Final After Action Report

Robinson Nuclear Plant
Radiological Emergency Preparedness Exercise
Exercise Date: July 11, 2017

October 18, 2017

FEMA

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Executive Summary

On July 11, 2017, the Department of Homeland Security, Federal Emergency Management Agency Region IV Radiological Emergency Preparedness Program staff evaluated a plume exposure pathway exercise in the emergency planning zone for the Robinson Nuclear Plant. The evaluations of out of sequence activities conducted during the weeks of May 1 and May 8, 2017 are also included in this report.

The Robinson Nuclear Plant is located west of the Lake Robinson Dam in western Darlington County and is owned and operated by Duke Energy. The Robinson Nuclear Plant emergency planning zone is divided into 11 emergency response planning zones. The 10-mile emergency planning zone encompasses parts of Chesterfield, Darlington and Lee Counties with a population of approximately 36,000.

The purpose of the exercise was to assess the level of state and local preparedness in responding to an incident at Robinson Nuclear Plant. This exercise was conducted in accordance with FEMA's 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 July 11-12, 2015. The qualifying emergency preparedness exercise was conducted March 11 and 12, 1981.

Officials and representatives from the State of South Carolina; the risk counties of Chesterfield, Darlington and Lee, and Duke Energy participated in this exercise. State and local officials demonstrated knowledge of their emergency response plans and procedures and successfully implemented them. The Federal Emergency Management Agency evaluation team did not identify any Level 1 findings. A Level 2 finding was identified in Darlington County on May 3, 2017 during a demonstration of emergency worker monitoring and decontamination. The county provided training to the Darlington County Fire Department emergency worker staff. The Darlington County Fire Department successfully demonstrated the correction of the level 2 finding on July 12, 2017.

The Federal Emergency Management Agency 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.

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Section 1: Exercise Overview

1.1 Exercise Details

Exercise Name
Robinson Nuclear Plant Plume Pathway Radiological Emergency Preparedness Program Evaluated Exercise

Type of Exercise
Plume

Exercise Date(s)
July 11, 2017

Locations
See the Extent of Play Agreement in Appendix D for a complete listing of locations.

Sponsors

South Carolina Emergency Management Division
2779 Fish Hatchery Road
West Columbia, South Carolina 29172

Robinson Nuclear Plant
3581 W. Entrance Road
Hartsville, South Carolina 29550

Program
Department of Homeland Security/Federal Emergency Management Agency
Radiological Emergency Preparedness Program

Mission
Response

Scenario Type
Plume Partial Participation Radiological Emergency Program Exercise

1.2 Exercise Planning Team Leadership

Lawrence Robertson
Central Section Chief
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3003 Chamblee Tucker Road
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Lee Jackson
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Nathan Nienhius
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Fixed Nuclear Facility Program Manager
2779 Fish Hatchery Road
West Columbia, South Carolina, 29172

Kristina Verderame
Fixed Nuclear Facility Coordinator
South Carolina Emergency Management Division
2779 Fish Hatchery Road
West Columbia, South Carolina 29172

1.3 Participating Organizations

Agencies and organizations of the following jurisdictions participated in the 2017 Robinson Nuclear Plant exercise.

State Jurisdictions

State Agencies:

South Carolina Emergency Management Division
South Carolina Law Enforcement Division
South Carolina Highway Patrol
Department of Agriculture
Department of Health and Environmental Control
Department of Social Services
Department of Transportation
Department of Natural Resources

Risk Jurisdictions:

Darlington County
Chesterfield County
Lee County

Private Organizations:

American Red Cross
The Salvation Army

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Section 2: Exercise Design Summary

2.1 Exercise Purpose and Design

The Federal Emergency Management Agency administers the Radiological Emergency Preparedness Program pursuant to the regulations found in Title 44 Code of Federal Regulation parts 350, 351, and 352. Title 44 Code of Federal Regulation part 350 codifies sixteen planning standards that form the basis for radiological emergency response planning for state, tribal, and local governments impacted by the emergency planning zones established for each nuclear power plant site in the United States. United States Nuclear Regulatory Commission regulations also codify the sixteen planning standards for the licensee. Title 44 Code of Federal Regulation Part 350 sets forth the mechanisms for the formal review and approval of state, tribal, and local government radiological emergency response plans and procedures by the Federal Emergency Management Agency. One of the Radiological Emergency Preparedness 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 procedures and verification of the periodic requirements set forth in *"Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980* (NUREG-0654/FEMA-REP-1) through the annual letter of certification and staff assistance visits enables the Federal Emergency Management Agency to provide a statement with the transmission of this final after action report to the United States 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 plans for the Robinson Nuclear Plant to the Federal Emergency Management Agency Region IV by the State of South Carolina and involved local jurisdictions occurred on February 13, 1981. Formal approval of the State of South Carolina's radiological emergency response plans was granted on December 29, 1981, under 44 CFR 350.

2.2 FEMA Exercise Objectives and Core Capabilities

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 methodology, the exercise objectives meet the Radiological Emergency Preparedness Program requirements and encompass the emergency preparedness evaluation areas. The critical tasks to be demonstrated were negotiated with the State of South Carolina and the participating counties. The Core Capabilities demonstrated during this exercise were:

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.

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: 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.

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 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 Services: 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.

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, county emergency operations centers, and field activities by exercise play and discussion of plans and procedures.

Objective 2: Demonstrate the ability to provide protective action decisions affecting state and county emergency workers and public through exercise play and discussions of plans and procedures.

Objective 3: Demonstrate the ability to implement protective actions for state and county emergency workers and public through exercise demonstration.

Objective 4: Demonstrate the ability to activate the prompt alert and notification system utilizing the primary notification system and the emergency alert system through exercise play.

Objective 5: Demonstrate the effectiveness of plans, policies, and procedures in the joint information center and the joint information system for public and private sector emergency information communications.

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

Objective 7: Demonstrate the ability to provide dose projection and protective action decision making for the plume phase.

Objective 8: Demonstrate the ability to provide appropriate space, adequate resources, and trained personnel to provide transport, monitoring, decontamination, and medical services to contaminated injured individuals.

2.3 Scenario Summary

~0700 Drill window open.

~0725 Assume the watch for drill.

~0735 "A" Main Feed Water Pump Trips

~0736 Automatic Reactor Trip fails and manual actions do not shut down reactor

~0741 Reactor tripped manually using local trip breakers

~0741 Steam Driven Auxiliary Feed Water Pump Trips

~0741 Pressure Operated relief value sticks open due to Controller Malfunction.

~0751 **Alert** declared **SA6.1**
An automatic or manual trip fails to shut down the reactor as indicated by reactor power ≥ 5%

AND Manual trip actions taken at the RTGB are **not** successful in shutting down the reactor as indicated by reactor power ≥ 5% (Note 8)

~0756 Activation of the Emergency Response Organization Notification System

~0806 Notifications to the State and County (15 minutes of the Alert Declaration)

~0921 Following Emergency Response Facilities are activated, Operational Support Center, Emergency Operations Facility, Technical support Center within 75 minutes of Emergency Response Organization Notification of Alert.

~0956 Joint Information Center is activated (within 120 minutes of Emergency Response Organization Notification of Alert)

~1005 Loose Parts Monitoring System Alarms

~1027 Steam Generator Tube Rupture occurs (~ 400 GPM)

~1042 **Site Area Emergency** declared by this time **FS1.1**
Loss or potential loss of **any** two barriers (Table F-1)

~1057 Notifications to the State and County (15 minutes of the Site Area Emergency Declaration)

~1242 Loose Parts Monitoring System Alarms

~1327 Field Monitoring Team sees a valid field measurement of 1,000 mR/hr closed window at fence

~1342 **General Emergency** declared by this time **RG1.3**
Field survey results indicate EITHER of the following at or beyond the SITE BOUNDARY: Closed window dose rates > 1,000 mR/hr expected to continue for ≥ 60 min.

