ensure a safe and secure environment through law enforcement and related security and protection operations for people and communities located within affected areas, and also for all traditional and atypical response personnel engaged in lifesaving and life-sustaining operations.

Critical Transportation: Provide transportation (including infrastructure access and accessible transportation services) for response priority objectives, including the evacuation of people and animals, and the delivery of vital response personnel, equipment, and services into the affected areas.

Mass Care: Provide life-sustaining services to the affected population with a focus on hydration, feeding, and sheltering to those who have the most need, as well as support for reunifying families.

Public Health, Healthcare, and Emergency Medical Services: Provide lifesaving medical treatment via Emergency Medical Services and related operations and avoid additional disease and injury by providing targeted public health, medical and behavioral health support, and products to all affected populations.

These core capabilities, when successfully demonstrated, meet the exercise objectives. The objectives for this exercise were as follows:

Objective 1: Demonstrate the ability to provide Direction and Control and make protective action decisions through the State Emergency Operations Centers and County EOCs by exercise play and discussion of plans and procedures.

Objective 2: Demonstrate the ability to physically implement protective actions for State and County emergency workers, access/functional needs, schools and the public through exercise demonstration.

Objective 3: Demonstrate the ability to perform plume-phase field measurements and analysis utilizing simulated data and discussion of plans and procedures with State field teams.

Objective 4: Demonstrate the ability to activate Prompt Alert and Notification System and Emergency Alert System through exercise play.

Objective 5: Demonstrate the effectiveness of plans, policies and procedures in the Joint Information System for public and private sector emergency information communications.

Objective 6: Demonstrate the ability to monitor, decontaminate and register evacuees.

2.3 Exercise Scenario

The following is a brief summary of the scenario developed by the Grand Gulf Nuclear Station to drive exercise play.

Initial Conditions:

1. Plant is at 100% power.

2. Weather is clear, with variable winds from the northeast.

3. Containment M41 High Volume Purge is running to support post RCIC Surveillance minor airborne radioactivity cleanup in Containment.

4. Div 2 DG in 'Maintenance'

5. RHR C tagged OOS

Summary:

1. The initiating event is based on a Preventive Radiation Nuclear Detection transportation incident proceeding through the State of Mississippi at or around 0530. The scenario will transition with a Grand Gulf notification of rapid escalating event resulting in a release. The radiological emergency preparedness scenario begins at 0800 in a Division 2 workweek at 100% reactor power. The Grand Gulf Nuclear Emergency Response Organization Blue Team is participating.

2. At 0805, a loss of containment area occurs in the drywell, which is a loss of one of the reactor fission product barrier's. Drywell pressure will exceed 1.39#. A failure of running containment and Aux building ventilation dampers to close upon isolation signal causes a loss of the second fission product barrier.

3. The Containment Vent radiation monitor fails.

4. Various injection systems fail to operate.

5. At 0820 a Site Area Emergency is declared.

6. At 0950, a feed water a line break occurs, causing reactor water level to go below -191 inches, which is a loss of the third fission product barrier.

7. By 1005, radioactivity release to the environment starts, with the release path being the open Containment Ventilation system.

8. Repair efforts are expected to work to address the challenges of restoring water to the reactor and isolating the release path.

9. Releases are unmonitored and expected to exceed Environmental Protection Agency Protective Action Guides near the site.

10. Recovery of injection systems and closure of the release pathway should be the priority.

11. The Exercise is expected to terminate at approximately 1245.

Section 3: Analysis of Capabilities

3.1 Exercise Evaluation and Results

This section contains the results and findings of the evaluation of all jurisdictions and functional entities that participated in the March 29, 2017 plume-exposure-pathway exercise and out-of-sequence activities of March 8 and 13-17, 2017.

Each jurisdiction and functional entity was evaluated based on the demonstration of core capabilities, capability targets and critical tasks and the underlying REP criteria as delineated in the FEMA REP Program Manual dated January 2016. Exercise criteria are listed by number, and the demonstration status of those criteria are indicated by the use of the following terms:

- M: Met (no unresolved level 1 or level 2 findings assessed and no unresolved findings from prior exercises)
- 1: Level 1 finding assessed
- 2: Level 2 finding assessed or an unresolved level 2 finding(s) from a prior exercise
- P: Plan issue
- N: Not demonstrated

3.2 Summary Results of Exercise Evaluation

HSEEP evaluation methodology is an analytical process used to assess the demonstration of specific capabilities during an exercise. A capability provides a means to perform one or more critical tasks under specified conditions and to specific performance standards. Core capabilities form the foundation of the FEMA Region IV REP Program evaluations. The core capability summaries below provide an overall combined assessment of state and local jurisdictions based upon their collective demonstrated performance as it relates to the specific core capability. Each jurisdiction's standalone capability summaries are listed in Section 3.3 of this report.

Operational Coordination: Key leadership personnel from the participating agencies established and maintained a unified and coordinated operational structure which provided effective and responsive direction and control. The overall decision making process integrated critical stakeholders, enabling protective actions and subsequent decisions to be made in a sensible and timely manner. The Homeland Security Information Network video conference line provided a face-to-face discussion medium for protective action recommendation discussions. The video capability removed any doubt as to whom was providing input and responses.

Situational Assessment: Decision makers were provided with relevant information regarding assessed radiological and plant conditions. This information allowed decision makers to understand the extent of the hazards, and cascading effects and to make the appropriate protective action decisions. However, the information was not always provided in a timely manner. The subsequent Level 2 Finding 028-17-2.5.1:-L2-02 is discussed in Section 3.3

Operational Communications: All participating jurisdictions were active and contained ample communications capabilities to allow responders to perform their respective roles. Communications in support of situational awareness and operations were performed without challenges. The primary and alternate means of communications, to include commercial phone, cell phone, and cellular alert texting were employed without failure, thus successfully demonstrating this core capability.

Public Information and Warning: Alert and notification of the public was made using simulated siren activation and EAS messages, followed by supplemental news broadcast messages, media releases, and formal media briefings in the joint information center. These processes enabled a coordinated, prompt and reliable information message to be delivered to the public and media. A single conflicting news release after a protective action decision resulted in a Level 2 Finding 028-17-5.b.1-L2-01.

Environmental Response/Health and Safety: State personnel assessed radiological and plant conditions and made recommendations and decisions. Challenges with the air sampler procedures, operations and field team management were observed. These challenges resulted in two plan issues (028-17-1.e.1-P-01 and 028-17-4.a.3-P-02) and assessed one Level 2 Finding: 028-17-4.a.2-L2-03. Risk and Host county emergency workers successfully demonstrated their ability to perform radiological monitoring and decontamination of emergency workers and evacuees during out-of-sequence activities.

On-Scene Security, Protection and Law Enforcement: The ability to ensure a safe and secure environment of an affected community was demonstrated as an out-of-sequence activity. This was accomplished by the risk county law enforcement and road department demonstrating traffic and access control points operated at site area emergency.

Critical Transportation: Administrators from Claiborne County and Port Gibson Schools demonstrated their ability, without challenges, to implement protective actions and safeguard students, staff, and faculty in the event of an incident at the Grand Gulf Nuclear Station during an in-sequence interview.

Mass Care: Host Counties, Adams, Copiah, Hinds and Warren demonstrated the ability to provide services and accommodations for evacuees during out-of-sequence activities. These activities included evacuee reception, radiological monitoring, decontamination, and registration of evacuees at designated schools and community safe rooms selected as Reception Center and Congregate Care facilities.

Public Health, Healthcare & Emergency Medical Services: Warren County demonstrated the ability to provide medical transport and medical services for potentially contaminated persons during out-of-sequence activities. These activities were two-phase and included Warren County Emergency Medical Services, Vicksburg Fire Department response, patient assessment, radiological monitoring, contamination avoidance/control, transport and transfer to the Merit Health River Regional Medical Center. The second phase demonstration included patient treatment, provision of medical services, radiological monitoring, contamination avoidance/control, patient decontamination, and patient aftercare by the Merit Health River Regional Medical Center.

Tables 3.2 - Summary of Exercise Evaluation

DATE: March 29, 2017 SITE: Grand Gulf Nuclear Station M: Met, 1: Level 1 Finding, 2: Level 2 Finding, P: Plan Issue, N: Not Demonstrated, ▭: Not Scheduled for Demonstration		MEMA	MSDH/DRH	Claiborne	Adams	Copiah	Hinds	Warren
Alert, Notify, Mobilize	1a1	M		M	M	M	M	M
Direction and Control	1c1	M		M	M	M	M	M
Communications Equipment	1d1	M	M	M	M	M	M	M
Equipment and Supplies to Support Operations	1e1	M	P	M	M	M	M	M
E.W. Exposure Control	2a1		M	M				
Protective Action Recommendations	2b1	M	2					
Dose Assessment, PARs, and PADs for the Emergency Event—Decision Making	2b2	M	M	M				
PADs for the Protection of Persons with Disabilities and Access/Functional Needs	2c1			M				
Implementation of Emergency Worker Exposure Control	3a1	M	M	M	M	M	M	M
Implementation of KI Decision for Institutionalized Individuals and the Public	3b1			M				
Implementation of Protective Actions for Persons with Disabilities & Access/Functional Needs	3c1			M				
Implementation of Protective Actions for Schools	3c2			M				
Implementation of Traffic and Access Control	3d1	M		M				
Implementation of Traffic and Access Control—Impediments to Evacuation	3d2	M		M				
Plume Phase Field Measurement and Analyses—Field Team Management	4a2		2					
Plume Phase Field Measurement and Analyses—Field Team Measurements and Sampling	4a3		P					
Post-Plume Phase Field Measurements and Sampling	4b1		M					
Laboratory Operations	4c1		M					
Activation of the Prompt Alert and Notification System	5a1	M		M				
Activation of the Prompt Alert and Notification System—Backup Alert and Notification	5a3	M		M				
Emergency Information and Instructions for the Public and the Media	5b1	2		M				
Monitoring, Decontamination, and Registration of Evacuees	6a1				M	M	M	M
Monitoring and Decontamination of Emergency Workers, Equipment, and Vehicles	6b1			M				
Temporary Care of Evacuees	6c1				M	M	M	M
Transportation and Treatment of Contaminated Injured Individuals	6d1							M

3.3 Jurisdictional Summary Results of Exercise Evaluation

3.3.1 State of Mississippi

3.3.1.1 State Emergency Operations Center

Operational Coordination Capability Summary:

The Mississippi State Emergency Operations Staff successfully demonstrated the ability to establish and maintain a unified operational process to support a response to a simulated radiological incident at the Grand Gulf Nuclear Station. They successfully coordinated actions with other State agencies, Claiborne, Hinds, Adam, Copiah, and Warren Counties, the U.S. Coast Guard, Mississippi National Guard and Grand Gulf Nuclear Station.

Mississippi State Warning Point received initial notification of an emergency at Grand Gulf Nuclear Station over the INFORM system. Information provided over the system was immediately transferred to a reverse calling notification system. The reverse calling notification system was used to provide information, notification to respond and track notification results of key responders. The emergency operations center was declared operational at 0833. The Mississippi Emergency Management Agency Director of Operations maintained direction and control of the staff and provided input in the protective action decisions with Claiborne County. Periodic briefings were held throughout the exercise, enhancing situational awareness among the staff.

The Mississippi Department of Transportation successfully coordinated with the U.S. Coast Guard, Mississippi Department of Fish and Wildlife, and the State of Louisiana, for the clearance of a portion of the Mississippi River. This closure included both commercial and private watercraft. These actions supported the protective action decisions.

Site Assistance Visits were conducted on March 8 and 13, 2017 at the Mississippi Emergency Management Agency and the Mississippi State Department of Health, Division of Radiological Health. The 2016 radiological emergency preparedness training records, potassium iodide and equipment maintenance and calibration records were reviewed. No discrepancies were noted. The Mississippi Emergency Management Agency Emergency Operations Center had redundant communications capability exceeding requirements. Office equipment, automation and audio visual equipment were state of the art. The facility has backup generator power. The facility would easily support the 24-hour mission statement of the State.

For this capability the following Radiological Emergency Preparedness criteria were MET: 1.a.1, 1.c.1, 1.e.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

Situational Assessment Capability Summary:

During the Grand Gulf Nuclear Station exercise, the capability for appropriate offsite response organization staffs to communicate and coordinate precautionary and/or protective action decisions based on protective action recommendations from the utility was demonstrated at the State Emergency Operations Center. Senior representatives from the State of Mississippi and Claiborne, Adams, Warren, Copiah, and Hinds Counties met using a video-conference provided by the Homeland Security Information Network to disucss the situation at Grand Gulf and make protective action decisions. Protective action recommendations were received from the Grand Gulf Nuclear Station, the video-conference meetings were held with the Governor's Authorized Representative, protective action decisions were made and efficiently communicated to the citizens of all affected locations.

