Robinson Nuclear Plant
Final After Action Report

Exercise Date July 21-23, 2015

Radiological Emergency Preparedness Program

FEMA

Published January 11, 2016

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Executive Summary

On July 21-23, 2015, the Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA) Region IV Radiological Emergency Preparedness (REP) Program staff evaluated an ingestion exposure pathway exercise in the emergency planning zone (EPZ) for the Robinson Nuclear Plant (RNP). RNP is located west of the Lake Robinson Dam in western Darlington County and is owned and operated by Duke Energy. The RNP EPZ is divided into 11 emergency response planning zones, with a population of approximately 65,000 residents. The 50-mile ingestion pathway zone (IPZ) consists mainly of rural areas with agricultural interests and includes all or portions of Chesterfield, Darlington, Lee, Marlboro, Marion, Dillon, Williamsburg, Clarendon, Sumter, Richland, Fairfield, and Lancaster Counties in South Carolina and Anson, Robeson, Richmond, Union, and Scotland Counties in North Carolina.

This exercise was held in conjunction with a Full Federal Field Exercise named "Southern Exposure 2015" (SE-15). SE-15 was designed to examine the Federal response to an incident at a nuclear power plant and how the Federal response would be integrated to support the State of South Carolina's response to the exercise incident. SE-15 involved the deployment of the Federal Radiological Monitoring and Assessment Center (FRMAC), which is part of Department of Energy. Other Federal Players, included field and headquarters elements from FEMA, the Nuclear Regulatory Commission (NRC), U. S. Department of Agriculture, Environmental Protection Agency, Department of Health and Human Services, Centers for Disease Control and Prevention, Food and Drug Administration among others.

One of the bright spots of the coordination effort between Federal and State players was the ability to co-mingle field monitoring team members. During the ingestion phase state field team members were merged with a DOE Radiological Assistance Program (RAP) member and a member of the National Guard 43rd Civil Support Team (CST). The teams coordinated their activities to successfully take soil, vegetation, and water samples utilizing each other as a force multiplier.

The purpose of FEMA's evaluation of the RNP ingestion pathway exercise was to assess the level of State and local preparedness in responding to a radiological emergency at RNP. 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 May 18, 2013. The qualifying emergency preparedness exercise was conducted March 11 and 12, 1981.

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Section 1: Exercise Overview

1.1 Exercise Details

Exercise Name
Robinson Nuclear Plant Ingestion Pathway Radiological Emergency Preparedness (REP) Program Evaluated Exercise

Type of Exercise
Ingestion

Exercise Date(s)
July 21 - 23, 2015

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

Sponsors

South Carolina Emergency Management
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 (DHS) Federal Emergency Management Agency (FEMA) REP Program

Mission
Response, Recovery

Scenario Type
Ingestion Phase Full Participation REP Exercise

1.2 Exercise Planning Team Leadership

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1.3 Participating Organizations

Agencies and organizations of the following jurisdictions participated in the 2015 Robinson Nuclear Plant exercise.

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
University of Clemson Livestock Poultry Animal Health Program

Risk Jurisdictions:

Darlington County
Chesterfield County
Lee County

Support Jurisdictions:

Florence County

Ingestion Jurisdictions:

The counties of Chesterfield, Darlington, Lee, Florence, Marlboro, Marion and Dillon.

Private Organizations:

Oak Ridge Institute for Science and Education
American Red Cross
American Nuclear Insurers
Salvation Army

Federal Agencies:

Department of Agriculture
Department of Commerce
Department of Defense
Department of Energy
Department of Homeland Security
Department of the Interior
Department of Justice
Department of Labor
Department of State
Department of Veterans Affairs
Environmental Protection Agency
Federal Bureau of Investigation
Federal Drug Agency
Federal Emergency Management Agency
General Services Administration
Health and Human Services
Nuclear Regulatory Commission
Small Business Administration
Department of Transportation

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Section 2: Exercise Design Summary

2.1 Exercise Purpose and Design

The purpose of this exercise was to assess the level of state and local preparedness to respond to and recover from a radiological emergency at RNP involving a radiological release that impacts the ingestion pathway. This exercise included a full scale Federal response (Southern Exposure 2015) featuring the integration of organizations at all levels of government to demonstrate the whole community's ability to coordinate and conduct response and recovery activities in response to a nuclear power plant emergency. This full participation ingestion pathway exercise was held in accordance with FEMA's policies and guidance concerning the exercise of federal, state and local emergency response plans and procedures.