OR
Analyses of field survey samples indicate thyroid CDE > 5,000 mrem for 60 min. of inhalation. (Notes 1, 2)

~1342 Protective Action Recommendation development and approval for **A-0, D-1, D-2, E-1, E-2**

~1357 Notifications to the State and County (15 minutes of the GE Declaration and Protective Action Recommendations)

~1430 **TERMINATION** of the Drill.

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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 July 11, 2017 Plume Pathway exercise and out-of-sequence interviews and demonstrations in May 2017.

Each jurisdiction and functional entity was evaluated based on their demonstration of Core Capabilities and their equivalent Radiological Emergency Preparedness criteria as delineated in the Federal Emergency Management Agency Radiological Emergency Preparedness 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

Homeland Security Exercise Evaluation Program 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 Federal Emergency Management Agency Region IV Radiological Emergency Preparedness Program. 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 stand-alone capability summaries are listed in section 3.3 of this report.

Operational Coordination: Key leadership personnel established and maintained a unified and coordinated operational structure which provided effective and responsive direction and control. Critical stakeholders were appropriately integrated in the overall decision-making process, which enabled protective action recommendations to be evaluated in a sensible and timely manner. This process included input from both relevant critical stakeholders and support personnel and took into account the safety and well-being of the general public, property and business alike. From there, protective action decisions as a whole were made without undue delay.

Public Information and Warning: The jurisdictions as a whole demonstrated the ability to deliver coordinated, prompt, reliable and actionable information to the whole community through the use of clear, consistent and accessible means. Accurate initial information and follow on instructions were made with the formulation of news releases and press briefings being reviewed from the Joint Information System and conducted at the Joint Information Center. Alert and notification of the public and media was completed in a timely manner by simulated means of sounding of sirens, Emergency Alert System messaging, backup route alerting, waterway warning, news releases and press briefings. The simulated release of the aforementioned public information modes were consistent with protective action decisions and contained applicable and specific instructions relative to those decisions.

Environmental Response/Health and Safety: State emergency support function 10 provided appropriate staff and resources to support the response. They simulated the positioning and management of field monitoring teams and provided appropriate instructions for emergency worker exposure control.

The availability of guidance and resources to address hazardous materials was integral in support of the responder operations and the affected communities. The Emergency Operations Facility liaisons communicated well with the state emergency operations center to ensure that state and county responses and protective action recommendations were coordinated properly.

Workers in the risk counties of Chesterfield and Lee demonstrated their ability to monitor and decontaminate evacuees and emergency workers. They demonstrated proficiency in using monitoring equipment, exposure control equipment, and operating procedures. In Darlington County, an emergency worker monitoring and decontamination demonstration resulted in a Level 2 finding due to improper use of monitoring equipment, improper monitoring techniques, and failure to prevent the spread of contamination. This finding was subsequently resolved.

Situational Assessment: The Department of Health and Environmental Control, Dose Assessment Coordinator demonstrated proficiency in the use of dose assessment software to calculate dose projections independent of the Robinson Nuclear Plant dose projections. The staff calculated hypothetical dose projections based on plant conditions and possible release scenarios. When field team monitoring data became available, the staff used that data to modify the dose projection and support protective action recommendations.

The Emergency Response Coordinator participated in the state and county decision-making conference calls providing timely and technically sound recommendations to decision makers. The field monitoring teams and the mobile laboratory were not participants in the exercise.

On-Scene Security and Protection: State and local law enforcement agencies demonstrated the capability to 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. The implementation of traffic and access control points were correctly assessed and established in a timely manner.

Critical Transportation: School officials effectively demonstrated the ability to implement protective actions for affected local schools.

Mass Care: Congregate care center staff demonstrated the ability to provide life-sustaining services to the affected populations with a focus on hydration, feeding and sheltering to those who had the most need as well as support for reunifying families. The jurisdiction as a whole demonstrated that the centers had resources to provide services and accommodations consistent with planning guidelines. The shelter managers demonstrated the procedures to assure that evacuees had been monitored for contamination and had been decontaminated as appropriate before entering the congregate care facilities.

Public Health, Healthcare, and Medical Services: Qualified medical personnel successfully demonstrated the ability to provide for transport, treatment and decontamination of a contaminated injured individual. Emergency Medical Services and hospital personnel exhibited good knowledge of contamination control and decontamination techniques and exposure limits. All personnel were aware of the need to place medical treatment of the patient before performing decontamination.

3.3 Jurisdictional Summary Results of Exercise Evaluation

3.3.1 State Of South Carolina

3.3.1.1 State Emergency Operations Center

Operational Coordination Capability Summary:

South Carolina Emergency Management Division personnel demonstrated the ability to establish and maintain a unified and coordinated operational structure and process that appropriately integrated all critical stakeholders and supported the execution of core capabilities.

South Carolina Emergency Management personnel in the 24-hour warning point used effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner. When the initial notification of an Alert was received, the warning point personnel used a reserve calling system to automatically notify the appropriate personnel to staff the emergency operations center. Personnel received the notification within two minutes of the warning point initiating the call. Communication equipment included multiple telephone systems, radios, and computer systems. All methods of communications operated without any problems throughout the exercise. The emergency operations center was equipped with: multiple computer systems for displaying information on three large screens; 10- and 50-mile maps of the emergency planning zones; and hardcopies of plans and procedures.

The Chief of Operations and the Technical Officer provided direction and control and used a decision-making process, considering relevant factors and appropriate coordination, to ensure that an exposure control system, including the use of potassium iodide, was in place for the emergency workers. Prior to contacting the risk counties, they conducted meetings with state agencies and reviewed data and potential actions. They used the conference bridge line to maintain constant communications with the risk counties and coordinated all protective action decisions with the county leaders. The decision for emergency workers to ingest potassium iodide was coordinated with Public Health and they ensured the information was forwarded to the counties.

Participants representing emergency support functions 1 (Transportation), 6 (Mass Care), 8 (Medical Services), 10 (Hazardous Materials), 13 (Law Enforcement), 15 (Public Information), 16 (Emergency Traffic Management), and 19 (Military Support) collaborated and coordinated with leadership and other elements within the South Carolina State Emergency Operations Center to develop appropriate protective action decisions in response to an emergency at the Robinson Nuclear Power Plant.

Emergency support functions 8 (Medical Services) and 10 (Hazardous Materials) demonstrated exceptional coordination in the development of recommendations to state emergency operations center leadership for presentation to the affected counties during the bridge-line calls. Thoughtful consideration of data received from the plant status/condition software, the Emergency Operations Facility, and a utility liaison resulted in recommendations which were appropriate for both the current plant status and the evaluation of projections based on data trends. These were presented to State Emergency Operations Center leadership for discussion with local officials. The State's Dosimetry Redistribution Plan was implemented early, ensuring necessary dosimetry resources were available when required.

Prior to a recommendation for the ingestion of potassium iodide, the designated public health physician was contacted and briefed on protective actions for the public. Despite knowledge that the designated physician was on vacation, extraordinary effort was made to contact him via cellphone. After multiple attempts, the physician was contacted and briefed on the emergency; he subsequently ordered the publication of a public health recommendation that was notionally signed and disseminated to the affected counties.

Emergency support function 1 (Transportation) and 16 (Emergency Traffic Management) were presented with multiple impediments to the emergency response, including traffic accidents that involved livestock, hazardous materials, and a passenger bus. In each instance, emergency response officials demonstrated real-world actions using real-world time estimates to resolve the impediments.

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

Situational Assessment Capability Summary:

In accordance with the extent-of-play agreement, the Department of Health and Environmental Control staff were prepositioned in the area and promptly responded upon being notified of the emergency at the plant. All key positions were staffed and prepared to perform technical assessment functions prior to the activation of the State Emergency

Operations Center. The field monitoring teams and the mobile laboratory were not participants in the exercise. The primary communication system, the telephone, and the back-up radio system were operating and were used throughout the exercise. WebEOC was used and displayed. Individuals used their computers to access the Robinson Nuclear Plant emergency notification forms, emergency response data system and dose assessment software. The e-mail system was used effectively to communicate information. Maps of the 10-mile emergency planning zone were posted.