Protective action recommendations from Grand Gulf Nuclear Station were based on plant conditions, field data and meteorological data. This information was transmitted to the off-site response agencies over the utility's secure message notification system. The Mississippi State Department of Health, Division of Radiological Health analyzed and compared the utility recommendation and provided input to senior leadership. Protective action decisions were developed after a thorough review and discussion by the leadership of all affected counties and the State. Claiborne County Emergency Management Director and the Governor of Mississippi's Authorized Representative agreed on all protective action decisions, times to sound sirens and time to release the emergency alert system messages. The process was accomplished in an expedient manner without undue delays.

For this capability, the following Radiological Emergency Preparedness criteria were MET: 2.b.1, 2.b.2.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

Operational Communications Capability Summary:

Mississippi Emergency Management Agency staff successfully demonstrated the ability to communicate both inside and outside of their agency. A communications plan, Incident Command System 205, was published and implemented very early in the event. Communication links were established and maintained with other State Agencies, risk and host counties, the news media, and Grand Gulf Nuclear Station throughout the exercise. Commercial and government specific communications systems were used during the exercise. Primary and backup communications systems were fully functional. All Emergency Support Functions staff had access to the internet, cable television and telephones in the State Emergency Operations Center. All systems demonstrated or observed operated properly.

For this capability the following Radiological Emergency Preparedness criterion was MET: 1.d.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

Public Information and Warning Capability Summary:

This Capability is a duplicate of the Joint Information Center to include activities, personnel and planning. Refer to section 3.3.1.2 for details.

For this capability the following Radiological Emergency Preparedness criteria were MET: 3.d.2, 5.a.1, 5.a.3.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

On Scene Security, Protection, and Law Enforcement Capability Summary:

The Mississippi State Emergency Operations Center Staff successfully demonstrated the ability to control the commercial and private watercraft on the Mississippi River as it related to a simulated emergency at the Grand Gulf Nuclear Station. This control ensured watercraft did not enter the affected area. River traffic was notionally controlled from Natchez to Vicksburg. The action was performed by representatives from the Mississippi Department of Transportation, Mississippi Department of Wildlife, Fisheries and Parks, and the United States Coast Guard. A unified command was established at the State Emergency Operations Center to coordinate the simulated effort.

For this capability the following Radiological Emergency Preparedness criteria were MET: 1.d.1, 1.e.1, 3.a.1. 3.d.1, 3.d.2

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

3.3.1.2 Joint Information System / Center

Public Information and Warning Capability Summary:

The ability to provide coordinated emergency information and instructions to the public and media was demonstrated at the Mississippi Emergency Management Agency's Joint

Information Center in support of the Grand Gulf Nuclear Station. Representatives from the States of Mississippi and Louisiana, Entergy, Claiborne County and Tensas Parish were present. These representatives provided a unified effort by establishing a joint information system for delivery of emergency information to the public and media. The State's Director of External Affairs served as the Lead Public Information Officer and was positioned in the Emergency Operations Center with his Deputy serving as the State's Joint Information Center Manager.

The Mississippi Emergency Management Agency's Joint Information Center is collocated with the State Emergency Operations Center. The joint information center served as the official release point for information regarding the response to this emergency. Activation was accomplished in accordance with jurisdictional plans following the declaration of a Site Area Emergency.

Four formal media briefings were held and a total of five news releases were distributed during the exercise. Message preparation, including emergency alert system and supplemental news releases were in conflict between the State and Claiborne County. These minor conflicts may cause confusion among the public in following the protective actions.

The rumor control function was performed by personnel from the utility and the State and operated in the confines of the Joint Information System. Rumors and trends were handled with a sense of urgency and were brought to the attention of the Public Information Officers to be addressed or dismissed during the media briefings. Additionally, a State representative monitored multiple social media sites and posted relevant emergency information as needed.

Ample space and sufficient equipment was available. Redundant communications and sufficient equipment and supplies to support emergency operations were tested and used during the exercise. Primary and backup communications systems were fully functional and there were no failures during the exercise.

The combined effort of multiple agencies led to the successful demonstration of this core capability through the coordination, development, and dissemination of emergency public information.

For this capability the following Radiological Emergency Preparedness criteria were MET: 3.d.2, 5.a.1, and 5.a.3

a. Level 1 Finding: None

b. Level 2 Finding: 028-17-5.b.1-L2-01

Condition: Message development protocols were not completely followed by the Joint Information Cener during the exercise, which could have confused the public regarding

the actions they were to take.

Analysis: Established protocols for the Executive Director (or his designee) and the Director of External Affairs both approving messaging was not observed. These messages did not adequately relay the protective action decisions of the State and County leadership. Particularly, the initial Emergency Alert Message issued a "Monitor and Prepare" order and the fourth supplementary news release modified the order to "Shelter in Place." During media briefings, the State Lead Public Information Officer did not fully explain the protective actions of "Monitor and Prepare," Shelter in Place," and "Evacuate" as it pertained to what the public should do to comply with these decisions. The geographical boundaries provided to the public in press releases were in sync with the safety calendar, however, they did not meet the intent of the State leadership's protective action decision to evacuate only to the five-mile boundary of the Protective Action Area.

Possible causes: During the Lead Public Information Officer's 1038 update to the State Joint Information Center staff, the protective action decision was briefed as evacuate PAA 1, 5A, 5B and 6, and monitor and prepare for the rest of the 10-mile emergency planning zone. This protective action decision was in conflict with Claiborne County's Public Information Officer who was instructed to use "shelter in place" and not "monitor and prepare" for remaining areas.

Some of the highlighted inconsistencies are as follows:

1. The initial pre-scripted Emergency Alert System message stated "government authorities" had directed the evacuation of Protective Action Areas "2 miles around all sectors" and "out to 5 miles for sections 1, 5A, 5B and 6" and "monitor and prepare for all remaining areas within the10-mile Emergency Planning Zone." The message did not clearly identify the government official or agency with the authority to order an evacuation. The initial EAS message provided imprecise evacuation information to the public. The Protective Action Areas were inaccurately described as "sectors" and "sections" in the initial EAS message. Portions of the geographical boundaries of Protective Action Areas 1 and 5A are both within and exceed the 5-mile radius. Further, the geographical boundaries Protective Action Areas 5B and 6 are entirely outside of the 5-mile radius. The third supplemental news release prepared in conjunction with the initial EAS message reiterated this imprecise evacuation information. The third supplemental news release provided the geographical boundaries of the Protective Action Areas as a whole, but not the geographical boundaries of the Protective Action Areas within the intended 5-mile evacuation radius.

2. A fourth correction news release was issued shortly thereafter to modify "monitor and prepare" to "shelter in place" for the "rest of 10-mile emergency planning zone." However, the second page of the corrected news release was not modified and still referenced "All other areas in the 10-mile EPZ are directed to monitor and prepare."

Also not modified was the imprecise language of shelter in place "out to 5 miles for sections 1, 5A, 5B and 6" with respect to the geographical boundaries of these Protective Action Areas relative to the 5-mile radius.

3. The follow on Emergency Alert System message and fifth news release was prepared in conjunction with the order to evacuate additional Protective Action Areas. The follow on pre-scripted EAS message stated that "government authorities" had directed "precautionary evacuations" of Protective Action Areas "sections 1, 2A, 2B, 3A, 4A, 5A, 5B, 6 and 7" and "shelter in place for all remaining areas within the10-mile emergency planning zone." As with earlier messaging, it was not clearly identify the government official or agency with the authority to order an evacuation. More significantly, this message included the unusual phrasing of "precautionary evacuations" in reference to directed evacuations. "Precautionary evacuations" is not defined as an emergency action in the 2017 GGNS Emergency Public Information Calendar.

Supplementary news releases and media briefings were not used as an opportunity to relay and translate the leadership's Protective Action Decision into language that is in concert with the printed safety materials distributed to the public.

Established protocols for the Executive Director (or his designee) and the Director of External Affairs both approving messaging was not observed. The Director of External Affairs appeared to be the sole approver of messages prior to their dissemination.

Reference(s):

1. DHS/FEMA Program Manual, Radiological Emergency Preparedness, January 2016. Planning Standard E, NUREG 0654, Criterion E.7, G.1, and G.2.

2. The Mississippi Radiological Emergency Preparedness Plan, 2017, revision 17.

3. 2015 External Affairs GGNS SOP, revised 06/2015.

4. 2013 Mississippi Emergency Public Information Comprehensive Plan, section 2, Dissemination of News Releases and Public Information.

Effect: Potential existed for the public to be confused on what to do in case of a nuclear power plant emergency at Grand Gulf Nuclear Station. Information in distributed materials were not consistent with information contained in the plans/procedures used to make protective action decisions and develop emergency alert system messages and news releases. Press briefings and distributed materials aided the public in identifying their corresponding protective action area. However, these briefings and materials did not indicate a level of detail for the public to identify whether they were located within or outside the intended 5-mile evacuation radius of a particular protective action area.

Potential for further confusion may have arisen if the public was unsure of specific actions to take when instructed to "monitor and prepare," "shelter in place," or to "evacuate." Additionally, the "precautionary evacuation" statement given during the exercise did not relay a sense of importance or urgency to the public to evacuate the area and also may have given the impression of being a voluntary or optional evacuation.

Recommendation(s):

1. Current plans detail a process for message development and approval. These established procedures should be followed to ensure the proper vetting, approval and dissemination of accurate and timely messages.

2. Ensure all information is written in "plain language" and is clear, accurate, consistent, and complete to ensure it is easily understood by members of the public. These materials must be consistent with respect to geographical descriptions and maps of protective action areas, and protective measures for the public as detailed in the 2017 Grand Gulf Nuclear Station Public Information Calendar.

3. When instructing the public on protective action decisions, the public information officers must be able to clearly explain what they want the public to do as it relates to "Monitor and Prepare," Shelter in Place," and "Evacuate." Supplementary news releases and media briefings provide an opportunity to relay and translate leadership's Protective Action Decision intent into language that is in concert with the printed safety materials distributed to the public.

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

3.3.1.3 Department of Radiological Health / Dose Assessment

Environmental Response/Health and Safety Capability Summary:

The Mississippi State Department of Health, Division of Radiological Health personnel demonstrated their ability to assess radiological and plant conditions in case of a radiological incident at the Grand Gulf Nuclear Station.

Mississippi Division of Radiological Health personnel were pre-positioned as per the extent of play agreement prior to the site area emergency declaration. Numerous briefings were conducted throughout the exercise, but there was no information sharing

between the Emergency Operations Facility Director and facility staff during these briefings. The State of Mississippi dose assessor used utility provided dose numbers to calculate off-site dose projections and they agreed with the utility's results. However, the State of Mississippi dose assessor never conducted an independent verification to insure the utility's provided data was correct. A subsequent dose assessment calculation by the State of Mississippi dose assessor using field team data yielded results outside the factor of 10. Instead of allowing the dose assessor to attempt to resolve this issue the State of Mississippi controller prompted the dose assessor to use an alternative input iodine into the Radiological Assessment System for Consequence Analysis software which resulted in satisfying the factor of 10 criteria.

For this capability the following Radiological Emergency Preparedness criteria were MET: 1.d.1, 1.e.1, 2.a.1, 2.b.2.

a. Level 1 Finding: None

b. Level 2 Finding: 028-17-2.b.1-L2-02

Condition: The State of Mississippi dose assessment team did not provide the State Emergency Operations Center staff with accurate results in a timely manner.

Analysis: The Department of Radiological Health assigned a State liaison, field team coordinator, and dose assessor to the Emergency Operations Facility. They were working as a team to provide information to the State Emergency Operations Center for protective action decision-making. The State of Mississippi dose assessor used a dedicated computer to access the RASCAL 4.3 program to perform dose assessment calculations. While the State dose assessor brought references to the facility, a review of the manual revealed that the dose assessment procedure provided little detail. The licensee dose assessor provided the State dose assessor with the DoseCalc dose assessment results, including noble gas and iodine release rates, which were calculated based on field team results. The State dose assessor used the release rates as inputs to the RASCAL program and used the program to calculate dose projections. The State dose assessor determined that the comparison with the licensee results were greater than a factor of 10. The dose assessor was not allowed an attempt to resolve this issue, but was prompted by the dose assessment Controller to modify the data inputs, changing the total iodine's to I-131 equivalent. This resolved the discrepancy between the utility and State of Mississippi results. When the dose assessor was asked how this problem would be resolved should a real event occur, the reply was that the person serving as the Controller would be contacted, since the standard operating procedure was not applicable to this problem.