DHS/FEMA administers the REP Program pursuant to the regulations found in Title 44 Code of Federal Regulation (CFR) parts 350, 351 and 352. 44 CFR 350 codifies 16 planning standards that form the basis for radiological emergency response planning for licensee, State, tribal and local governments impacted by the emergency planning zones (EPZs) established for each nuclear power plant site in the United States. 44 CFR 350 sets forth the mechanisms for the formal review and approval of State, Tribal and local government RERPs and procedures by DHS/FEMA. One of the REP program cornerstones established by these regulations is the biennial exercise of offsite response capabilities. During these exercises 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 (RERPs) and procedures and verification of the periodic requirements set forth in NUREG-0654/FEMA-REP-1 through the Annual Letter of Certification and staff assistance visit enables FEMA to provide a statement with the transmission of this final AAR to the NRC that 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 RERPs for RNP to FEMA by the State of South Carolina occurred on February 13, 1981. Formal approval of the State of South Carolina's RERP was granted on December 29, 1981, under 44 CFR 350. A REP exercise was evaluated on July 21-23, 2015. Out of sequence demonstrations during April-July, 2015 included a Medical Services Drill, Emergency Worker Decontamination and Reception and Congregate Care demonstrations.

2.2 FEMA Exercise Objectives and Core Capabilities

The objectives developed to meet the Radiological Emergency Preparedness (REP) Program requirements and based on the negotiated Extent of Play Agreement (XPA) are as follows (these objectives encompass the REP Program evaluation area criteria):

- Demonstrate the ability to provide Emergency Operations Center (EOC) management including Direction and Control through the Counties and State EOC (SEOC).

- Demonstrate the ability to make and implement protective action decisions (PADs) for State and county emergency workers and the public through exercise play and discussion with EOC staff regarding their actions as governed by their plans and procedures.

- Demonstrate the ability to perform Plume Phase and Ingestion Phase field measurements and analysis utilizing state field teams through exercise play and discussion of plans and procedures. Demonstrate the ability to integrate the Federal response to assist in State field measurement and analysis operations.

- Demonstrate the ability to notify the public by utilizing the Prompt Alert and Notification System (PNS) and the Emergency Alert System (EAS) through discussion or exercise play.

- Demonstrate the effectiveness of plans, policies and procedures in the Joint Information Center (JIC) for public and private sector emergency status information.

- Demonstrate the ability to provide Dose Projection and Protective Action Decision Making, both for the Plume Phase and Ingestion Phase.

- Demonstrate the ability to identify areas requiring relocation, make decisions and implement them, which would allow re-entry into a controlled area.

- Demonstrate the ability to develop and implement return procedures and assist individuals who were affected by the emergency.

- Demonstrate the ability to make available information regarding water, food supplies, milk and agricultural production and implement protective actions.

The core capabilities listed below form the foundation of FEMA Region IV REP Program objectives and observations for this exercise.

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

- Public Information and Warning: Is the capability to 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 Safety: Is the capability to ensure the availability of guidance and resources to address emergency response to all hazards including hazardous materials, acts of terrorism, and natural disasters in support of the response operations and the affected communities.

- On-Scene Security and Protection: Is 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.

- Critical Transportation: Is the capability to 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: Is the capability to provide life-sustaining services to the affected population with a focus on hydration, feeding and sheltering to those who have the most need as well as support for reunifying families.

- Public Health and Medical Services: Is the capability to provide lifesaving medical treatment via emergency medical services and related operations and avoid additional contamination and injury by providing targeted public health and medical support and products to all people in need within the affected area.

- Situationnal Assessment: Is the capability to 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.