The dose assessment coordinator demonstrated proficiency in the use of dose assessment software to calculate dose projections independent of the Robinson Nuclear Plant dose projections. Prior to the start of the radiological release, the staff calculated hypothetical dose projections based on plant conditions and possible release scenarios. Following the start of the release, the staff first calculated dose projections based on plant conditions and the release pathway. When field team monitoring data became available, the staff used that data to modify the dose projection and support protective action recommendations. Department of Health and Environmental Control personnel also effectively used the Nuclear Regulatory Commission's Emergency Response Data System to stay current with changing plant conditions and to monitor trends.

The emergency response coordinator frequently obtained updated information from his staff and proactively discussed potential protective actions with the State Emergency Response Team Leader and the Division of Public Health Director. The emergency response coordinator participated in the state and county decision-making conference calls providing timely and technically sound recommendations to decision makers.

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

Public Information and Warning Capability Summary:

At the State Emergency Operations Center South Carolina Emergency Management Division Public Information personnel successfully demonstrated the capability to promptly alert, notify and warn the public of a simulated emergency at the Robinson Nuclear Plant, by coordinating (via conference call) with Chesterfield, Darlington, and Lee Counties, other state agencies and the utility. Two Emergency Alert System messages and four news releases were generated, approved and disseminated. A test Emergency Alert System message was mailed electronically to Radio Station WJMX, and its broadcast was simulated. The Public Information Officer was on the phone with the radio station's chief engineer during the process to verify that the message had been received. The transmission of Emergency Alert System messages one and two to WJMX was simulated. Both messages and all news releases were electronically mailed to the Joint Information Center for distribution to the media. They were also sent to the three risk Counties, and their placement was simulated on the state website and Facebook page, which provided additional emergency information for the public.

The state public inquiry function was located adjacent to the main Operations Room. The Public Inquiry staff responded to all calls with the correct information, or the correct information was obtained and a return call was made. As references, they used Messages, news releases, charts, calendars, brochures, and supervisory attendance at Operations Room briefings. False rumors were identified pertaining to potassium iodide and an accident on the plant site, which were provided to the Public Information Officer for transmittal to the Joint Information Center for correction at the next Media Briefing.

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

Joint Information System

Joint Information Center

Public Information and Warning Capability Summary

The ability to provide emergency information and instructions to the public and media was demonstrated at the Joint Information Center in support of the Robinson Nuclear Plant. It was through close coordination and collaboration, that state and county public information officers provided effective and unified emergency information for the public. This facility offered enough space for the public information officers and supplemental technical staffs from the State of South Carolina, and Darlington, Lee and Chesterfield Counties and the utility to perform the duties required of them.

The Joint Information Center served as the central point of contact for the distribution and release of information to the media and public during this event. This facility operated within a joint information system structure and was defined and supported through the various Emergency Operations Centers.

Activation of the facility was done in accordance with exercise agreements and jurisdictional plans following the declaration of Alert. Multiple redundant communication systems were demonstrated and there were no communications failures during the exercise. Additionally, an abundance of equipment and supplies were available to support operations.

Established protocols were followed when preparing, coordinating and disseminating news releases. Five media briefings were held during the exercise. Prior to each briefing, each agency spokesperson discussed and coordinated their message for the briefing. The spokespersons answered all questions asked of them and were able to discuss what actions have been taken by their organizations.

A critical aspect of ensuring accurate information was released to the public was the ability to correct erroneous information and dispel rumors. The public inquiry and rumor control functions were performed outside of the Joint Information Center at each agency's dedicated facility. Identified rumors and trends were forwarded to the spokespersons to discuss and explain during the media briefings.

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

Emergency Operations Facility

Operational Coordination Capability Summary:

The South Carolina Emergency Management Division and the South Carolina Department of Health and Environmental Control, Division of Emergency Response, Nuclear Response and Emergency Environmental Surveillance Section provided liaisons to the Robinson Nuclear Plant on-site Emergency Operations Facility. The presence of these liaisons enhanced the essential flow of information between Duke Energy and the decisions makers of the respective response organizations operating at the state and risk county emergency operations centers. The liaisons followed applicable procedures and performed their respective duties in an efficient and professional manner, thereby ensuring that state and county decision makers were kept up to date with accurate and timely information.

The liaisons worked closely with Duke Energy personnel in the Emergency Operations Facility to obtain the current plant conditions at the Robinson Nuclear Plant and to provide that information on a timely basis to the State Emergency Operations Center, and in turn to the risk counties. The South Carolina Emergency Management Division liaison effectively facilitated the flow of information to various queries and requests between the utility and state and county agencies. For example, the South Carolina Emergency Management Division liaison promptly coordinated an exchange of information between the utility and county officials on the impact of various simulated events such as a traffic accident, a dam failure, and a railroad derailment on potential evacuation routes. The South Carolina Department of Health and Environmental Control liaison knowledgably interacted with utility dose assessment personnel and ensured the timely flow of information, including radiological monitoring and the results of dose modeling, to the state dose assessment staff at the State Emergency Operations Center. Both liaisons provided substantive information to the State Emergency Operations Center, and in turn to the risk counties on the basis for the utility's protective action recommendations.

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

3.3.2 Risk Jurisdictions

3.3.2.1 Darlington County

Operational Coordination Capability Summary:

Darlington County emergency services personnel successfully demonstrated the ability to alert, mobilize and activate facilities and staff in a timely manner. Emergency operations center staff, supporting emergency support function representatives, and non-governmental organizations successfully established and maintained an effective operational structure in response to a radiological emergency. Through use of redundant and reliable communications systems along with the readily available equipment and supplies, emergency operations were found to be sufficient to support 24-hour operations.

The director maintained direction and control in a systematic and methodical manner. Additionally, the director was proactive in providing informative briefings and had each emergency support function representative brief their response. The Robinson Nuclear Plant liaison's simple explanation of plant conditions and interpretation of technical data enabled the county representatives to have a better understanding of the situation and enhanced their response. All emergency support personnel demonstrated knowledge related to how their agency would respond to an event.

Protective action recommendations were considered, discussed and decisions were made in a unified and timely manner taking all known information and situational conditions into account.

Protective actions for persons with disabilities and those with access/functional needs were demonstrated and coordinated amongst the staff and other risk counties. School officials implemented effective protective actions and coordinated same with internal and external partners alike. Traffic control was managed by the South Carolina Highway Patrol and Darlington County Sheriff's Office. Impediments impacting evacuation routes were given by inject and notionally played throughout the duration of the exercise.

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

Public Information and Warning Capability Summary:

The Darlington County Emergency Service Director, Public Information Officer and staff effectively demonstrated the ability to inform and warn the public during this exercise. This included primary alerting and notification of the public through activation of the alert and notification system, the ability to provide backup alerting in case of siren failure, and the ability to provide accurate emergency information and instructions to the public and news media in a timely manner.

Darlington County emergency services personnel demonstrated the procedures for activating the alert and notification system with coordination from the state and other risk counties. After receiving the Site Area Emergency notification, the director coordinated the decision to activate the siren system. Per the extent-of-play agreement, the initial siren activation was completed by silent test of the system. After the silent test was completed, the report of activation indicated a partial failure of siren D12. This partial failure would not have impacted the public because of the overlap of four adjacent sirens. Through interview, the director described how backup route alerting of siren D12's coverage area would be accomplished by law enforcement personnel.

Under the direction of the Darlington County emergency services director, the public information officer developed accurate and timely news releases using pre-scripted messages from their procedures. Darlington County news releases were prepared in the emergency operation center, approved by the director and forwarded to the county public information officer in the joint information center for release. Public inquiry and rumor control were demonstrated by the public information officer and assistant. They accurately answered eight calls during the exercise by residents requesting general situational and evacuation information and clarifications.