An additional RASCAL field to dose calculation based on a State field team air sample took an inordinate amount of time to complete, due in part to poor coordination between the State field team coordinator and the State dose assessor. Another contributing factor was that there was no recognition that this was an unmonitored, unfiltered release, in which data was completely reliant upon field team air sample and survey results. Upon

further review, it was determined that the release rates calculated by the licensee using the DoseCalc program were in error, speculatively due to the filtered release pathway status used for the calculations. The error in the iodine release rates calculated by the licensee resulted in dose projections lower by an approximate factor of 200-300 as compared to the actual thyroid committed dose equivalent values. Having field team air sample data available for comparisons earlier in the exercise may have avoided some of the erroneous information.

Possible causes:

1. The dose assessment team had not received adequate training for this type of scenario.
2. The dose assessment procedure did not provide any detail to support this critical task.

Reference(s):

1. "DRH EOF Dose Assessment Procedure", 2013.

Effect: State protective action recommendations could be based on inaccurate or incomplete information, resulting in the failure to properly evacuate affected areas. In addition, incorrect data could result in the failure to provide potassium iodide to special populations, the general public, and emergency workers.

Recommendation(s):

1. Revise the dose assessment procedure with critical information needed by the State dose assessor in the EOF.
2. Provide team training for the EOF staff, including the importance and timeliness of the field team to dose assessment comparisons, and the need to verify licensee data.

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

3.3.1.4 Field Team Management

Environmental Response/Health and Safety Capability Summary:

The State of Mississippi Radiological Emergency Response Team Coordinator successfully demonstrated activation to Grand Gulf Nuclear Station Emergency

Operations Facility. State representatives in the Emergency Operations Facility received dosimetry and a radiological briefing prior to departure to Grand Gulf. The Radiological Emergency Response Team Coordinator was equipped with appropriate maps and forms needed to direct the teams and record field team data. There were no communication problems encountered using the Mississippi Wireless Information Network radio system which is permanently installed at the facility. During the exercise, the field teams were directed to proper locations in a timely manner. However, the Radiological Emergency Response Team Coordinator failed to manage the team to obtain sufficient information to assist in characterizing the release by not relaying proper instructions on the use of air sample media and delaying information for release characterization.

For this capability the following Radiological Emergency Preparedness criteria were MET: 1.d.1, 1.e.1, 2.a.1, 2.b.1, 3.a.1.

a. Level 1 Finding: None

b. Level 2 Finding: 028-17-4.a.2-L2-03

Condition: The Mississippi Radiological Emergency Response Team Coordinator failed to instruct the field teams to utilize a silver zeolite cartridge for obtaining an air sample. The Radiological Emergency Response Team Coordinator never instructed either field team to make an attempt to locate the centerline of the plume. The coordinator also allowed significant time to pass before finalizing airborne activity calculations and providing that data to dose assessment for confirmation of projected dose. The Radiological Emergency Response Team Coordinator was unprepared and had little knowledge on how to perform the activity calculations on the Field Estimate of Airborne Activity Form. Shortly after the release, a field team conducted an air sample in the plume. That team was then sent to low background area to stage and await further instruction instead of obtaining more data or locating the centerline.

Analysis: Mississippi representation in the Grand Gulf Nuclear Station Emergency Operations Facility consisted of the EOF Team Lead, RERT Coordinator and a Dose Assessor. During the exercise, the RERT Coordinator sent teams to appropriate downwind locations to locate and monitor the plume. A simulated release began at 1006. At 1041 Team 1 arrived at a location about one mile from the plant. Survey results indicated they were in the plume. The EOF Team Lead instructed the RERT Coordinator to dispatch the team to another location. At 1058 the RERT Coordinator received results indicating the team was also in the plume at this location. The EOF Team Lead made the decision to have the team collect an air sample. At this point the RERT Coordinator did not utilize procedures on advising the team which type of air cartridge (charcoal or silver zeolite) to use for the sample. The same lack of advisement was duplicated when Team 2 was instructed to collect an air sample.

The RERT Coordinator received the results of the Team 1 air sample at 1151. The results, the background and gross counts of the cartridge and filter paper, were recorded. The RERT Coordinator did not begin calculating the activity resulting from these counts until about 1220. The RERT Coordinator had a very difficult time using the Field Estimate of Airborne Activity form and performing the necessary calculations. Assistance was provided by the EOF Team Leader and Dose Assessor and the final calculations were still not completed until 1240. The final results derived from the air sample data indicated an extreme difference in the projected radiation dose and actual dose indicated in the field. The failure to act on the results and difficulty in performing the calculations resulted in a significant delay in obtaining this information.

After Team 1 had performed the air sample and relocated to a low background area to process and read the sample at 1151, the RERT Coordinator advised the team to stage at a low background location and await further instruction. The team could have been sent for additional monitoring and sampling or locate the centerline and sample in order to provide more data for dose determination.

Possible causes:

1. The RERT Coordinator had not received sufficient training to become familiar with the RERT procedures on use of air sampling cartridges prior to the exercise.

2. The RERT Coordinator had not received sufficient training to become familiar with the RERT procedures on calculating airborne activity using the Field Estimate of Airborne Activity Form.

3. The RERT Coordinator had no specific written procedures or checklist.

4. The delay in calculating the high dose field results and then comparing them to the very low projected dose, resulted in time not being used efficiently to obtain as much data as possible from the field teams.

Reference(s):

1. Procedures for Radiological Emergency Response Team, Function Annex 17.0, Page 17, advises the Radiological Emergency Response Team will receive instruction from the Team Coordinator on which type of air filter cartridge to use during air sampling.

2. Procedures for Radiological Emergency Response Team, Function Annex 17.0, Page 70, General Procedure for Counting Air Samples, Step 8 - Complete the calculations, verify their accuracy, and report the results to the Radiological Emergency Response Team Coordinator at the Emergency Operating Facility.

3. Procedures for Radiological Emergency Response Team, Function Annex 17.0,

Appendix G, contains Form RH-3, Field Estimate of Airborne Activity for calculating iodine and particulate activity.

4. NUREG-0654/FEMA-REP-1, H.12; I.7;I 8,vii; I.11

Effect: Failure to use a silver zeolite cartridge (even if simulated for drill purposes) would have given a more accurate iodine activity result. There was a significant delay in utilizing field team air sample results to determine if dose projections accurately reflected actual field data. A more timely understanding, calculation, and utilization of the air sample data would have provided information for decision makers of any significant radioactive iodine dose that may differ from dose projections. This is vital information in determining the need for recommendations on use of thyroid blockers for emergency workers and the general public. The delay also resulted in field team being under-utilized in providing as much data as possible for dose analysis.

Recommendation(s):

1. Provide persons who may fill the role of RERT Coordinator periodic training on the importance and use of field data, use of cartridge procedures, interpreting field data, and calculating airborne activities. A more in-depth knowledge and familiarization on these topics would allow the RERT Coordinator to quickly determine and recognize significant dose realized, based on the air sample results.

2. Develop specific procedures and/or a checklist of actions for the RERT Coordinator. With a defined set of procedures, the RERT Coordinator would be able to reference them on the importance of field monitoring and air sample data, when to use silver zeolite cartridges, and how to calculate airborne activities.

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

3.3.1.5 Field Monitoring Teams

Environmental Response/Health and Safety Capability Summary:

Personnel from the Mississippi Department of Health, Division of Radiological Health staffed two field teams to obtain sufficient information to help characterize the release and to control radiation exposure.

Field team personnel were knowledgeable of their communication equipment, dose limits, and had sufficient supplies to support their operations. The initial briefing was short and did not include all necessary information, which may have been helpful to the teams in the performance of their duties. Communication equipment worked throughout the exercise and backup equipment was available.

The field teams had survey instruments and were familiar with their operations. However, the instruments were not capable of measuring radiation fields in the range necessary to ensure they would not exceed their dose limits. This could have resulted in the teams exceeding their dose limits. Although the instruments issued worked throughout the exercise if the instruments had failed there were not any backup instruments to replace them. Other instruments that could have been used were available but were either not calibrated or the teams were instructed to not use them. *A Plan Issue (028-17-1.e.1-P-01) was decided concerning: Radiation monitoring equipment was not appropriate or in sufficient supply to support emergency operations. Field monitoring teams were not sufficiently equipped to monitor radiation levels in a high gamma radiation field. The teams did not have backup supplies of calibrated low-level radiation survey instruments and calibrated/charged air pumps for collecting an air sample.*

The teams demonstrated the ability to collect an air sample. However, they were not familiar with proper air sampling techniques and air sample calculation procedures. Due to procedural and lack of knowledge they did not use the proper sample cartridge or purge the cartridge after sampling. One team was asked to calculate air sample results and they had difficulty in calculating the correct concentrations. The procedures for performing these functions were not clear to the team members and some steps were confusing. Also, during the exercise the teams were in the plume but were not instructed to ingest potassium iodine. *A Plan Issue (028-17-4.a.3-P-02) was decided concerning: The Division of Radiological Health procedure needs revision to clarify methodology for air sampling to ensure that proper methodology is followed for collecting and analyzing a quality air sample to use for making dose assessment calculations and making protective actions for the public. Personnel also need to have additional training on air sample procedures and why certain steps are vital to taking a valid air sample.*

For this capability the following Radiological Emergency Preparedness criteria were MET: 1.d.1, 1.e.1, 3.a.1, 4.a.2, 4.a.3, 4.b.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: 028-17-1.e.1-P-01 and 028-17-4.a.3-P-02

Condition: (028-17-1.e.1-P-01) Radiation monitoring equipment was not appropriate or in sufficient supply to support emergency operations. Field monitoring teams were not sufficiently equipped to monitor radiation levels in a high gamma radiation field. The teams did not have backup supplies of calibrated low-level radiation survey instruments and calibrated/charged air pumps for collecting an air sample.

Analysis: The field monitoring teams were each equipped with a Ludlum Model 3 survey meter with a Model 44-38 probe, capable of detecting gamma radiation up to 200 mR/hr. Only two calibrated survey meters were available for the exercise. The field team procedures state that the Ludlum Model 3 is interchangeable with the Ludlum Model 14C for use in characterizing the plume, but the Model 3 does not have an internal Geiger Mueller tube like the Ludlum Model 14C and is not capable of detecting gamma radiation greater than 200 mR/hr. The Ludlum 3 is appropriate for conducting ambient radiation surveys and is capable of taking open and closed window measurements to characterize the plume. However, the use of this instrument is limited to gamma exposure levels less than 200 mR/hr. The instrument is not compatible with the emergency worker turn-back exposure level of 1.5 R/hr.

The teams were not supplied with a backup calibrated and charged air pump or Ludlum 3. In addition there were only two calibrated Ludlum Model 19 meters available. If either meter failed there would not have been any backup instruments. Extra calibrated survey meters and air pumps were not available at the staging area.

Possible causes: It was evident that Department of Health had an adequate supply of radiation monitoring equipment and air pumps to sufficiently supply the field teams, however, the instruments were not calibrated. The inventory included several Ludlum Model 14C survey meters as well as Ludlum Model 2241 instruments. Both instruments are capable of detecting gamma radiation greater than 1 R/hr, and both are listed in the plan.

Reference(s):

1. Mississippi State Department of Health Procedures for Radiological Emergency Response Team Function Annex 17.0, Manual of Procedures for Radiological Emergency Response Team, Rev. 12, December 16, 2016

2. NUREG-0654, H. 7, 10, I.7,8

Effect: The team did not have the necessary equipment to manage radiological exposure in accordance with the plans and procedures. As equipped, the field team did not have a

verifiable source checked instrument to determine whether they were in a radiation field that exceeds their turn-back exposure limit of 1.5 R/hr.

Recommendation(s):

1. Calibrate supply of radiation detection survey meters and equipment in a timely manner so that instruments and equipment are available for use and in sufficient supply in the event of an emergency. If the agency is unable to fulfill the calibration requirement, it may be necessary to contract this service with an outside agency.

2. Develop an instrument calibration tracking system to track where instrument are issued and their calibration status.

Condition: (028-17-4.a.3-P-02) The Division of Radiological Health procedure needs revision to clarify methodology for air sampling to ensure that proper methodology is followed for collecting and analyzing a quality air sample to use for making dose assessment calculations and making protective actions for the public. Personnel also need to have additional training on air sample procedures and why certain steps are vital to taking a valid air sample.

Analysis: The field monitoring teams did not perform required steps for taking an air sample because they were either not specified in the procedure, or the procedure itself needs clarification. Difficulties with calculating the field estimate of airborne activity were encountered.

1. The procedure does not require field teams to take open and closed window readings during the sample collection or at the end of the air sample collection period. Procedure directs team to leave the area during the collection period which is unnecessary.

2. The field teams did not perform a purge for noble gases.

3. One of the teams miscalculated the field estimate of airborne activity and which if the incorrect calculations had been communicated could have resulted in errors to protective action recommendations.