2.3 Scenario Summary

0700 Exercise window open.

0730 Crew on Simulator.

0740 Assume the watch for exercise.

0742 Indicator Failure connected to RCS system which will lead to RCS Leak > capacity of 1 charging pump.

0754 A 3 min. ramped 180 gpm leak rate from RCS to Containment begins. Evaluation of leak source and size will be initiated.

0808 Reactor manually tripped. Some Rods stuck out of core.

0808 Safety Injection manually initiated.
0808 'B' Emergency Diesel Generator fails to start ('B' Emergency Bus remains energized by off-site power.)

0808 'A' train (HVH-1, HVH-2) Containment Fan Coolers trip on over-current. (Shaft Seizure)

~0809 Alert is declared [FA1.1]. Any loss or potential loss of Fuel Clad or RCS. Potential LOSS of the RCS Barrier; Unisolable RCS leak exceeding the capacity of one charging pump.

0824 Notify the State and Counties that the Emergency Response Organization (ERO) is being activated.

0845 The Containment Instrument Air isolation valve, PCV-1716, automatically shuts upon receipt of the Safety Injection signal. The valve will fail to reopen, making air operated valves inside containment inoperable. (Apparent when attempting to place letdown is service.)

0924 All ERO and ORO are activated, except the JIC.

0947 RCS Leak size increases and fuel failure begins.

~1003 R-32A and R-32B indicate > 100R/hr. Initiating condition for a Site Area Emergency (SAE).

~1018 Site Area Emergency (SAE) is declared [FS1.1]. Loss or Potential Loss of any two barriers. Loss of the Reactor Coolant System Barrier; R-32A and R-32B >5 R/hr and Loss of Fuel Cladding Barrier; R-32A and R-32B >100 R/hr

1024 JIC is activated.

1033 Notify the State and Counties of the SAE.

1116 The RCS piping leak suddenly increases, indicative of pipe ruptures. The RCS is suddenly depressurized and fuel failure worsens. Within minutes, Containment Radiation Monitors indicate a potential loss of the Containment Barrier. RCS Cold Leg Accumulators Inject. Cold water injection eventually increases fuel damage. Conditions met for GE.

1116 'B' train (HVH-3, HVH-4) of Containment Fan Coolers trip on over current.

1131 General Emergency is declared [FG1.1]. (Loss of any two barriers and loss or potential loss of third barrier (Table F-1)

1146 Notify the State and Counties and recommend Protective Action Requirements (PARS) based on plant conditions, Evacuate A-0, B-1, C-1, D-1.

1200 "B" Emergency Diesel Generator is restored to service Fuel racks

~1230 Release starts. (The release from containment is through a break located in the Pipe Alley (PA) Room through the Auxiliary Building to the stack and to the environment. Charcoal and HEPA filters out of service)

1245 PARS to expand to 10 miles downwind and Recommend KI and Evacuate A-0, A-1, B-1, C-1, C-2, D-1, D-2, E-1.

1300 Notify the State and Counties of the KI Recommendation and additional PARS.

1445 Release continues for 2 hours (all of containment volume cycled out) or until the State and FEMA have met all objectives.

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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 21-23, 2015 Ingestion Pathway exercise and out-of-sequence (OOS) interviews and demonstrations of April - July, 2015.