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

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

During an out-of-sequence activity, two South Carolina Highway Patrol officers and one county sheriff's deputy demonstrated, through interview, the capability to provide appropriate traffic and access control and identify/resolve impediments to evacuation.

The responsibility to deploy officers and establish these traffic control points rests with the law enforcement representative at the emergency operations center and according to plans would be done at or prior to a declaration of a Site Area Emergency. These officers were equipped with direct reading dosimeters, RAD 360 Electronic Dosimeters, 800 MHz radios in their patrol units, 800-megahertz hand held radios, and personal cell phones. Both the hand held and cell phones were observed to work during the exercise. Both officers' units were equipped with operating emergency lights, traffic cones, traffic vests, and flashlights with orange or yellow wand attachments. Both were aware that additional equipment could be obtained by radio contact with their dispatch.

The officers were provided a radiological safety briefing, by the county radiological officer, detailing a simulated incident at the Robinson Nuclear Plant. Each officer was issued a radiological equipment kit that contained the following: direct-reading dosimeter, dosimeter charger, simulated potassium iodide, job aids, exposure control forms, etc. They were also issued simulated permanent record dosimeters.

Each officer zeroed the direct-reading dosimeter with the charger and completed the appropriate forms. The officers were aware of their exposure limits and turn back values, the frequency of readings and recordings, and proper wearing of both the direct-reading dosimeter and the simulated permanent-record dosimeters. Further, they were aware of why they would take potassium iodide, proper dosage, and possible side effects. They were aware that at the end of shift all equipment and records would be returned to the radiological officer at the emergency operations center or an arrangement would be made if they were to report to an emergency worker monitoring and decontamination station.

The law enforcement representative stated that traffic control points could be activated at any time, but no later than the declaration of a Site Area Emergency at the Robinson Nuclear Plant and that officers would be contacted by the dispatch office either by radio if on duty or telephone if being called in. The three traffic control points addressed during this interview were 16B, 16E, and 16F.

The law enforcement representative also stated that should an impediment to evacuation be identified, either by an officer or a report from a citizen, sufficient resources would be available. These resources could be obtained through the law enforcement dispatch, which would contact the public works department. In the event law enforcement dispatch had problems obtaining sufficient or timely assistance they would contact the emergency operations center who would coordinate with the state emergency operations center for further assistance.

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

Core Capability: Environmental Response/Health and Safety

During the May 3, 2017, emergency worker decontamination station demonstration Federal Emergency Management Agency evaluators identified a Level 2 finding concerning the inability of the emergency worker decontamination station staff to properly bring their radiological monitoring instruments into operation and to follow procedures when using the hand held monitoring instruments to properly monitor the emergency worker. On July 12, 2017, after receiving additional training, the emergency worker decontamination station staff from the Darlington County Fire Department successfully demonstrated their ability to monitor and decontaminate if necessary emergency workers. The emergency worker decontamination stations had trained staff, an appropriate amount of space and sufficient resources to run the emergency worker decontamination station.

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

Level 2 Finding: 54-17-6.a.1, 6.b.1-L.2-01

Condition: Emergency workers were unfamiliar with the procedure to operationally check radiological survey instruments. They did not demonstrate the ability to consistently perform a successful operation check on the Ludlum 3 survey meters. The radiation monitor who conducted the hand survey, with the Ludlum-3, did not follow procedures to monitor the emergency worker. He did not survey the arms and hands. Protective gloves were seldom changed. Procedures designed to prevent cross contamination were not followed.

Possible Causes: Insufficient training and familiarization in the use of monitoring equipment and cross contamination procedures. Although written procedures were available, the emergency worker decontamination station staff did not refer to them during the demonstration. The emergency workers did not understand: how to perform an instrument source check or what it indicated; what the purpose of the red cap on the proes was for; how to interpret the scales on the survey instruments; or how to properly survey an emergency worker for contamination.

References:

1. State of South Carolina, Standard Technical Radiological Operating Procedures, SOP 6.11, Exposure Control Officer/Site Safety Officer, March 2015.
2. Darlington County Emergency Worker Monitoring and Decontamination Standard Operating Procedures

Effect: Improper and inconsistent personnel monitoring may result in a health hazard for personnel. Incorrect operational checks of survey equipment could result in incorrect readings. Additionally, failure to minimize cross contamination will increase the health hazard at the emergency worker decontamination station.

Recommendations:

1. Provide refresher training, including hands-on-training with the radiological equipment, for emergency worker decontamination station staff to ensure they become knowledgeable of their duties, including the use of radiological monitoring equipment and the procedures used to monitor individuals and to prevent the spread of contamination.

Schedule of Corrective Action: Resolved on July 12, 2017.

Core Capability: Environmental Response/Health and Safety Level 2 Finding –

Resolved:

Hand held survey meters were operationally checked and placed into service in accordance with manufactures instructions. The emergency worker decontamination station staff used a guide while performing the operability checks to ensure each step was followed correctly.

One member of each three person team was issued one 0-5 roentgen direct-reading dosimeter, and two direct-reading dosimeters were issued to each four person team. The direct-reading dosimeters were zeroed using a dosimeter charger prior to issuance. Dosimetry was checked every 15 minutes and recorded by the safety officer. The safety officer was familiar with the reporting value and turn back value. The teams stayed together in groups and were familiar with the concept of group dosimetry.

The pre-scripted radiological briefing provided to staff discussed the equipment that had been issued, including survey meters and exposure control equipment. The brief reminded workers to properly put their equipment into service, and how to wear dosimetry and how often to check it. Communications, points of contact, and reference resources available to team members were also discussed. During the briefing, it was stated that the order had been given for emergency workers to take KI, however no emphasis or further explanation was provided about the statement. Some emergency workers were under the impression that they had not been told to ingest while others were not. It was later determined that leadership's intention was for the emergency workers to ingest their KI.

Vehicles were sprayed with a firehose prior to entering the facility. They were then monitored for contamination. The survey probe was held at 1 to 3 inches from the vehicle surface and the probe speed was at about 2 inches per second, which demonstrated proper monitoring technique in accordance with their plans. The vehicles were surveyed in appropriate locations to determine if a vehicle was contaminated. The exercise scenario indicated the contaminated vehicle contained contamination on the inside air vents, which according to county plans required quarantining the vehicle. No decontamination of vehicles was demonstrated. Through interview it was explained that for vehicles where the air vents were not contaminated, they would attempt decontamination of the interior and exterior of the vehicle. They would wipe down the interior surfaces until there was no more removable contamination and they would flush the exterior surfaces, tires, and wheel wells with water until contamination levels were below 300 counts per minute.

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

a. Level 1 Finding: None

b. Level 2 Finding: 6.a.1, 6.b.1

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: 6.a.1, 6.b.1

e. Prior Level 2 Findings - Unresolved: None

Public Health and Medical Services Capability Summary:

Darlington County Emergency Services successfully demonstrated the capability to treat and transport an injured potentially contaminated patient in response to a radiological emergency at the Robinson Nuclear Plant. Before beginning the drill, the ambulance to be used for the demonstration began running hot and could not be used. Darlington County staff quickly obtained a replacement by coordinating with a local volunteer fire department. The ambulance team conducted a radiological and safety briefing, inventoried resources, checked and issued dosimetry, completed radiation exposure forms, and effectively donned personal protective equipment, prior to being dispatched to treat and transport the patient injured within the emergency planning zone. The county used checkpoints based on the exposure limits to inform dispatch of their location within the plume. On scene, the ambulance team quickly and effectively treated the patient's injuries, cocooned her, and moved her to the ambulance, without any cross contamination and in under 10 minutes, as stated in their standard operating guide. Additionally, the driver used the horn on the vehicle to inform the team of their time on station. Dosimetry was checked several times, in fifteen to thirty-minute intervals, and documented by the driver. Doffing was successfully demonstrated by a member of the team with the assistance of hospital personnel, after the patient was successfully transferred to the hospital. The ambulance team was knowledgeable, professional and promptly performed their tasks.