Possible causes: The Department of Health procedure is confusing and needs revision to clarify procedures to be followed in taking an air sample. Because the procedure instructs the team to leave the area during the collection period it does not allow for teams to collect information about the plume while the air sample is being collected. The emergency workers did not understand when and why to use a silver zeolite cartridge, and the procedure is confusing as to whether the field team can make the determination to use silver zeolite or only the coordinator can make the decision. The emergency workers did not understand that they needed to purge the cartridge of noble gases before counting, and did not understand why they should purge an air sample.

Reference(s):

Mississippi State Department of Health Procedures for Radiological Emergency Response Team Function Annex 17.0, Manual of Procedures for Radiological Emergency Response Team, Rev. 12, December 16, 2016

Effect: The teams did not collect necessary information to characterize the plume while the air sample was being collected. Errors in calculating the field estimate of airborne activity were made and could have been communicated to the coordinator.

Recommendation(s):

1. Revise procedure to include taking open and closed window readings during and after the air collection period. This information is necessary to determine whether the plume has moved away during the collection period.
2. It is not necessary to require the teams to move to a background location while the air sample is being collected. The information provided during the air sample period is more important than the incurred dose to the emergency worker during the short collection period.
3. Train emergency workers on the importance of purging the air cartridge before counting. Field Team Coordinator should remind the team to purge before they count the sample.
4. Recommend that field teams send raw count data measured on the particulate and filter to the field team coordinator who then can do the calculations. This would eliminate errors in the calculations and expedite results to send to dose assessment.

3.3.1.6 Laboratory

Environmental Response/Health and Safety Capability Summary:

As part of the Grand Gulf Nuclear Station Radiological Emergency Preparedness Exercise, radiological laboratory personnel successfully demonstrated the capability to perform required radiological analyses used to support protective action decisions. The laboratory was staffed by personnel from Mississippi Department of Health, Division of Radiological Health.

Two communication systems were available to communicate with field teams and dose assessment personnel. Laboratory personnel were issued dosimetry and managed radiological exposure within procedural requirements. Appropriate sample analysis equipment, monitoring equipment, dosimetry and other supplies were available to support laboratory functions associated with protective action decisions. Laboratory personnel operationally checked and used hand-held radiation monitoring instrumentation for measurement of exposure rates and surface contamination levels associated with field samples. All portable instruments were within current calibration. Adequate

contamination control techniques were demonstrated.

Eight environmental samples (air, soil, water, and vegetation) were provided to the laboratory for analysis. Laboratory staff received and prepared samples for gamma spectrum analysis, conducted the analysis, and produced sample results using high purity germanium detectors. Gamma spectroscopy systems were calibrated with mixed gamma sources traceable to the National Institute of Standards and Technology. Daily equipment checks were comprehensive and ensured the equipment operated properly.

For this capability the following Radiological Emergency Preparedness criteria were MET: 1.d.1, 1.e.1, 3.a.1, 4.c.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

3.3.2 Claiborne County

Operational Coordination Capability Summary:

The Claiborne County Emergency Management Director effectively demonstrated the capability to coordinate emergency management activities and direct emergency operations in support of a radiological emergency at Grand Gulf Nuclear Station.

Claiborne County Emergency Management Agency received a Site Area Emergency, notification, via the automated notification system. The notification was verified with the State Emergency Operations Center. In accordance with the extent of play agreement, personnel were pre-positioned in the general area. Staff personnel were notified by the automated calling system via their home phones, cellular phones, electronic mail, and pagers. The system was effective, versatile and alerted key staff and county leaders of a plant emergency in a timely manner.

The emergency operations center was sufficiently equipped to support emergency operations in support of Grand Gulf Nuclear Station. It was equipped with maps and displays of the emergency planning zones, road network and water ways. Work stations were available for all emergency support functions as well as telephones, plans and

procedures. Computer connectivity was provided through both wireless and Ethernet. Printers and fax machines were also available.
The Claiborne County Emergency Management Director led Claiborne County emergency response activities through coordination with the counties of Adams, Hinds, Copiah, and Warren, and Mississippi Emergency Management Agency. He mitigated the impact of a radiological release on Claiborne County through prompt evacuation of schools and the county special needs population and effectively coordinated for additional resources and protective action decisions with the host counties in a timely manner. His staff addressed local emergencies quickly and without undue delay and critical information was disseminated down to the lowest level. Claiborne County and the City of Port Gibson elected officials were raptly involved in the coordination and planning process for the County and provided critical support for county emergency management activities.

For this capability the following Radiological Emergency Preparedness criteria were MET: 1.a.1, 1.c.1, 1.e.1, 3.a.1, 3.b.1, 3.c.1, 3.d.1, 3.d.2.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

Operational Communications Capability Summary:

Claiborne County Emergency Management staff successfully demonstrated communications with state, county and local jurisdictions. Commercial communications systems were also successfully demonstrated with Grand Gulf Nuclear Station throughout the exercise. All systems operated in accordance with plans and procedures. Primary and backup communications systems were functional without failure. The EOC had redundant communications which include landline and cellular phones, a primary coordination line and a video conferencing line. A statewide 700MHz communications network is available in conjunction with the county's local systems. No equipment or communication failures were observed.

For this capability the following Radiological Emergency Preparedness criterion was MET: 1.d.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

Public Information and Warning Capability Summary:

The Claiborne County emergency operations center staff were able to provide timely and accurate information and warning to the public in a coordinated fashion. The decision to activate alerting sirens was made at the appropriate emergency classification level and without delay. The simulated siren activation occurred on time and responders coordinated a rapid response to conduct back-up route alerting for a failed siren. The Claiborne County Sheriff's Office demonstrated that deputies had the necessary instruction and procedural references to conduct this activity safely and rapidly.

For this capability the following Radiological Emergency Preparedness criteria were MET: 5.a.1, 5.a.3, 5.b.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

Environmental Response/Health and Safety Capability Summary:

Monitoring and decontamination of emergency workers and their vehicles were successfully demonstrated by members of the Claiborne County Fire Department and Emergency Management Agency. This demonstration was completed as an out of sequence activity on March 15, 2017 at the Pattison Fire Station.

Emergency workers demonstrated the procedures and resources available were sufficient to accomplish the monitoring and decontamination of emergency workers and their vehicles. The emergency workers received a safety briefing and were issued personal and simulated permanent record dosimetry at the start of the demonstration. County personnel demonstrated appropriate survey and decontamination techniques of three emergency workers and two vehicles. During the demonstration, a radiological portal monitor failed the operational check and was subsequently taken out of service. In its place, county personnel used handheld radiological monitoring survey instruments. Those instruments were properly put into service and used throughout the demonstration.

All activities were completed in accordance with the stated county procedures. Those activities were demonstrated as they would be in an actual emergency.

For this capability the following Radiological Emergency Preparedness criteria were MET: 1.e.1, 3.a.1, 6.b.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

On Scene Security, Protection, and Law Enforcement Capability Summary:

The ability to implement traffic and access control along with the clearance of impediments were successfully demonstrated by officers of the Port Gibson Police Department and members of the Port Gibson Road Department. The demonstration was completed as an out of sequence activity on March 14, 2017.

Traffic and access control are a combined operation of the two aforementioned agencies. Initial notification for the establishment of traffic and access control points would come from the County Emergency Operations Center and go through both the 911 dispatch center and agency representatives simultaneously. In turn, Port Gibson Police Department and Street Department personnel would respond to the appropriate pre-designated points. The traffic and access control point established for this demonstration was A4. From this point, evacuating traffic would be directed to the Hazlehurst reception/congregate care center in Copiah County.

Communications and equipment to support the operation was sufficient and is available 24 hours a day. The County's Sheriff's Office and Roads Department along with the Mississippi Highway Patrol and Department of Transportation would be called upon to support the city. The emergency workers participating in this demonstration received a thorough radiological emergency safety briefing which included potassium iodide instructions and were issued personal dosimetry.

Impediments to evacuation would be cleared immediately by the assigned personnel. If impediment removal was outside of their ability, assistance would be requested and coordinated through the county emergency operations center. Other organizations available to assist with impediment removal would include additional county and state resources.

For this capability the following Radiological Emergency Preparedness criterion was MET: 1.d.1, 1.e.1, 3.a.1, 3.d.1, 3.d.2.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

Critical Transportation Capability Summary:

The responders in the Claiborne County emergency operations center demonstrated, by both simulated actions and interview, that they were capable of implementing protective actions for schools. The responders simulated the evacuation of students at the appropriate emergency classification level and initiated actions to perform the evacuation without delay. They properly coordinated with law enforcement resources to ensure protection of the evacuating students. Finally, school officials demonstrated through interview that they could perform the necessary actions to notify parents of their children's situation and how to re-unite with them. The Alcorn State University represenatives also demonstrated a capability to simulate prompt actions to protect their students at the appropriate emergency classification level. They also secured transportation resources without delay and simulated movement of their students and personnel to the appropriate reception center.

For this capability the following Radiological Emergency Preparedness criteria were

MET: 3.c.2.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

3.3.3 Adams County

Operational Coordination Capability Summary:

Adams County emergency management personnel successfully established and maintained a unified and coordinated operational structure that integrated all critical stakeholders. Response personnel from several county agencies were knowledgeable of their role as a host county supporting Claiborne County. Their knowledge and attention to detail was essential to an effective response. County personnel as a whole participated in all coordination video teleconference calls which enabled them to effectively coordinate response actions. Supplies, equipment, and displays were readily available and used to support emergency operations.

In accordance with the extent of play agreement, county personnel were prepositioned in the emergency operations center. The county's electronic automated notification system used to alert and mobilize essential personnel was explained. Exercise participants activities were limited to receiving the exercise controller safety briefing until their simulated response times had been completed.

The Adams County Emergency Management Director maintained an open dialog with personnel throughout the exercise. Many valuable conversations were held amongst staff that would better prepare them for an actual emergency. They made decisions as a group and brainstormed to anticipate the potential needs of the evacuees and prepare applicable resources. All personnel were familiar with their duties and accomplished them in accordance with plans and procedures.

For this capability the following Radiological Emergency Preparedness criteria were MET: 1.a.1, 1.c.1, 1.e.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

Operational Communications Capability Summary:

Adams County emergency managers leveraged available emergency management communications equipment and software to provide valuable input to the response. Personnel maintained communication with key stakeholders in a real-time chat function within the Homeland Security Information Network, as well as through the use of cellular and landline telephones. They also shared and accessed important documents in the state-wide emergency management software.

Frequent video-teleconferencing facilitated good situational awareness for Adams County emergency managers and allowed the staff to make decisions based on the most current information available. The Mississippi Emergency Management Agency area coordinator positioned in the emergency operations center provided valuable assistance ensuring important communications were shared between Adams County and the State.

Redundant communications systems, including handheld radios linked within the Mississippi Wireless Integrated Network and a satellite telephone, were available and managed in support of response operations. Those communications systems used during the exercise operated without fail.

For this capability the following Radiological Emergency Preparedness criterion was MET: 1.d.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

Environmental Response/ Health and Safety Capability Summary:
Emergency Services personnel and volunteers from Adams County successfully demonstrated their abilities to provide monitoring, decontamination and registration of evacuees. This was demonstrated as an out-of-sequence activity on March 15, 2017 at the Adams County Community Safe Room.

The county reception center had appropriate space, resources and trained personnel to provide for the evacuating public of the Claiborne County in the event of an incident at the Grand Gulf Nuclear Station. The evacuees were able to easily maneuver the well-laid out reception center area with the assistance of attentive escorts. Facilities were set up and demonstrated as they would be in an actual emergency and in accordance with county plans and procedures. Operational checks of the radiological monitoring and survey instruments were properly completed and personal dosimetry was issued.

Approximately six evacuees were processed through the monitoring station, consisting of four males and two females. These persons arrived at the monitoring station and were processed through primary and secondary screening, and decontamination as applicable. The Adams County reception center anticipated approximately 3,710 evacuees from Claiborne County. Twenty percent of this value within the first 12 hours of an emergency would be 742 people. Through this demonstration, it was determined that 1,440 people could be monitored within a 12-hour period.

For this capability the following REP criteria were MET: 1.e.1, 3.a.1, 6.a.1

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

Mass Care Services Capability Summary:

Adams County, Mississippi Department of Human Services, and Department of Health personnel along with the Southwest Mississippi Chapter of the American Red Cross successfully demonstrated their ability to provide temporary care of evacuees. The mass

care facility was setup in accordance with local procedures and agreements, and had ample space and reasonable accommodations for their assigned purpose. The representatives of the forenamed agencies were well trained and versed in their responsibilities in operating the facility. The processes demonstrated were logical and effective. The staff and volunteers were extremely knowledgeable in their duties and displayed a commendable dedication to the health and welfare of the public.