Each jurisdiction and functional entity was evaluated based on their demonstration of Capabilities and their equivalent REP criteria as delineated in the FEMA REP Program Manual dated January 2015. 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 level 1 or level 2 findings assessed and no unresolved findings from prior exercises)
- 1: Level 1 finding (formerly deficiency) assessed
- 2: Level 2 finding (formerly area requiring corrective action) 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 (HSEEP) evaluation methodology is an analytical process used to assess the demonstration of specific capabilities during an exercise. A capability provides a means to perform one or more critical tasks under specified conditions and to specific performance standards. The previously described core capabilities form the foundation of the FEMA Region IV REP 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. Alert and notification of the public and media was completed in a timely manner by simulated means of sounding of sirens, EAS messaging, backup route alerting, waterway warning, news releases and press briefings. Accurate information and follow on instructions were made with the formulation of news releases and press briefings being reviewed from the JIS and conducted at the individual JICs. 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: The availability of guidance and resources to address hazardous materials was integral in support of the responder operations and the affected communities. DHEC demonstrated the ability to provide Dose Projection and Protective Action Decision Making, both for the Plume Phase and Ingestion Phase. Ambient radiation measurements were made and recorded at appropriate locations, and radioiodine and particulate samples are collected. Teams moved to an appropriate low-background location and determined whether any significant amount of radioactivity had been collected on the sampling media. All emergency workers were issued the appropriate dosimetry, KI, and procedures, and properly managed their radiological exposure. The DHEC Agency Coordination Center (ACC) successfully accomplished its mission to make recommendations to protect the public. The EOF staff communicated well with the SEOC and the various EOF representatives to ensure that State and County responses and PARs were coordinated properly.

Situational Assessment: The Field Monitoring Teams (FMT) effectively demonstrated the capability to collect field measurements and air samples. The teams demonstrated good communication with the Mobile Operations Center (MOC). Field monitoring measurements were obtained and relayed to the MOC via radio and Rad Responder. The Rad Responder data entry process slowed the team during the exercise. The teams also showed proper contamination control; sample packaging, labeling and chain-of custody procedures; and use of dosimetry. The team properly packaged, labeled, recorded and delivered the sample to the MOC for processing and radiological analysis.

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 implemented protective actions for affected local schools. The evacuation of people and animals, and the delivery of vital response personnel, equipment, and services into the affected areas to provide transportation (including infrastructure access and accessible transportation services) for response priority objectives was effectively demonstrated.

Mass Care: Congregate care centers provided 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 and Medical Services: Qualified medical personnel successfully provided for transport, treatment and decontamination of a contaminated injured individual. EMS and hospital personnel exhibited good knowledge of contamination control and decontamination techniques and exposure limits. All personnel were aware of placing medical treatment of the patient before performing decontamination.

Table 3.2 - Summary of Exercise Evaluation

M: Met, 1: Level 1 Finding, 2: Level 2 Finding, P: Plan Issue, N: Not Demonstrated		SC	SC JIS	Darlington County	Chesterfield County	Lee County	Florence
Operational Coordination							
Alert and Mobilization	1a1	M	M	M	M	M	
Facilities	1b1	M		M	M	M	
Direction and Control	1c1	M		M	M	M	
Communications Equipment	1d1	M	M	M	M	M	
Equipment and Supplies to Support Operations	1e1	M	M	M	M	M	
Environmental Response/Health and Safety							
Emergency Worker Exposure Control	2a1	M		M	M	M	
Dose Assessment & PARs & PADs for the Emergency Event	2b1	M					
Dose Assessment & PARs & PADs for the Emergency Event	2b2	M		M	M	M	
PADs for the Protection of persons with disabilities and access/functional needs	2c1			M	M	M	
Radiological Assessment and Decision-making for the Ingestion Exposure Pathway	2d1	M		M	M	M	
Radiological Assessment & Decision-making Concerning Post-Plume Phase Relocation, Reentry, and Return	2e1	M		M	M	M	
Environmental Response/Health and Safety and/or Critical Transportation							
Implementation of Emergency Worker Exposure Control	3a1	M		M	M	M	
Implementation of KI Decision for Institutionalized Individuals and the Public	3b1			M	M	M	
Implementation of Protective Actions for persons with disabilities and access/functional needs	3c1			M	M	M	
Implementation of Protective Actions for persons with disabilities and access/functional needs	3c2			M	M	M	
Implementation of Traffic and Access Control	3d1	M		M	M	M	
Implementation of Traffic and Access Control	3d2	M		M	M	M	
Implementation of Ingestion Pathway Decisions	3e1	M		M	M	M	
Implementation of Ingestion Pathway Decisions	3e2	M		M	M		
Implementation of Post-Plume Phase Relocation, Reentry, and Return Decisions	3f1	M		M	M	M	
Situational Assessment							
RESERVED	4a1						
Plume Phase Field Measurement and Analyses	4a2	M					
Plume Phase Field Measurement and Analyses	4a3	M					
Post Plume Phase Field Measurements and Sampling	4b1	M					
Laboratory Operations	4c1	M					
Public Information and Warning							
Activation of the Prompt Alert and Notification System	5a1	M		M	M	M	
RESERVED	5a2						
Activation of the Prompt Alert and Notification System	5a3	M		M	M	M	
Activation of the Prompt Alert and Notification System	5a4						
Emergency Information and Instructions for the Public and the Media	5b1	M	M	M	M	M	
Environmental Response/Health and Safety and/or Mass Care							
Monitoring, Decontamination, and Registration of Evacuees	6a1			M	M	M	M
Monitoring and Decontamination of Emergency Workers and their Equipment and Vehicles	6b1			M	M	M	M
Temporary Care of Evacuees	6c1				M	M	M
Transportation and Treatment of Contaminated Injured Individuals	6d1			M			