The Carolina Pines Regional Medical Center demonstrated the capability to provide appropriate space, resources and trained personnel for monitoring, decontamination and medical services to contaminated injured individuals. The hospital received the appropriate notifications from the county and the ambulance so that they had enough time to prepare to receive the patient. The hospital used appropriate radiological survey equipment to determine the level of contamination on the patient and on the wounds. The survey data was documented. The Triage Officer/physician determined that the patient could be decontaminated prior to treatment of the wounds without compromising patient treatment. Patient medical data was recorded. Effective protocols were used for

transferring equipment, biological samples and the patient across the contamination control line. Decontamination of wounds was accomplished by repeated rinsing and swabbing with water. All radioactive liquids and solid waste were collected for disposal by Robinson Nuclear Plant personnnel. Personnel protective equipment was worn and the appropriate contamination control measures were exercised. Electronic direct-reading and permanent-record dosimetry was issued and read every 30 minutes. The Radiation Exposure Records were filled out. Hospital personnel demonstrated removal of personnel protective equipment. The Hospital Radiation Response Team was knowledgeable, professional and performed their duties in accordance with plans and procedures.

For this capability, the following Radiological Emergency Preparedness criterion was MET: 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

Critical Transportation Capability Summary:

The Darlington County School District representatives, through interview, effectively demonstrated the ability to implement protective measures to ensure the health and safety of the students and staff. The staff was well trained in the established protocols, knowledgeable of their responsibilities, plans and procedures, and very professional. All responses were in accordance with established plans, policies, and procedures.

For this capability, the following Radiological Emergency Preparedness criterion was 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

3.3.2.2 Chesterfield County

Operational Coordination Capability Summary:

The Chesterfield County staff and leadership successfully demonstrated the capability to alert, notify and mobilize personnel, and make and implement protective action decisions in a timely manner. Key members of the Chesterfield Crisis Management Team were alerted and mobilized in a timely manner following the notification of a radiological emergency at the Robinson Nuclear Plant. The director effectively disseminated important emergency response information to his staff and coordinated decisions with his staff, prior to discussing them on the conference bridge line. Implementation of protective actions were timely and in accordance with county plans and procedures. The crisis management team and leadership personnel were knowledgeable of their responsibilities within the emergency operations center, as well as within their field. The Team worked well together and received full support from the county administrator who was also present during the exercise.

The county emergency operations center was well equipped to support emergency response management for the county. Sufficient communications capabilities were available to assist in coordination and implementation of protective actions and notification. All crisis management team members had sufficient equipment and supplies to accomplishment emergency response activities.

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

Public Information and Warning Capability Summary:

Notification to the public of an emergency at Robinson Plant was successfully demonstrated through the director's coordination with state and the other effected counties. The initial siren activation, a silent test, was activated by Darlington County. The director monitored the activation of his sirens and identified a siren which did not appear to activate, but was confirmed activated by the Darlington County Director. The

Chesterfield County Director discussed the process of alerting the public within area covered by the presumably inoperable siren to include agencies tasked to perform route alerting and where they would receive radiological and safety briefings, alerting instructions, dosimetry and potassium iodide. The process was thoroughly coordinated amongst the appropriate staff members, to include the GIS specialist who utilized digital overlays and data to determine the approximate number of residences within the area affected by the inoperable siren. All notification planning and actions were conducted in a timely manner by knowledgeable crisis management team members.

Chesterfield County's Crisis Management Team successfully coordinated and implemented public notification of an emergency at the Robinson Nuclear Plant and protective action decisions. Three Chesterfield County press releases were coordinated and sent to the joint information center. Each message was coordinated and approved by the director prior to release to the public. Messages included all coordinated decisions. The public information officer communicated with Chesterfield's representative at the joint information center via email. The public information officer was consistent and performed multiple tasks in support of emergency response.

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

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

During an out-of-sequence activity, two Chesterfield County sheriff's deputys and one South Carolina Highway Patrol officer were interviewed and successfully demonstrated the capability to provide appropriate traffic and access control and identify/resolve impediments to evacuation.

The responsibility to deploy officers and establish these traffic control points rests with the law enforcement representative at the county emergency operations center and according to plans will be done at or prior to a declaration of a Site Area Emergency. These officers were equipped with 800-megahertz radios, 800-megahertz hand held radios, and personal cell phones.

After receiving a radiological safety briefing, each officer was issued a radiological equipment kit that contained the following: direct-reading dosimeter, dosimeter charger, simulated potassium iodide, job aids, and exposure control forms. Simulated permanent-record dosimeters were also issued. Each officer zeroed the direct-reading dosimeter with the charger and completed the appropriate forms. During the interview each officer demonstrated that they knew their exposure limits and turn back values, the frequency of readings and recordings, and proper wearing of dosimetry, usage of potassium iodide, the dosage and its side effects. They were also aware that at the end of shift all equipment and records would be returned to the emergency operations center or arrangement would be made if they were to report to an emergency worker monitoring and decontamination site.

The law enforcement representative at the emergency operations center can order the activation of the traffic control points at any time, but not later than the declaration of a Site Area Emergency. Law enforcement officers would be contacted by the dispatch office either by radio if on duty or telephone if being called in. The traffic control point addressed during this interview was CH-1, CH-2 and CH-3.

They also stated during the interview that should an impediment to evacuation be identified, either by an officer or a report from a citizen, adequate resources would be available through law enforcement dispatch, which contacts the public works department. In the event law enforcement dispatch has problems obtaining sufficient or timely assistance they can contact the county emergency operations center who can coordinate with the state for further assistance.

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

Core Capability: Environmental Response/Health and Safety Capability Summary:

The Chesterfield County reception center had more than enough space for evacuee vehicles and emergency vehicles to park. Vehicles were screened for contamination and were then directed to different parking areas. The use of color coding signs and using

two different areas for vehicles to park depending upon the initial screening results was a very good process.

Emergency workers were issued appropriate dosimetry and were instructed on the exposure limits, contamination limits, and how often to read their dosimeters. Radio calls to each station would also be made to remind workers to read their dosimeters. Workers had cards to record their readings and knew to radio in any results. Chesterfield County had sufficient amounts of survey equipment and dosimetry. Workers were knowledgeable of how to use the equipment and knew their exposure and contamination limits.

The process for monitoring and decontaminating evacuees and emergency workers was very good. There were numerous color-coded signs placed to direct evacuees and emergency workers to the correct locations. Signs and posters were placed at all workstations to remind workers how to use their equipment and what their exposure and contamination limits were.

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

Critical Transportation Capability Summary:

The Chesterfield County School District Superintendent, through interview, effectively demonstrated the ability to implement protective measures to ensure the health and safety of the students and staff. He was very knowledgeable of the district responsibilities, plans and procedures. All responses were in accordance with established plans, policies, and procedures.

For this capability, the following Radiological Emergency Preparedness criterion was 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

Mass Care Services Capability Summary:

Chesterfield County representatives for the Department of Social Services, American Red Cross, and the Department of Health and Environmental Control successfully demonstrated that the Chesterfield County shelter was equipped with adequate resources to provide services and accommodations consistent with American Red Cross planning guidelines.

The American Red Cross managed the shelter with Department of Social Services representatives in charge of registration of evacuees as they entered the facility. Representatives from the Department of Health and Environmental Control were available to provide guidance, distribution, and recording of potassium iodide distribution.