The community safe room is primarily used to temporarily shelter arriving evacuees after they have been monitored for radiological contamination and, if necessary decontaminated. For this demonstration six people were processed into the mass care facility, which was well-equipped and staffed to successfully provide support. The Mississippi Department of Health was also present and able to distribute potassium iodide to the evacuating public. Potassium iodide in both pill form for adults and liquid form for juveniles would be transported to the shelter upon activation for dispensing by Department of Health nurses.

For this capability the following REP criteria were MET: 6.c.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

3.3.4 Copiah County

Operational Coordination Capability Summary:

Copiah County Emergency Operation Center staff successfully demonstrated the capability to establish and maintain a unified and coordinated operational structure. Critical stakeholders were integrated into an effective team that demonstrated the county's ability to support Claiborne County. Throughout the exercise, plans and procedures were methodically and proactively instituted by county personnel. 911 Communication Center staff followed established procedures to notify the Emergency Management Director and key emergency operations center staff.

The Director maintained direction and control of the emergency operations center staff. Briefings were held at predesignated times and were focused on host county support operations. County personnel displayed excellent coordination with the other host counties, State and Claiborne County.

Equipment and supplies were sufficient to support emergency response operations. Personnel demonstrated a high degree of competence which demonstrated their ability to protect the health and safety of the public and emergency workers in the event of an incident at the Grand Gulf Nuclear Station.

For this capability the following Radiological Emergency Preparedness criteria were MET: 1.a.1, 1.c.1, 1.e.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

Operational Communications Capability Summary:

The primary means of communication were commercial telephones, cellular phones, pagers, facsimile, and 700 MHz radios. County radios were identified as their secondary means of communication. The county recently became part of the Mississippi Wireless Integrated Network. All personnel maintained telephonic and email communication with their counterparts at the State and other counties.

In addition to the above communications systems, the Homeland Security Information Network was used to complete live situational updates and briefings. This video-teleconference increased situational awareness of county personnel and enhanced their response operations.

All communications systems used during the exercise operated without fail.

For this capability the following Radiological Emergency Preparedness criterion was MET: 1.d.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

Environmental Response/ Health and Safety Capability Summary:

Staff and volunteers from the Copiah County Emergency Services and the Bethel Volunteer Fire Department successfully demonstrated their ability to monitor, decontaminate and register evacuees. This demonstration was completed as an out-of-sequence activity on March 8, 2017 at the Copiah County Community Safe Room. This location is primarily used to receive the evacuating/relocating schools from areas 4A and 4B of Claiborne County.

As demonstrated, the reception center facility had the appropriate space and adequate resources along with the trained personnel to provide radiological monitoring, appropriate decontamination and registration of the Claiborne County evacuees. The facility was set up and demonstrated as they would be in an actual emergency involving the Grand Gulf Nuclear Station. Operational checks of the radiological monitoring and survey instruments were properly completed and personal dosimetry was issued in accordance with plans and procedures.

Approximately fourteen evacuees were processed through the monitoring station, consisting of a realistic mixture of children and adults. These persons arrived at the monitoring station and were processed through primary and secondary screening, and decontamination as needed. The facility anticipated approximately 2,900 evacuees from Claiborne County. Twenty percent of this value within the first 12 hours of an emergency would be 580 people. Through this demonstration, it was determined that 960 people could be monitored within a 12-hour period.

For this capability the following REP criteria were MET: 1.e.1, 3.a.1, 6.a.1

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

Mass Care Services Capability Summary:

The ability of Copiah County to provide temporary care of evacuees from Claiborne County was successfully demonstrated by representatives of Copiah County Emergency Services and the Southwest Mississippi Chapter of the American Red Cross. The Copiah County Community Safe Room facility had the space to accommodate and provide the necessary resources for the evacuating/relocating population of Claiborne County. The American Red Cross shelter manager demonstrated their procedures to set up, operate and demobilize the county shelter in accordance with American Red Cross guidelines and the memorandum of understanding with the county.

For an incident involving the Grand Gulf Nuclear Station, the community safe room is primarily used to receive the evacuating/relocating schools from areas 4A and 4B of Claiborne County. As such, the majority of those evacuees would be minors and they would be accompanied by their teachers and/or staff from their schools. For this demonstration, six minors and six adults were processed into the shelter. Those processed evacuees were volunteers from the Gallman Baptist Church of Gallman, MS. The Mississippi Department of Health was present and is responsible to distribute potassium iodide to the evacuating public. Potassium iodide would be transported to the shelter upon the activation, and Department of Health nurses would dispense after instructed to do so by the State Health Officer. Potassium iodide, in both pill and liquid form would be available as stated and safety instructions would also be given at the time of dispense.

With the majority of the shelter population being students from the relocated schools of Claiborne County, parent notification would be made by Claiborne County. Copiah County representatives would also be available to provide additional parental information. Students and staff would be dropped off at this facility by bus; those buses are then instructed to go to the staging area located at the Copiah County Multi-Purpose and Fairgrounds facility. Parents of the relocating school students would be instructed to respond to that facility to be reunited with their children. Upon parent arrival at the staging area facility, their identification would be obtained and verified. With that, their children would be transported from the congregate care facility to the staging facility for reunification.

For this capability the following REP criteria were MET: 6.c.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

3.3.5 Hinds County

Operational Coordination Capability Summary:

Hinds County elected officials and emergency management personnel and assigned staff successfully demonstrated the ability to effectively respond to an Emergency Classification Level event at the Grand Gulf Nuclear Station. All actions taken by the Emergency Operations Center staff during the exercise reflected their plans and procedures. The staff was trained and familiar with their responsibilities as they relate to an event at Grand Gulf Nuclear Station. Both internal and external coordination was competently and professionally performed by the Hinds County Emergency Management Director.

The Director and his Assistant Director used effective procedures to alert, notify, and mobilize emergency response personnel and activate the Emergency Operations Center in a timely manner. The Emergency Operations Center had multiple redundant means of communications, to include commercial land lines, and cell phones or other hand-held electronic devices. The emergency notification system and Homeland Security Information Network were very successfully used for coordination of protective actions. Backup communications included electronic e-mail, facsimile machines, 800 MHz radios, and satellite phones. They also used an electronic incident management system to maintain situational awareness.

The Emergency Operations Center has sufficient supplies, space and equipment to support emergency response operations. The 15,000 square foot facility is supported by a 250 kilowatt diesel generator, smart boards, Emergency Planning Zone and State maps, projectors, monitors, fax, copiers, clocks, tables, chairs, computers, response plans, procedures and checklists.

The Hinds County Department of Emergency Management Director was involved in the decision making process throughout the exercise, and continually had his county prepare for the next upcoming event. He led his staff with a proactive approach to problem solving, and maintained a calm, positive, and confident atmosphere in the Emergency Operations Center. The Director conducted periodic briefings which kept the Emergency Operations Center staff updated throughout the exercise. Using the Homeland Security Information System video-teleconference system, the Director coordinated closely with the State Emergency Operations Center, Claiborne County Emergency Management Director, and other counties effectively. Hinds County is a host county, with the mission of providing a Reception and Congregate Care Center for the public evacuating from designated at-risk areas. The Emergency Management Director and his Emergency Operations Center staff demonstrated the ability to effectively plan and implement their mission during the exercise.
For this capability the following Radiological Emergency Preparedness criteria were MET: 1.a.1, 1.c.1, 1.e.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

Operational Communications Capability Summary:

The Hinds County Department of Emergency Management successfully demonstrated the capability to establish and maintain communications in support of security, situational awareness, and operations among and between state, risk and host counties, and Grand Gulf Nuclear Station emergency response forces. Initial and subsequent emergency notifications, coordination of protective action recommendations/decisions regarding evacuation of protective action area 3a and the activation of the reception center was effectively accomplished utilizing the primary and secondary communication resources such as a reverse calling notification system commercial land lines, the Homeland Security Information Network, operational hot line, an electronic incident management system , emails, fax, and cell phones. The host county participated in all the coordination calls to maintain situational awareness of the event where it would affect county residents and/or resources.

For this capability the following Radiological Emergency Preparedness criterion was MET: 1.d.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

Environmental Response/ Health and Safety Capability Summary:

Hinds County first responders successfully demonstrated the county's capability to provide radiological monitoring, decontamination and evacuee registration for an evacuating populace. This was demonstrated as an out sequence activity on March 16, 2017 at the Hinds County College Utica Campus. The community college campus is outside of the 10-mile emergency planning zone of the Grand Gulf Nuclear Station and is used as the county's reception center for the evacuating public of Claiborne County from protective action areas 3A and 3B.

The reception center had the appropriate space as well as sufficient resources to include trained personnel to provide radiological monitoring, decontamination and registration of evacuees. The demonstrated activity was completed as it would be in an actual incident. Six evacuees were processed through the monitoring station, consisting of four males and two females. These persons arrived at the monitoring station and were processed through primary screening, and secondary screening as needed. Per county plans, approximately 1,425 evacuees from Claiborne County are anticipated. Twenty percent of that value is 285 persons. As demonstrated, 1,235 people could be monitored within a 12-hour period at the reception center.

For this capability the following REP criteria were MET: 1.e.1, 3.a.1, 6.a.1

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

Mass Care Services Capability Summary:

The ability of Hinds County to provide temporary care of evacuees from Claiborne County was successfully demonstrated by representatives of the Southwest Mississippi Chapter of the American Red Cross, Mississippi Department of Human Services and Mississippi Department of Health. This demonstration took place as an out of sequence activity in conjunction with the reception center demonstration on March 16, 2017. Mass care services were set up in accordance with county and American Red Cross shelter procedures. The facility had ample space and reasonable accommodations for the expected evacuee population of Claiborne County. The staff and volunteers were extremely knowledgeable in their duties and displayed a commendable dedication to the health and welfare of the public.

The Mississippi Department of Health was also present and able to distribute potassium iodide to the evacuating public. Potassium iodide in both pill form for adult and liquid for juveniles would be transported to the shelter upon activation for dispensing by Department of Health nurses. The Department of Human Services and American Red Cross staff members were very knowledgeable and professional, worked together as a team, and demonstrated shared responsibilities in meeting the needs of evacuees.

For this capability the following REP criteria were MET: 6.c.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

3.3.6 Warren County

Operational Coordination Capability Summary:

Warren County emergency operations center staff successfully demonstrated their ability to respond to an incident at Grand Gulf Nuclear Station. Warren County is a host county

with the mission of providing a reception and congregate care center for the general public evacuating from designated protective action areas. The emergency operations center staff responded in a timely manner upon receipt of initial notification via an electronic crisis communication and mass notification tool. The knowledgeable and professional emergency operations center staff, composed of a variety of supporting county agencies, demonstrated their ability to plan and conduct emergency response actions through effective coordination. Redundant and reliable communications systems, along with the readily available equipment and supplies, ensured emergency operations could be sustained for extended operations.

For this capability the following Radiological Emergency Preparedness criteria were MET: 1.a.1, 1.c.1, 1.e.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

Operational Communications Capability Summary:

Warren County communications equipment was redundant and capable of supporting emergency operations. The Director and his staff used effective procedures to alert, notify, and mobilize emergency response personnel and activate the emergency operations center in a timely manner. The primary means of communication among the State and counties was the Homeland Security Information Network Connect, which operated without failure. The system allowed for video conferencing capabilities using software in conjunction with a conference call bridge line. This capability permitted fluid communications among the emergency response organizations to allow for seamless command and control.

The emergency operations center had redundant means of communications, to include personal computer Internet access, electronic mail, commercial land lines, cell phones, and other hand-held electronic devices. Backup communications also included facsimile machines, low band, 700 and 800 megahertz radios, and satellite phones. An electronic incident management system was used to maintain situational awareness and track assistance requests.

For this capability the following Radiological Emergency Preparedness criterion was MET: 1.d.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

Environmental Response/ Health and Safety Capability Summary:

Representatives from Warren County Emergency Management, Emergency Services and the Sheriff's Office successfully demonstrated their ability to monitor, decontaminate and register evacuees. Additional Warren County Emergency Services agencies included the Culkin, Fisher Ferry and Northeast Warren County Volunteer Fire Departments and the Vicksburg Fire Department. This demonstration was completed as an out sequence activity on March 13, 2017 at the Warren Central High School campus.

The Warren County reception congregate care center had the appropriate space and adequate resources along with the trained personnel to provide radiological monitoring, appropriate decontamination and registration of the Claiborne County evacuees. The facility was set up and demonstrated as they would be in an actual emergency involving the Grand Gulf Nuclear Station. Operational checks of the radiological monitoring and survey instruments were properly completed and personal dosimetry was issued in accordance with plans and procedures. Challenges were identified with monitoring equipment usage and procedures for processing evacuees. With additional equipment refresher training, joint agency training, and checklist usage, Warren County can ensure an efficient and thorough response.

Approximately six evacuees were processed through the monitoring station. These persons arrived at the monitoring station and were processed through primary and secondary screening, and decontamination as needed. The facility anticipated approximately 1,704 evacuees from Claiborne County. Twenty percent of this value within the first 12 hours of an emergency would be 341 people. For each person monitored, the portal monitor check, to include transition time, took 31 seconds on average. As demonstrated, the county could monitor twenty percent of this population within the first 12 hours of an incident.

For this capability the following REP criteria were MET: 1.e.1, 3.a.1, 6.a.1

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

Mass Care Services Capability Summary:

Representatives from the Southwest Mississippi Chapter of the America Red Cross and Mississippi Department of Human Services successfully demonstrated the registration and temporary care of evacuees at the Warren County Central High School reception center. The facility was setup in accordance with local procedures and agreements. This facility had ample space and reasonable accommodations for its assigned purpose. The aforementioned agency representatives were well trained and versed in their responsibilities in operating the facility. The processes demonstrated were logical and effective.

The Mississippi Department of Health was unavailable to participate in this activity. With that, the County Emergency Management Director stated that the Department of Health is responsible to distribute potassium iodide to the evacuating public. Potassium iodide would be transported to the shelter upon the activation and Department of Health nurses would dispense after instructed to do so by the State Health Officer. Potassium iodide, in both pill and liquid form would be available as stated and safety instructions would also be given at the time of dispense. This was verified through a later interview with the Department of Health representatives on March 14, 2017.

For this capability the following REP criteria were MET: 6.c.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

Public Health, Healthcare & Emergency Medical Services Capability Summary:

The Vicksburg Fire Department and Ambulance Service personnel successfully demonstrated their ability to treat and transport a simulated radiological contaminated injured individual. Conversely, they demonstrated that the county had adequate resources and trained personnel to provide transport and medical services to a contaminated injured individual.

For this demonstration and in accordance with the extent of play agreement, participants were pre-positioned at Vicksburg Fire Department's Fire Station 5. The incident site was the vehicle bay of the station. Prior to beginning the demonstration, personnel received a safety briefing which included personal safety, radiation safety, dosimetry, reporting requirements, administrative limits and potassium iodide. Emergency Medical Service personnel wore personal protective equipment, which is described as level D, basic working uniform, adding disposable cloth over boots, multiple nitrile surgical gloves and a particulate filtering face piece respirator. Vicksburg Fire Department crewmembers wore their turnout gear adding surgical gloves and a particulate filtering face piece respirator.

While enroute to the hospital, the paramedic obtained the victim's medical vitals and relayed same as well as the simulated radiological contamination readings to the hospital. Personnel demonstrated good victim care and contamination control, verbalizing glove changes numerous times after changing patient treatment protocols. They were also aware of personal radiation exposure limits, actions to take at each level and were very conscious of the health and safety of their patient, the public and themselves.

Warren County Emergency Medical Services, Vicksburg Fire Department, and Merit Health River Regional Medical Center personnel successfully demonstrated the ability to conduct the Public Health, Healthcare, and Emergency Medical Services Core Capability in response to a radiological incident at Grand Gulf Nuclear Station during this drill.

The Merit Health River Region Medical Center had sufficient space, equipment, monitoring instruments, dosimetry, and other supplies to support handling a radiologically contaminated injured patient. Medical center personnel provided monitoring, decontamination, and medical services to the contaminated injured individual while minimizing the spread of contamination. Staff were properly trained in their plans and procedures and executed their duties appropriately. They demonstrated the ability to issue appropriate dosimetry and manage radiological exposure in accordance with the plans and procedures. The radiological emergency area staff worked together to ensure

the medical center was prepared to receive the patient, that he was well cared for, and that he was effectively decontaminated.

For this capability the following REP criteria were MET: 1.d.1, 1.e.1, 3.a.1, 6.d.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings - Unresolved: None

f. Plan Issues: None

Section 4: Conclusion

Overall, the exercise was a success. Officials and representatives from: the State of Mississippi; the risk county of Claiborne; the host counties of Adams, Copiah, Hinds and Warren; and numerous other organizations participated in the exercise. The cooperation and teamwork of the participants was evident throughout all phases of the exercise. FEMA identified two plan issues and three Level 2 Findings during the exercise. FEMA will work closely with the Mississippi Emergency Management Agency and the Department of Health, Division of Radiological Health to resolve these findings and issues.

FEMA wishes to acknowledge the efforts of the many individuals who participated and made this exercise a success. Protecting the public health and safety is the full-time job of some of the exercise 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. State and local emergency response organizations demonstrated knowledge of their emergency response plans and procedures and successfully implemented them.

Highlights of the exercise included the State of Mississippi's continued efforts on technology to enhance the decision-making process and willingness to step outside the exercise box and combine outside and/or parallel critical exercise aspects with the graded radiological emergency preparedness program exercise. These highlights demonstrate the commitment of all of the jurisdictions involved to improve their preparedness to respond to an incident at the Grand Gulf Nuclear Station.

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Appendix A: Exercise Timeline

Emergency Classification Level or Event	Time Utility Declared	Time That Notification Was Received or Action Was Taken									
		SEOC	JIC	DOSE	EOF	FIELD TEAM	CLAIBORNE COUNTY	ADAMS COUNTY	HINDS COUNTY	COPIAH COUNTY	WARREN COUNTY
Unusual Event	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Alert	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Site Area Emergency	0824	0829	0834	0833	N/A	N/A	0832	0836	0833	0833	0833
General Emergency	1016	1027	1030	1016	1017	1017	1026	1027	1032	1026	1030
Simulated Rad. Release Started	1016	1027	1030	1016	1017	1017	1026	1027	1032	1044	1030
Simulated Rad. Release Ended	-	1246	1224	1223	N/A	N/A	1246	1229	Ongoing	1244	1246
Facility Declared Operational	-	0833	0835	0730*	0904	0904	0922	0847	0943	0845	0840
Exercise Terminated	-	1247	1242	1245	1246	1246	1246	1241	1247	1244	1245
Declaration of State of Emergency Local: State:		0924	0855	-	-	-	0930 0930	0929 0930	0848 0930	0845 0930	0838 0930
Early Precautionary Actions: Precautionary transfer of nursing homes, hospital patients, special needs population, schools, inmates Staffed and opened shelters and reception centers		0916	0909	-	-	-	0912	0922	1030	0930	1011
1st Protective Action Decision: Evacuate Areas: 1, 5a, 5b, 6 Monitor and prepare: All others out to 10-miles		1048	1058	-	-	-	1048	1048	1048	1048	1048
1st Siren Activation		1055	1045	-	-	-	1055	1055	1055	1055	1055
1st EAS Message		1100	1058	-	-	-			1100		1100
2nd PAA: Evacuate Areas: 1, 2a, 2b, 3a, 4a, 5a, 5b, 6, 7 Shelter in Place Zones: All remaining		1148	-	-	-	-	1148	1148	1148	1148	1148
2nd Siren Activation		1200	-	-	-	-	1200	1200	1200	1200	1200
2nd EAS Message		1205	-	-	-	-			1200	1205	
KI Decision: Issue to Emergency Workers		1048	-	-	-	-	1052	1052	1052	1052	1052

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Appendix B: Exercise Evaluators and Team Leaders

Regional Assistance Committee Chair: Kevin Keyes

North Section Chief: JT Ackermann

THEPET Coordination: JT Ackermann

Central Section Chief: Larry Robertson

ICF Coordinator/RC: Jill Leatherman

MS Lead Evaluator: Gerald McLemore

ICF Admin Support: Erin McCarty

Location / Venue	Evaluation Team	Core Capability(ies) Evaluated at each venue
Mississippi Emergency Management Agency: Director – Mr. Lee Smithson		
MEMA SEOC	Walt Cushman Andrew Seward Lisa Rink Glenda Bryson (OJT)	Operational Coordination Situational Assessment Operational Communications Public Information and Warning
MEMA JIC	Robert Spence Linda Gee Tom Hegele	Public Information and Warning
MEMA TCP (OOS)	J.T. Ackermann E. Adkins	On Scene Security, Protection, and Law Enforcement
Mississippi Department of Radiological Health: Director – B.J. Smith		
DRH SEOC Dose	Jill Leatherman	Environmental Response/Health and Safety
DRH EOF Dose	Lloyd Generette	Environmental Response/Health and Safety
Field Team Management	Bart Ray	Environmental Response/Health and Safety
DRH Laboratory	Marcy Campbell	Environmental Response/Health and Safety
DRH Field Team 1 DRH Field Team 2	**Joe Harworth** Deborah Blunt	Environmental Response/Health and Safety
Claiborne County: Director – Marvin Ratliff		
EOC	Gerald McLemore Quintin Ivy Bill Maier Henry Christiansen	Operational Coordination Operational Communications
Backup Route Alerting	Bill Maier	Public Information and Warning
Schools	Bill Maier	Critical Transportation
EWD (OOS)	J.T. Ackermann L. Lewis M. Dolder M. Bradley E. Adkins G. McLemore	Environmental Response/Health and Safety
TCP (OOS)	J.T. Ackermann E. Adkins	On Scene Security, Protection, and Law Enforcement
Adams County: Director – Robert Bradford		
EOC	Matthew Bradley John Simpson	Operational Coordination Operational Communications
Reception Center / Congregate Care (OOS)	J.T. Ackermann L. Lewis	Mass Care Services

Location / Venue	Evaluation Team	Core Capability(ies) Evaluated at each venue
	M. Dolder M. Bradley E. Adkins G. McLemore	
Copiah County: Director – Randle Drane		
EOC	Robert Nash Alex Sera	Operational Coordination Operational Communications
Reception Center / Congregate Care (OOS)	J.T. Ackermann L. Lewis E. Adkins G. McLemore	Mass Care Services
Hinds County: Director – Ricky Moore		
EOC	Lorenzo Lewis Ron Shaw	Operational Coordination Operational Communications
Reception Center / Congregate Care (OOS)	J.T. Ackermann L. Lewis M. Dolder M. Bradley E. Adkins G. McLemore	Mass Care Services
Warren County: Director – John Elfer		
EOC	Mike Dolder Elizabeth Adkins	Operational Coordination Operational Communications
Reception Center / Congregate Care (OOS)	J.T. Ackermann L. Lewis M. Dolder M. Bradley E. Adkins G. McLemore	Mass Care Services
MSD (OOS)	J.T. Ackermann M. Bradley E. Adkins	Public Health, Healthcare & Emergency Medical Services

Appendix C: Exercise Extent of Play Agreement

2017 GRAND GULF NUCLEAR STATION

GRADED EVALUATION EXERCISE
(Full Scale Plume Phase Exercise)

RADIOLOGICAL EMERGENCY PREPAREDNESS EXERCISE

All activities will be demonstrated fully in accordance with respective plans and procedures as they would be in an actual event. This extent of play agreement is written by exception. If it is not listed as an exception it will be demonstrated as described in the plans, standard or suggested operating guides (SOGs) and/or procedures (SOPs). Any issue or discrepancy arising during exercise play may be redemonstrated if allowed by the RAC Chair or as listed herein. This allowance may be granted if it is not disruptive to exercise play and mutually agreed to by the MEMA lead controller and FEMA lead evaluator, as designated by the RAC Chair.

Exercise Date: March 29, 2017
Exercise Start Time: 0800

Exercise Objectives

Objective 1: Demonstrate the ability to provide Direction and Control and make protective action decisions through the State Emergency Operations Centers and County EOCs by exercise play and discussion of plans and procedures.
Mission Area / Core Capability (ies) – Response / Operational Coordination; Operational Communications

Objective 2: Demonstrate the ability to physically implement protective actions for State and County emergency workers, access/functional needs, schools and the public through exercise demonstration.

Mission Area / Core Capability (ies) – Response/Environmental Response Health & Safety; On-Scene Security, Protection & Law Enforcement; Critical Transportation.

Objective 3: Demonstrate the ability to perform plume-phase field measurements and analysis utilizing simulated data and discussion of plans and procedures with State field teams.
Mission Area / Core Capability (ies) – Response / Situational Assessment; Environmental Response Health & Safety

Objective 4: Demonstrate the ability to activate Prompt Alert and Notification System (PNS) and Emergency Alert System (EAS) through exercise play.
Mission Area / Core Capability (ies) – Response / Public Information & Warning

Objective 5: Demonstrate the effectiveness of plans, policies and procedures in the Joint Information System (JIS) for public and private sector emergency information communications. Mission Area / Core Capability (ies) – Response / Public Information & Warning

Objective 6: Demonstrate the ability to monitor, decontaminate and register evacuees. Mission Area / Core Capability (ies) – Response / Mass Care

Exercise Evaluation Criteria

Core Capability: Operational Coordination:
Definition: Establish and maintain a unified and coordinated operational structure and process that appropriately integrates all critical stakeholders and supports the execution of core capabilities.