The American Red Cross Manager carefully instructed the registration staff on procedures for determining if evacuees attempting to enter the shelter had been monitored for contamination and decontaminated as appropriate. They were told to only register and allow shelter access to evacuees that presented a red wristband. The red wristband indicated that the evacuee had been monitored and was clean or monitoring indicated contamination levels of 300 counts per minute or less. The American Red Cross Manager explained that only evacuees wearing a red wristband should be coming to the shelter, and if an evacuee were to show up with no red wristband, that they were to be directed back to the decontamination operation. Service animals would be allowed into the shelter and all other animals would be managed by the local animal shelter.

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

3.3.2.3 Lee County

Operational Coordination Capability Summary:

Lee County emergency management officials successfully demonstrated the ability to respond to a radiological emergency. Lee County had a variety of automated and manual notification methods to alert the emergency operations center staff in a timely manner. The director effectively gathered pertinent emergency information and analyzed it, making appropriate decisions based on input from his key staff. Periodic briefings by the director and assigned liaison representatives kept the staff informed of emergency conditions and plant status.

The emergency operations center had multiple communication systems, to include personal computer Internet access, electronic mail, commercial landlines, cell phones, and other hand-held electronic devices. Backup communications also included facsimile machines, 800-megahertz radios, and local government frequency radios. An electronic incident management system was used to maintain situational awareness and track assistance requests. Status calls and discussions among South Carolina Emergency Management Division and Darlington and Chesterfield counties concerning protective action decisions were coordinated using dedicated notification and conference bridge lines. Equipment and supplies were sufficient to sustain emergency operations for an extended time period.

Agency representatives were knowledgeable of appropriate dosimetry, potassium iodide, and their procedures to ensure the safety of emergency workers. The staff performed effective planning to evacuate persons identified with access/functional needs, and to ensure the safety of school children and staff. County health department representatives were prepared to make potassium iodide available to the general public as required. Law enforcement representatives provided details on traffic control points and clearing road impediments. Staff members were knowledgeable and effectively used county plans to ensure the safety of emergency workers and the general public.

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

Public Information and Warning Capability Summary:

The Lee County Emergency Management Director and the County Public Information Officer effectively prepared, coordinated and promptly released reliable and actionable information relating to an accident at Robinson Nuclear Plant to the residents of Lee County. A total of three news releases and two emergency alert system messages were disseminated. All messages released included the four elements required by current Federal Emergency Management Agency Radiological Emergency Preparedness Program guidance.

Activation of the primary alert and notification system was timely. There were no siren failures in Lee County during the alert phase. Backup route alert procedures were verified to be effective through discussion with Lee County Sheriff's Office Deputies in the emergency operations center.

The public inquiry hotline was professionally and competently managed by the Public Information Officer in the emergency operations center.

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

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

During an out-of-sequence activity, two Lee County sheriff's deputies demonstrated, through interview, the capability to provide appropriate traffic and access control and identify/resolve impediments to evacuation.

The responsibility to deploy officers and establish these traffic control points rests with the law enforcement representative at the county emergency operations center and according to plans will be done at or prior to a declaration of a Site Area Emergency. These officers were equipped with 800-megahertz radios in their patrol units, 800 megahertz hand held radios, and personal cell phones. Both officers' vehicleswere sufficiently equipped to respond to an emergency at the Robinson Nuclear Plant.

Each officer was issued a radiological equipment kit that contained the following: direct-reading dosimeter, dosimeter charger, simulated potassium iodide, job aids, and exposure control forms. Each officer zeroed the direct-reading dosimeter with the charger and completed the appropriate forms. During the interview both officers demonstrated that they knew their exposure limits and turn back values, the frequency of readings and recordings, and proper wearing of dosimetry, usage of potassium iodide, the dosage and its side effects. They were also aware that at the end of shift, all equipment and records would be returned to the emergency operations center, or arrangement would be made if they were to report to an emergency worker monitoring and decontamination site.

The law enforcement representative at the emergency operations center can order the activation of the traffic control points at any time, but not later than the declaration of a Site Area Emergency. Law enforcement officers would be contacted by the dispatch office either by radio if on duty or telephone if being called in. The traffic control points addressed during this interview were LE-1 and LE-2.

They also stated during the interview that should an impediment to evacuation be identified, either by an officer or a report from a citizen, adequate resources would be available through law enforcement dispatch, which contacts the public works department. In the event law enforcement dispatch has problems obtaining sufficient or timely assistance they can contact the county emergency operations center who can coordinate with the state for further assistance.

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

Core Capability: Environmental Response/Health and Safety Capability Summary:

Lee County Emergency Management personnel and Lee County Fire Department personnel demonstrated the ability to monitor and decontaminate emergency response and evacuee vehicles and to monitor and decontaminate emergency personnel and evacuees.

The Lee Central High School reception center area had more than enough space for evacuee vehicles and emergency vehicles to park. Vehicles were screened for contamination and were then directed to decontamination stations or to parking areas.

Emergency workers were issued appropriate dosimetry and were instructed on the exposure limits, contamination limits, and how often to read their dosimeters. Workers had cards to record their readings. There was appropriate amounts of survey equipment and dosimetry. Workers were knowledgeable of how to use the equipment and knew their exposure and contamination limits.

The process for monitoring and decontaminating evacuees and emergency workers was very good. Emergency workers displayed good communication and coordination in completing decontamination of personnel and used good techniques for monitoring and in determining decontamination processes.

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

Mass Care Services Capability Summary:

Lee County representatives for the Department of Social Services, American Red Cross, and the Department of Health and Environmental Control successfully demonstrated that the Lee County shelter was equipped with adequate resources to provide services and accommodations consistent with American Red Cross planning guidelines.

The American Red Cross managed the shelter with Department of Social Services representatives in charge of registration of evacuees as they entered the facility. Representatives from Department of Health and Environmental Control were available to provide guidance, distribution, and recording of potassium iodide distribution.

The American Red Cross Manager carefully instructed the registration staff on procedures for determining if evacuees attempting to enter the shelter had been monitored for contamination and decontaminated as appropriate. They were told to only register and allow shelter access to evacuees that presented a red wristband. The red wristband indicated that the evacuee had been monitored and was clean or monitoring indicated contamination levels of 300 counts per minute or less. The American Red Cross Manager explained that only evacuees wearing a red wristband should be coming to the shelter and if an evacuee were to show up with no red wristband that they were to be directed back to the decontamination operation. Service animals would be allowed into the shelter and all other animals would be managed by the local animal shelter.

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

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Section 4: Conclusion

Overall, the Robinson Nuclear Plant partial participation plume phase radiological emergency exercise was a success. Officials and representatives from the State of South Carolina, the risk counties of Chesterfield, Darlington,and Lee, and Duke Energy, as well as numerous volunteers participated in the exercise. The cooperation and teamwork of the participants was evident throughout all phases of the exercise.

The Federal Emergency Management Agency 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.

During this exercise, the Federal Emergency Management Agency did not identify any Level 1 findings, however, during an out of sequence activity (Emergency Worker Monitoring and Decontamination) one Level 2 finding was identified in Darlington County. The finding involved emergency workers being unfamiliar with the proper procedures to operate radiological monitoring equipment, improper personnel monitoring techniques and, the proper procedures to prevent the spread of contamination. Darlington County demonstrated the correction of this finding during a July 12, 2017, Emergency Worker Decontamination Station drill.

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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				
2017 Robinson NP REP Exercise		SEOC/ Dose	JIC	Chesterfield County	Darlington County	Lee County
Unusual Event	-	-	-	-	-	N/a
Alert	0745	0802	0835	0751	0751	0754
Site Area Emergency	1054	1101	1100	1101	1100	1100
General Emergency	1319	1332	1326	1329	1329	1330
Simulated Rad. Release Started	1031	1052	1052	1052	1052	1052
Simulated Rad. Release Ended	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing
Exercise EndEx		1500	1445	1452	1450	1452
Facility Declared Operational	0820	0818	0855	0910	0836	0910
Declaration of State of Emergency State		0925	0958	0936	0940	1035
Local		-	-	0901	0837	1420
Precautionary Action: Notify CSX and FAA		-	-	0825	0825	-
1st Protective Action Decision: Hunting and fishing ban, clear lakes, livestock on stored feed		1125	1138	1125	1125	1125
1st Siren Activation		1140	1140	1140	1140	1140
1st EAS Message		1145	1145	1145	1145	1145
2nd Protective Action Decision: Evacuate Zones: A-0, D-1, D-2, E-1, E-2 Shelter in Place Zones: None		1356	-	1356	1356	1356
2nd Siren Activation		1420	1420	1420	1420	1420
2nd EAS Message PAD Evacuation and KI		1425	1425	1425	1425	1425
KI Decision: Emergency Workers: In evacuation zones General Public: In evacuation zones		1346	1407	1422	1437	1417

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Appendix B: Exercise Evaluators and Team Leaders

Regional Assistance Committee (RAC) Chair: Randall L. Hecht

Section Chief: Lawrence Robertson **Site Specialist:** Ron Shaw

Location	Evaluator Team	
EOF	John Pelchat Matt Bradley	NRC FEMA
JIC	Robert Spence Roy Smith	FEMA ICF
SEOC Sim Cell	Joe Harworth Elisabeth Adkins John Simpson Henry Christianson	FEMA ICF
Dose Assessment	Roy Rogers	ICF
Chesterfield County	Quintin Ivy Alex Sera	FEMA
Darlington County	JT Ackerman Lorenzo Lewis Robert Nash	FEMA
Lee County	Mike Dolder Walt Cushman	FEMA

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Appendix C: Extent of Play Agreement

Extent of Play Agreement

Robinson Nuclear Plant 2017 Partial Participation Radiological Emergency Preparedness Exercise

All activities will be demonstrated fully in accordance with respective plans and procedures, as they would be in an actual emergency (FEMA must receive these plans, guides and procedures NLT 60 days before the exercise). 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 operating guides (SOGs) and/or procedures (SOPs). Any issue or discrepancy arising during exercise play may be re-demonstrated, if allowed by the Regional Assistance Committee (RAC) Chair or as listed herein. This allowance may be granted if it is not disruptive to exercise play and is mutually agreed to by the Offsite Response Organization (ORO) Controller and FEMA Evaluator.

Core Capability: Operational Coordination – *State and County Emergency Operations Centers (EOCs), Emergency Operations Facility (EOF)*
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.

Critical Task: Alert, Notify, Mobilize
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 1.a.1).

All participating state and local government personnel will be pre-positioned in the area and will only respond after notification in accordance with plans and procedures as the scenario dictates.

Critical Task: Direction and Control
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.2; C.4, 6; Criterion 1.c.1).

State direction and control will occur at the State Emergency Operations Center (SEOC). Local direction and control will occur at each county's Emergency Operations Center (EOC).

Critical Task: Communications Equipment
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 1.d.1).

State and county decision makers will use the conference bridge line to conduct protective action discussions/decision making among the offsite response organizations (OROs). Duke Emergency Management Network (DEMNet) will be used for notifications and conducting siren activations in accordance with plans and procedures.

Critical Task: Equipment & Supplies to Support Operations
Equipment, maps, displays, monitoring instruments, dosimetry, 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 1.e.1).

Quantities of KI were verified during Staff Assistance Visits (SAVs).

Quantities of equipment, their calibration/testing were verified during SAVs.

SAV locations, dates, and times were as follows:

- Chesterfield County: County EOC on March 14, 2017 at 10:00 am.
- Darlington County: County EOC on March 15, 2017 at 2:00 pm.
- Florence County: County EOC on March 15, 2017 at 10:00 am.
- Lee County: County EOC on March 14, 2017 at 1:00 pm.

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

Critical Task: Protective Action Decisions for the General Public
A decision-making process involving consideration of appropriate factors and necessary coordination is used to make PADs for the general public (including the recommendation for 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 2.b.2).

Critical Task: Protective Action Decisions for Access/Functional Needs
PADs are made, as appropriate, for groups of people with disabilities and those with access/functional needs (NUREG-0654/FEMA-REP-1, D.4; J.9; J.10.d, e; Criterion 2.c.1).

Phone calls to the school district or individual schools will not be necessary because representatives from county school districts will be in the Chesterfield and Darlington EOCs during the exercise.

Critical Task: Implementation of Emergency Worker Exposure Control
The OROs issue appropriate dosimetry, KI, and procedures, and manage radiological exposure to emergency workers in accordance with the plans/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. Appropriate record keeping of the administration of KI for emergency workers is maintained (NUREG-0654/FEMA-REP-1, J.10.e; K.2.a, b; K.4; Criterion 3.a.1).

PRDs and KI will be simulated by separate props identified as such.

Critical Task: Implementation of KI Decision for Institutionalized and General Public
KI and appropriate instructions are made available in case a decision to recommend use of KI is made. Appropriate record keeping of the administration of KI for institutionalized individuals and the general public is maintained (NUREG-0654/FEMA-REP-1, J.10.e, f; Criterion 3.b.1).

KI distribution and record keeping for institutionalized individuals will be discussed at County EOCs during the exercise.

Critical Task: Implementation of PADs for Access/Functional Needs
PADs are implemented for people with disabilities and those with access/functional needs other than schools within areas subject to protective actions (NUREG-0654/FEMA-REP-1, J.10.c, d, e, g; Criterion 3.c.1).

The processes for contacting persons with disabilities and access/functional needs will be discussed during the exercise (if applicable).

Critical Task: Implementation of PADs for Schools
OROs/school officials implement protective actions for schools (NUREG-0654/FEMA-REP-1, J.10.c, d, e, g; Criterion 3.c.2).

Implementation of protective actions for schools will be conducted by discussion in each County EOC during the exercise (if applicable).

Critical Task: Implementation of Traffic and Access Control
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 3.d.1).

Implementation of traffic and access control will be conducted by interview during out-of-sequence (OOS) activities.

Critical Task: Impediments to Evacuation and Traffic and Access Control
Impediments to evacuation are identified and resolved (NUREG-0654/FEMA-REP-1, J.10.k; Criterion 3.d.2).

> Impediments to evacuation will be discussed at the TCP interviews during out-of-sequence activities and with State and local law enforcement agencies at each State and County EOC during exercise play, as the scenario dictates.

Core Capability: Situational Assessment – *ESF-10/Dose Assessment and Emergency Operations Facility (EOF)*
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.

Critical Task: Protective Action Recommendations
Appropriate PARs are based on available information on plant condition, 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; Supp. 3; Criterion 2.b.1).

Critical Task: Protective Action Decisions for the General Public
A decision-making process involving consideration of appropriate factors and necessary coordination is used to make PADs 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 2.b.2).

Core Capability: Public Information and Warning – *State/County EOCs, Local Primary (LP-1) Radio Station, and Joint Information Center (JIC)*
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.

Critical Task: Alert, Notify, Mobilize
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 1.a.1).

> Public Information staff will be pre-positioned in the area of the Duke Energy Joint Information Center (1755 Mechanicsville Road, Florence) and will only respond after notification in accordance with plans and procedures, as the scenario dictates. Public inquiry for the state will be demonstrated at the State EOC. County public inquiries will be demonstrated at the respective county EOCs. Public inquiry personnel will provide the FEMA evaluator with a call log.

Critical Task: Communications Equipment
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 1.d.1).

Communications with real-world media will be simulated.

Critical Task: Equipment & Supplies to Support Operations
Equipment, maps, displays, monitoring instruments, dosimetry, 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 1.e.1).

Critical Task: Initial Activation of Prompt Alert and Notification System
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 (Timely: The responsible ORO personnel/representatives demonstrate actions to disseminate the appropriate information/instructions with a sense of urgency and without undue delay) (NUREG-0654/FEMA-REP-1, E.5, 6, 7; Criterion 5.a.1).