Jurisdictions: *MEMA/SEOC, Risk County (Claiborne), Host Counties (Adams, Copiah, Hinds and Warren)*

Performance Measure:
Demonstrate alert, notification, and mobilization of emergency personnel and facility activation; key personnel ability to execute direction and control of response effort; the ability to sufficiently support emergency operations; capability to implement emergency worker exposure control; KI decision for institutionalized individuals and the general public; implementation of protective actions for persons with disabilities and access/functional needs; and establishment of traffic control and resolution of impediments to evacuation.

Critical Task: OROs use effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner. (NUREG-0654/ FEMA-REP-1, A.1.a, e; A.3, 4; C.1, 4, 6; D.4; E.1, 2; H.3, 4; Criterion **1a1**).

> MEMA/SEOC, MSDH/DRH and County: Prepositioning is authorized and will consist of State personnel (MEMA/SEOC, JIC and DRH), County (Risk and Host) and EOF personnel. These positions will be prepositioned near or at designated exercise locations and will respond as plans and procedures dictate. Alert rosters will be provided to FEMA evaluators for review.

Critical Task: Key personnel with leadership roles for the ORO provide direction and control to that part of the overall response effort for which they are responsible. (NUREG-0654/FEMA-REP-1, A.1.d; A.2.a, b; A.3; C.4, 6; Criterion **1c1**).

> **MEMA/SEOC and Risk County (Claiborne)**: Will demonstrate activation and setup of HSIN Portal as an additional means of communication for conducting face-to-face coordination and decision making between MEMA/SEOC, Risk and Host County Directors for one briefing.

Critical Task: Equipment, maps, displays, monitoring instruments, dosimetry, potassium iodide (KI), and other supplies are sufficient to support emergency operations. (NUREG-0654/FEMA-REP-1, H.7, 10; I.7, 8, 9; J.10.a, b, e; J.11, 12; K.3.a; K.5.b; Criterion **1e1**).

MEMA, MSDH/DRH, Risk County (Claiborne) and **Host Counties** (Adams, Copiah, Hinds and Warren): Site Assistance Visits (SAV) will consist of verification of calibration dates on survey/monitoring equipment and dosimeters; inspection of ORO REP training records; and inspection and verification of onsite KI stock. SAV's will occur separately from scheduled OOS activities; dates for SAV's and OOS activities are as follows:

MEMA:	SAV	Mar 08th	9:00 AM – 11:00 AM
Copiah County:	RCCC	Mar 08th	6:00 PM – 10:00 PM
MSDH/DRH:	SAV	Mar 13th	9:00 AM – 11:00 AM
Warren County:	RCCC	Mar 13th	6:00 PM – 10:00 PM
Warren County:	MSD	Mar 14th	8:00 AM – 1:00 PM
Claiborne County:	TCP's	Mar 14th	2:00 PM – 3:00 PM
Claiborne County:	EWD	Mar 15th	9:00 AM – 12:00 PM
Adams County:	RCCC	Mar 15th	6:00 PM – 10:00 PM
Hinds County:	RCCC	Mar 16th	6:00 PM – 10:00 PM

Critical Task: The OROs issue appropriate dosimetry, KI 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. OROs maintain appropriate record keeping of the administration of KI to emergency workers. (NUREG-0654/FEMA-REP-1, J.10.e; K.3.a, b; K.4; Criterion **3a1**).

Risk County: There will be no MEMA RECO function demonstrated during the REP exercise conducted on March 29, 2017; an OOS demonstration at the Risk County will serve in its place.

Critical Task: KI and appropriate instructions are available should a decision to recommend use of KI for the general public and institutionalized individuals be made. Appropriate record keeping of the administration of KI for institutionalized individuals is maintained. (NUREG-0654/FEMA-REP-1, J.10.e, f; Criterion **3b1**).

Critical Task: Protective action decisions are implemented for persons with disabilities and access/functional needs other than schools within areas subject to protective actions. (NUREG-0654/FEMA-REP-1, J.10.c, d, e, g; Criterion **3c1**).

Critical Task: Appropriate traffic and access control is established. Accurate instructions are provided to traffic and access control personnel. (NUREG-0654/FEMA-REP-1, A.3; C.1, 4; J.10.g, j; Criterion **3d1**).

Critical Task: Impediments to evacuation are identified and resolved. (NUREG-0654/FEMA-REP-1, J.10.k; Criterion **3d2**).

> **Risk County (Claiborne)**: Procedures for identifying and resolving impediments to evacuation will be discussed in relation to the exercise scenario. The impediment will be IAW the 2016 REP Program Manual requirements.

Core Capability: Situational Assessment:
Definition: Provide all decision makers with decision-relevant information regarding the nature and extent of the hazard, any cascading effects, and the status of the response.

Jurisdictions: *MEMA/SEOC*

Performance Measure:
Demonstrate protective action decision making by OROs concerning exposure control; protective action recommendations for current onsite/offsite conditions; protective action decision for the general public; and protective action decisions for persons with disabilities and access/functional needs.

Critical Task: OROs use a decision-making process, considering relevant factors and appropriate coordination, to ensure that an exposure control system, including the use of KI, is in place for emergency workers including provisions to authorize radiation exposure in excess of administrative limits or protective action guides. (NUREG-0654/FEMA-REP-1, C.6; J.10. e, f; K.3.a, 4; Criterion **2a1**).

Critical Task: Appropriate protective action recommendations (PARs) are based on available information on plant conditions, field monitoring data, and licensee and ORO dose projections, as well as knowledge of onsite and offsite environmental conditions. (NUREG-0654/FEMA-REP-1, I.10 and Supplement 3; Criterion **2b1**).

Critical Task: A decision-making process involving consideration of appropriate factors and necessary coordination is used to make protective action decisions (PAD) for the general public (including the recommendation for the use of KI, if ORO policy). (NUREG-0654/FEMA-REP-1, A.3; C.4, 6; D.4; J.9; J.10.f, m; Criterion **2b2**).

Critical Task: Protective action decisions are made, as appropriate, for groups of persons with disabilities and access/functional needs. (NUREG-0654/FEMA-REP-1, D.4; J.9; J.10.d, e; Criterion **2c1**).

Core Capability: Operational Communications:
Definition: Ensure the capacity for timely communications in support of security, situational awareness, and operations by any and all means available, among and between affected communities in the impact area and all response forces.

Jurisdictions: *MEMA/SEOC, Risk County (Claiborne), Host Counties (Adams, Copiah, Hinds and Warren)*

Performance Measure:
Demonstrate alert, notification, and mobilization of emergency personnel and facility activation; and management of communications capabilities.

Critical Task: OROs use effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner. (NUREG-0654/ FEMA-REP-1, A.1.a, e; A.3, 4; C.1, 4, 6; D.4; E.1, 2; H.3, 4; Criterion **1a1**).

> MEMA/SEOC, MSDH/DRH and County: Prepositioning is authorized and will consist of State personnel (MEMA/SEOC, JIC and DRH), County (Risk and Host) and EOF personnel. These positions will be prepositioned near or at designated exercise locations and will respond as plans and procedures dictate. Alert rosters will be provided to FEMA evaluators for review.

Critical Task: At least two communications 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/FEMA-REP-1, F.1, 2; Criterion **1d1**).

Core Capability: Public Information and Warning:
Definition: Deliver coordinated, prompt, reliable, and actionable information to the whole community through the use of clear, consistent, accessible, and culturally and linguistically appropriate methods to effectively relay information regarding any threat or hazard and, as appropriate, the actions being taken and the assistance being made available.

Jurisdictions: *MEMA/SEOC, Joint Information Center, Risk County (Claiborne)*

Performance Measure:
Demonstrate alert, notification, and mobilization of emergency personnel and facility activation; management of communications capabilities; the ability to sufficiently support emergency operations; resolution of impediments to evacuation; primary alerting and notification of the public; backup alert and notification of the public for siren failure and/or waterway warning; and accurate emergency information and instruction to public and news media.

Critical Task: OROs use effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner. (NUREG-0654/ FEMA-REP-1, A.1.a, e; A.3, 4; C.1, 4, 6; D.4; E.1, 2; H.3, 4; Criterion **1a1**).

> MEMA/SEOC, MSDH/DRH and County: Prepositioning is authorized and will consist of State personnel (MEMA/SEOC, JIC and DRH), County (Risk and Host) and EOF

personnel. These positions will be prepositioned near or at designated exercise locations and will respond as plans and procedures dictate. Alert rosters will be provided to FEMA evaluators for review.

Critical Task: At least two communications 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/FEMA-REP-1, F.1, 2; Criterion **1d1**).

Critical Task: Equipment, maps, displays, monitoring instruments, dosimetry, potassium iodide (KI), and other supplies are sufficient to support emergency operations. (NUREG-0654/FEMA-REP-1, H.7, 10; I.7, 8, 9; J.10.a, b, e; J.11, 12; K.3.a; K.5.b; Criterion **1e1**).

Critical Task: Impediments to evacuation are identified and resolved. (NUREG-0654/FEMA-REP-1, J.10.k; Criterion **3d2**).

MEMA/SEOC: Procedures for identifying and resolving impediments to evacuation will be discussed in relation to the exercise scenario. The impediment will be IAW the January 2016 REP Program Manual requirements.

Critical Task: Activities associated with primary alerting and notification of the public are completed in a timely manner following the initial decision by authorized offsite emergency officials to notify the public of an emergency situation. The initial instructional message to the public must include, as a minimum, the elements required by current FEMA REP Guidance. (NUREG-0654/FEMA-REP-1, E.5, 6, 7; Criterion **5a1**).

Risk County (Claiborne): Initial siren activation will be completed by a "growl" test of that system as exercise play dictates; subsequent activations will be simulated. Initial activation of the EAS will be demonstrated up to the point of actual broadcast to the public in relation to the exercise scenario. <u>No actual EAS broadcast will occur.</u>

MEMA/SEOC: The Mississippi Emergency Management Agency's Joint Information Center is now collocated with the MEMA facility at #1MEMA Drive, Pearl, Mississippi 39208. Initial activation of the EAS will be demonstrated up to the point of actual broadcast to the public in relation to the exercise scenario.

Critical Task: Backup alert and notification of the public is completed within a reasonable time following the detection by the ORO of a failure of the primary alert and notification system. (NUREG-0654/FEMA-REP-1, E.6, Appendix 3.B.2.c; Criterion **5a3**).

MEMA/SEOC: Waterway warning will be discussed with the appropriate agencies in relation to the exercise scenario.

Risk County (Claiborne): Backup route alerting will be demonstrated with a Claiborne

County Sheriffs Deputy only if a siren failure is indicated; if there is no siren failure, backup route alerting procedures will be discussed in relation to the exercise scenario.

Risk County (Claiborne): Waterway warning will be discussed with the appropriate agencies in relation to the exercise scenario.

Critical Task: OROs provide accurate emergency information and instruction to the public and the news media in a timely manner. *(NUREG-0654/FEMA-REP-1, E.5, 7; G.3.a, G.4.a, c*; Criterion 5b1).

Core Capability: Environmental Response/Health and Safety:
Definition: Conduct appropriate measures to ensure the protection of the health and safety of the public and workers, as well as the environment, from all-hazards in support of responder operations and the affected communities.

Jurisdictions: *Dose Assessment (*MEMA/SEOC *and EOF), Laboratory Operations, Field Teams/Management, Risk County (Claiborne)*

Performance Measure:
Demonstrate management of communications capabilities; the ability to sufficiently support emergency operations; protective action decision making by OROs concerning exposure control; protective action recommendations for current onsite/offsite conditions; protective action decision for the general public; capability to implement emergency worker exposure control; manage field teams in gathering radiation release data and controlling exposure; field monitoring team operations within the plume exposure pathway EPZ performing detection capabilities; collect appropriate measurements and samples to support protective action decision making; the laboratory is capable of performing required radiological analyses to support protective action decisions; and the facility/ORO has adequate procedures and resources to accomplish monitoring and decontamination of emergency workers and their equipment and vehicles.

Critical Task: At least two communications 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/FEMA-REP-1, F.1, 2; Criterion **1d1**).

Critical Task: Equipment, maps, displays, monitoring instruments, dosimetry, potassium iodide (KI), and other supplies are sufficient to support emergency operations. (NUREG-0654/FEMA-REP-1, H.7, 10; I.7, 8, 9; J.10.a, b, e; J.11, 12; K.3.a; K.5.b; Criterion **1e1**).