The State will coordinate PADs with Darlington, Chesterfield, and Lee counties. As the scenario dictates, a silent test of the sirens will be conducted and the Emergency Alert System (EAS) will be activated. Darlington County will serve as the primary agency for the activation of all sirens within the EPZ, Lee County will serve as the backup, in the event Darlington County is unable to activate. All counties will verify their siren activation. A test EAS message will be transmitted to the Local Primary (LP-1) EAS Station (WJMX Florence). Broadcast of an EAS test message will be simulated and the process will be discussed. Copies of the simulated EAS messages and news releases will be provided to the FEMA evaluator at the SEOC. All following siren activations will be simulated.

Critical Task: Backup Alert and Notification
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 5.a.3).

Backup route alerting procedures will be discussed at each county EOC during the exercise. If a significant siren failure is indicated during the silent test, to the extent that backup alert and notification is required per local plans and procedures, implementation of backup route alerting will be conducted by interview.

Critical Task: Emergency Info and Instructions for Public and the Media
OROs provide accurate emergency information and instructions to the public and news media in a timely manner (NUREG-0654/FEMA-REP-1, E.5, 7; G.3.a; G.4.a, c; Criterion 5.b.1).

> Communications with and distribution of messages to real-world media will be simulated.

Core Capability: Environmental Response/Health and Safety – *ESF-10/Dose Assessment, Emergency Worker Decontamination (EWD), Reception Center/Congregate Care (RC/CC)*
Definition: 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.

Critical Task: Alert, Notify, Mobilize
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 1.a.1).

> DHEC personnel will be pre-positioned in the area and will only respond after notification in accordance with plans and procedures, as the scenario dictates.

Critical Task: Communications Equipment
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 1.d.1).

Critical Task: Equipment & Supplies to Support Operations
Equipment, maps, displays, monitoring instruments, dosimetry, 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 1.e.1).

> DHEC's Mobile Rad Lab (MRL) will not be participating in this exercise.

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

Critical Task: Implementation of Emergency Worker Exposure Control
OROs issue appropriate dosimetry, KI, and procedures, and manage radiological exposure to EWs in accordance with the plans/procedures. EWs 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 EWs (NUREG-0654/FEMA-REP-1, J.10.e, K.3.a, b, K.4; Criterion 3.a.1).

EW exposure control will be evaluated at County EWDs and RC/CC sites during OOS activities.

PRDs and KI will be simulated by separate props identified as such.

Critical Task: Monitor Decontamination/Registration of Evacuees
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 6.a.1).

This will be demonstrated in accordance with plans and procedures during out-of-sequence activities at the RC/CC sites. A minimum of six evacuees will be processed through the facility with at least one contaminated male and one contaminated female. Decontamination of personnel will be verbalized. RC/CC site OOS demonstrations are as follows:

- Chesterfield County: Chesterfield High School (401 N. Page Street, Chesterfield) on May 11, 2017 at 10:00 am.
- Florence County (Courtesy Evaluation): Florence County Civic Center (3300 W Radio Drive, Florence) on May 4, 2017 at 10:00 am.
- Lee County: Lee Central High School (1800 Wisacky Highway, Bishopville) on May 9, 2017, at 10:00 am.

Critical Task: Monitor Decontamination of Emergency Workers, Equipment and Vehicles
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 6.b.1).

Emergency Worker Decontamination (EWD) will be evaluated during out of sequence activities demonstration. A minimum of two emergency workers and their vehicles and equipment must be processed through the facility. Decontamination of vehicles will be demonstrated. Decontamination of personnel will be verbalized. OOS demonstrations are as follows:

- Chesterfield County: Chesterfield High School (401 N. Page Street, Chesterfield) on May 11, 2017 at .10:00 am
- Darlington County: Swift Creek Fire Department (137 N. Center Road, Hartsville) on May 3, 2017 at 10:00 am.
- Lee County: Lee Central High School (1800 Wisacky Highway, Bishopville) on May 9, 2017, at 10:00 am.

Core Capability: On Scene Security Protection – *Traffic Control Points (TCPs) and Access Control Points (ACPs)*
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.

Critical Task: Communications Equipment
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 1.d.1).

Critical Task: Equipment & Supplies to Support Operations
Equipment, maps, displays, monitoring instruments, dosimetry, 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 1.e.1).

Critical Task: Implementation of Emergency Worker Exposure Control
OROs issue appropriate dosimetry, KI, and procedures, and manage radiological exposure to EWs in accordance with the plans/procedures. EWs 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 EWs (NUREG-0654/FEMA-REP-1, J.10.e, K.3.a, b, K.4; Criterion 3.a.1).

PRDs and KI will be simulated by separate props identified as such.

Critical Task: Implementation of Traffic and Access Control
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 3.d.1)

TCPs and ACPs will be evaluated by interview during out-of-sequence activities as follows:

- Chesterfield County: Chesterfield High School (401 N. Page St, Chesterfield) on May 11, 2017 at 10:00 am. Chesterfield County will discuss TCPs CH-1, CH-2, and CH-3.
- Darlington County: Darlington County EOC (1625 Harry Byrd Highway, Darlington) on May 2, 2017 at 1:30 pm. Darlington County will discuss TCP 16B.
- Lee County: Lee Central High School (1800 Wisacky Highway, Bishopville) on May 9, 2017 at 10:00 am. Lee County will discuss TCPs LE-1 and LE-2.
- State: Darlington County EOC (1625 Harry Byrd Highway, Darlington) on May 2, 2017 at 1:30 pm. The State Highway Patrol will discuss TCPs 16E & 16F.

Waterway Warning will be conducted by interview out-of-sequence on May 3, 2017 at 9:00am at the Swift Creek Fire Department (137 N. Center Road, Hartsville). Morrison's Bridge and Johnson's Landing will be discussed. The FEMA evaluator will be escorted to locations to verify signage after the discussion, if necessary.

Critical Task: Impediments to Evacuation and Traffic and Access Control
Impediments to evacuation are identified and resolved. (NUREG-0654/FEMA-REP-1, J.10.k; Criterion 3.d.2)

Impediments to evacuation will be discussed at the TCP interviews during out-of-sequence activities and with State and local law enforcement agencies at each State and County EOC during exercise play, as the scenario dictates.

Core Capability: Mass Care – *Reception Center/Congregate Care (RC/CC)*
Definition: 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.

Critical Task: Equipment & Supplies to Support Operations
Equipment, maps, displays, monitoring instruments, dosimetry, 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 1.e.1).

Critical Task: Implementation of KI Decision for Institutionalized and General Public
KI and appropriate instructions are made available in case a decision to recommend use of KI is made. Appropriate record keeping of the administration of KI for institutionalized individuals and the general public is maintained (NUREG-0654/FEMA-REP-1, J.10.e, f; Criterion 3.b.1).

PRDs and KI will be simulated by separate props identified as such.

Critical Task: Temporary Care of Evacuees
Managers of congregate care facilities demonstrate that the centers have resources to provide services and accommodations consistent with planning guidelines. Managers demonstrate the procedures to assure that evacuees have been monitored for contamination and have been decontaminated as appropriate before entering congregate care facilities (NUREG-0654/FEMA-REP-1; J.10.h; J.12; Criterion 6.c.1).

RC/CC sites will be evaluated during out-of-sequence activities as previously noted in this document.

Core Capability: Critical Transportation – *Protective Action for Schools*
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.

Critical Task: Implementation of PADs for Schools
OROs/school officials implement protective actions for schools (NUREG-0654/FEMA-REP-1, J.10.c, d, e, g; Criterion 3.c.2).

Implementation of PADs for schools will be conducted by interview as follows:

- Chesterfield County (McBee Elementary School, McBee Head Start, McBee High School, and Plainview Elementary School) on May 11, 2017 at 401 N. Page Street, Chesterfield at 10:00 am.

Darlington County (North Hartsville Elementary, Thornwell, Hartsville High School, Coker College, First Baptist Church Pre-School, and Thomas Hart Academy) on May