Critical Task: OROs use a decision-making process, considering relevant factors and appropriate coordination, to ensure that an exposure control system, including the use of KI, is in place for emergency workers including provisions to authorize radiation exposure in excess of administrative limits or protective action guides. (NUREG-0654/FEMA-REP-1, C.6; J.10. e, f;

K.3.a, 4; Criterion **2a1**).
Critical Task: Appropriate protective action recommendations (PARs) are based on available information on plant conditions, field monitoring data, and licensee and ORO dose projections, as well as knowledge of onsite and offsite environmental conditions. (NUREG-0654/FEMA-REP-1, I.10 and Supplement 3; Criterion **2b1**).

Critical Task: A decision-making process involving consideration of appropriate factors and necessary coordination is used to make protective action decisions (PAD) for the general public (including the recommendation for the use of KI, if ORO policy). (NUREG-0654/FEMA-REP-1, A.3; C.4, 6; D.4; J.9; J.10.f, m; Criterion **2b2**).

Critical Task: The OROs issue appropriate dosimetry, KI 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. OROs maintain appropriate record keeping of the administration of KI to emergency workers. (NUREG-0654/FEMA-REP-1, J.10.e; K.3.a, b; K.4; Criterion **3a1**).

> **MSDH/DRH**: FEMA Evaluators will observe demonstration of an EW deployment briefing, issue of dosimetry and KI.
>
> **Risk County and Host Counties**: FEMA Evaluators will observe demonstration of an EW deployment briefing, issue of dosimetry and KI as determined by plans and procedures.

Critical Task: Field teams (two or more) are managed to obtain sufficient information to help characterize the release and to control radiation exposure. (NUREG-0654/FEMA-REP-1, C.1; H.12; I.7, 8, 11; J.10.a; Criterion **4a2**).

Critical Task: Ambient radiation measurements are made and recorded at appropriate locations, and radioiodine and particulate samples are collected. Teams will move to an appropriate low background location to determine whether any significant (as specified in the plan and/or procedures) amount of radioactivity has been collected on the sampling media. (NUREG-0654/FEMA-REP-1, C.1; H.12: I.8, 9; J.10.a; Criterion **4a3**).

Critical Task: The field teams (2 or more) demonstrate the capability to make appropriate measurements and to collect appropriate samples (e.g., food crops, milk, water, vegetation, and soil) to support adequate assessments and protective action decision-making. (NUREG-0654/FEMA-REP-1, C.1; I.8; J.11; Criterion **4b1**).

Critical Task: The laboratory is capable of performing required radiological analyses to support protective action decisions. (NUREG-0654/FEMA-REP-1, C.1, 3; J.11; Criterion **4c1**).

Critical Task: The facility/ORO has adequate procedures and resources to accomplish

monitoring and decontamination of emergency workers and their equipment and vehicles. (NUREG-0654/FEMA-REP-1, K.5.a, b; Criterion **6b1**).

> **Risk County**: Monitoring of emergency workers does not have to meet the 12-hour requirement. However, appropriate monitoring procedures must be demonstrated for a minimum of two (2) emergency workers and their equipment and vehicles (1). Provisions for separate showering and same-sex decontamination must be demonstrated or explained. Monitoring procedures must be demonstrated for a minimum of one vehicle. The Emergency Worker Decontamination (EWD) Station OOS activity will be conducted at the Pattison Fire Department on Mar 15, 2017 from 9AM to 12PM.

> **MSDH/DRH**: Field Teams will participate as EW's to be processed through the Emergency Worker Decontamination (EWD) Station during the OOS activity at Pattison Fire Department on Mar 15, 2017 from 9AM to 12PM. MSDH/DRH Field Teams will be composed of two (2) emergency workers and their equipment and vehicles (1) to achieve the FEMA requirement.

Core Capability: On Scene Security, Protection, and Law Enforcement:
Definition: Ensure a safe and secure environment through law enforcement and related security and protection operations for people and communities located within affected areas and also for all traditional and atypical response personnel engaged in lifesaving and life-sustaining operations.

Jurisdictions: *MEMA/SEOC and Risk County (Claiborne) (TCP/Waterway Warning)*

Performance Measure:
Demonstrate management of communications capabilities; the ability to sufficiently support emergency operations; capability to implement emergency worker exposure control; and establishment of traffic control and resolution of impediments to evacuation.
Critical Task: At least two communications 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/FEMA-REP-1, F.1, 2; Criterion **1d1**).

Critical Task: Equipment, maps, displays, monitoring instruments, dosimetry, potassium iodide (KI), and other supplies are sufficient to support emergency operations. (NUREG-0654/FEMA-REP-1, H.7, 10; I.7, 8, 9; J.10.a, b, e; J.11, 12; K.3.a; K.5.b; Criterion **1e1**).

> **MEMA**: A SAV will be conducted at MEMA on Mar 8, 2017 from 9 AM to 11 AM. The SAV includes assessment of monitoring instruments, ORO REP Training records, dosimetry, and KI; The SAV dates/results will be provided to evaluators by the Site Emergency Management Specialist.

Critical Task: The OROs issue appropriate dosimetry, KI 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. OROs maintain appropriate record keeping of the administration of KI to emergency workers. (NUREG-0654/FEMA-REP-1, J.10.e; K.3.a, b; K.4; Criterion **3a1**).

> **MEMA**: There will be no MEMA RECO function demonstrated during the REP exercise conducted on March 29, 2017; an OOS demonstration at the Risk County will serve in its place.

Critical Task: Appropriate traffic and access control is established. Accurate instructions are provided to traffic and access control personnel. (NUREG-0654/FEMA-REP-1, A.3; C.1, 4; J.10.g, j; Criterion **3d1**).

> **Risk County**: An OOS County Traffic Control Point (TCP) demonstration will be conducted on Mar 14 2017 at 2 PM. TCP A4 (US 61 and South City Limits) and will be the designated TCP location for demonstration.
>
> **Risk County**: TCP coordination and deployment will be discussed in relation to the exercise scenario.
>
> **MEMA/SEOC**: The MEMA Radiation Exposure Control Officer (RECO) will demonstrate one EW deployment briefing, issue dosimetry and KI on-location at Traffic Control Point (TCP) A4 (US 61 and South City Limits) during OOS demonstrations on Mar 14, 2017 at 2 PM. There will be no MEMA RECO demonstration during the REP exercise conducted on March 29, 2017; this OOS demonstration will serve in its place.
>
> **Risk County** (Claiborne) and **Host Counties** (Adams, Copiah, Hinds and Warren): Radiation Exposure Control briefings will be conducted by exercise participants and observed by FEMA Evaluators at the commencement of all OOS exercise activities for each jurisdiction.

Critical Task: Impediments to evacuation are identified and resolved. (NUREG-0654/FEMA-REP-1, J.10.k); Criterion **3d2**).

> **Risk County**: An OOS County Traffic Control Point (TCP) demonstration will be conducted on Mar 14 2017 at 2 PM. TCP A4 (US 61 and South City Limits) and will be the designated TCP location for demonstration.
>
> **MEMA/SEOC**: Procedures for identifying and resolving impediments to evacuation will be discussed in relation to the exercise scenario. The impediment will be IAW the 2016 REP Program Manual requirements.

Core Capability: Critical Transportation:

Definition: Provide transportation (including infrastructure access and accessible transportation services) for response priority objectives, including the evacuation of people and animals, and the delivery of vital response personnel, equipment, and services into the affected areas.

Jurisdictions: *Risk County (Claiborne)*

Performance Measure:
Demonstrate the implementation of schools.

Critical Task: OROs/School officials implement protective actions for schools. (NUREG-0654/FEMA-REP-1, J.10.c, d, e, g; Criterion **3c2**).

> **Risk County**: If this criterion is not triggered by exercise events, demonstrate the ability to implement PADs for schools through interview.

Core Capability: Mass Care Services:

Definition: Provide life-sustaining and human services to the affected population, to include hydration, feeding, sheltering, temporary housing, evacuee support, reunification, and distribution of emergency supplies.

Jurisdictions: *Host Counties (Adams, Copiah, Hinds and Warren)*

Performance Measure:
Demonstrate the ability to sufficiently support emergency operations; adequately trained personnel and equipment to support Reception Center operations; and the direction and control exhibited by Congregate Care Managers to provide reasonable accommodations and contamination free shelter to evacuees.

Critical Task: Equipment, maps, displays, monitoring instruments, dosimetry, potassium iodide (KI), and other supplies are sufficient to support emergency operations. (NUREG-0654/FEMA-REP-1, H.7, 10; I.7, 8, 9; J.10.a, b, e; J.11, 12; K.3.a; K.5.b; Criterion **1e1**).

> **Host Counties**: ***Refer to the Core Capability: Operational Coordination section (page 3)*** for specific dates and times of specific OOS events. SAV"s will be conducted in conjunction with the OOS events for each Host County. The SAV includes assessment of monitoring instruments, dosimetry, and KI. The SAV dates/results will be provided to evaluators by the Site Emergency Management Specialist.

Critical Task: The OROs issue appropriate dosimetry, KI 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. OROs maintain appropriate record keeping of the administration of KI to emergency workers. (NUREG-0654/FEMA-REP-1, J.10.e; K.3.a, b; K.4; Criterion **3a1**).

Host Counties: FEMA Evaluators will observe the Radiation Exposure Control briefing for each Host County at or before commencement of exercise activities.

Critical Task: The reception center facility has appropriate space, adequate resources, and trained personnel to provide monitoring, decontamination, and registration of evacuees. (NUREG-0654/FEMA-REP-1, A.3; C.4; J.10.h; J.12; Criterion **6a1**).

Host Counties: Staff responsible for the radiological monitoring of evacuees must demonstrate the capability to attain and sustain, within about 12 hours, a monitoring productivity rate per hour needed to monitor the 20 percent EPZ population-planning base. The 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 procedure. For demonstration of monitoring, decontamination, and registration capabilities, a minimum of six evacuees must be monitored per station using equipment and procedures specified in the plans/procedures. The monitoring sequences for the first six simulated evacuees per monitoring team will be timed by the evaluators to determine whether the 12-hour requirement can be met. ***Refer to the Core Capability: Operational Coordination section (page 3)*** for specific events and times.

SAV"s will be conducted in conjunction with the OOS events for each Host County. The SAV includes assessment of monitoring instruments, dosimetry, and KI. The SAV dates/results will be provided to evaluators by the Site Emergency Management Specialist.

Critical Task: 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/FEMA-REP-1, J.10.h, J.12; Criterion **6c1**).

Core Capability: Public Health, Healthcare & Emergency Medical Services:
Definition: Provide lifesaving medical treatment via Emergency Medical Services and related operations and avoid additional disease and injury by providing targeted public health, medical, and behavioral health support, and products to all affected populations.

Jurisdictions: *Host County (Warren):*

Performance Measure:
Demonstrate the ability to sufficiently support emergency operations; capability to implement emergency worker exposure control; and adequately trained personnel and resources to support transport, medical and decontamination operations.

Critical Task: At least two communications 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/FEMA-REP-1, F.1, 2; Criterion **1d1**).

Critical Task: Equipment, maps, displays, monitoring instruments, dosimetry, potassium iodide (KI), and other supplies are sufficient to support emergency operations. (NUREG-0654/FEMA-REP-1, H.7, 10; I.7, 8, 9; J.10.a, b, e; J.11, 12; K.3.a; K.5.b; Criterion **1e1**).

> **Host County** (Warren): ***Refer to the Core Capability: Operational Coordination section (page 3).*** The SAV dates/results will be provided to evaluators by the Site Emergency Management Specialist.

Critical Task: The OROs issue appropriate dosimetry, KI 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. OROs maintain appropriate record keeping of the administration of KI to emergency workers. (NUREG-0654/FEMA-REP-1, J.10.e; K.3.a, b; K.4; Criterion **3a1**).

> **Host County** (Warren): "OROs must demonstrate the capability to provide emergency workers (including supplemental resources) with the appropriate direct-reading and permanent record dosimetry, dosimeter chargers, KI, and instructions on the use of these items." FEMA Evaluators will observe the Radiation Exposure Control briefing for each Host County at or before commencement of exercise activities.

Critical Task: 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/FEMA-REP-1, F.2; H.10; K.5.a, b; L.1, 4; Criterion **6d1**).

> **Host County** (Warren): The Medical Service Drill will be conducted in accordance with Warren County Emergency Medical Services/Vicksburg Fire Department Procedure for Response to Radiological Emergencies and The Hospital Emergency Department Management Of Radiation Accidents Plan for The River Region Medical Center, Vicksburg, MS.

> **Host County** (Warren): Medical Service Drill locations are Vicksburg Fire Station #5 and River Region Medical Center, Vicksburg MS. The Medical Service Drill will be conducted on March 14, 2017 at 8 AM.