3.3 Jurisdictional Summary Results of Exercise Evaluation

3.3.1 State Of South Carolina

3.3.1.1 State Emergency Operations Center

Operational Coordination Capability Summary: Plume Phase

The South Carolina Emergency Management Division (SCEMD) and State Emergency Operations Center (SEOC) staff successfully demonstrated the Operational Coordination Capability in response to a radiological incident at Robinson Nuclear Plant (RNP) during this exercise. They established and maintained a unified, coordinated operational structure and process.

The exercise included demonstration of the State Warning Point (SWP) receiving the licensee's emergency notification, State Emergency Response Team (SERT) notification for SEOC activation and staffing. The SWP staff was organized, well versed in operational responsibilities and efficiently performed their duties in accordance with procedures. The SWP Communications Specialists successfully received and disseminated numerous RNP Emergency Notification Forms (ENFs).

The SEOC had sufficient equipment and communications for conducting operations and communicating with Federal, other State, and risk county agencies. The SEOC had sufficient maps, commercial and mobile phones, computers, wall monitors, projectors, printer/copy/facsimile machines, cameras, administrative supplies and radio systems to conduct emergency response operations, with no observed failures. The SEOC staff was pre-positioned in the area, as specified in the extent of play agreement (XPA) and was alerted, mobilized and activated in a timely manner after notification by an automated notification system.

Direction and Control was established immediately and maintained throughout. Leadership was decisive and effectively kept staff abreast of the situation with scheduled meetings, situational updates, and direction in anticipation of potential actions or activities that allowed staff input and aided in the protective action decision (PAD) making process. PADs included evacuation of affected zones within the 10-mile Emergency Planning Zone (EPZ) and the distribution and ingestion of Potassium Iodide (KI) to emergency workers and the public. The PADs were timely and coordinated between the Department of Health and Environmental Control (DHEC), Public Affairs, Health and Human Services, American Red Cross, State Law Enforcement Division, Department of Natural Resources and all affected counties through conference calls.

WebEOC, a crisis management tool that provided situational awareness, was utilized during the exercise. The system was functional, maintained connection throughout the exercise and allowed staff to coordinate with all the various organizations involved in the event.

Staff actions were defined and deliberate and aided in carrying out coordinated responsibilities with internal and external agencies. Organizational activities were chronicled and archived and position binders and checklists served as quick reference job aids that ensured consistent, thorough procedural compliance. Information for release to the media and public was coordinated, reviewed and approved in accordance with prescribed procedures and proper authorities prior to dissemination. The SEOC staff was well trained, proactive and performed their duties in accordance with plans and procedures.

For this capability the following REP criteria were met: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.2

Operational Coordination Capability Summary: Post Plume Phase

The South Carolina Emergency Management Division (SCEMD) SEOC staff demonstrated the Operational Coordination and Public Information and Warning Core Capabilities during Day 2 activities of the Ingestion Pathway Exercise.

The Command staff consistently exercised effective direction and control throughout the exercise with meetings and back brief activities for the staff, integration and collaboration with federal resources and deliberative decision making that resulted in greater visibility of the scope of the event, the impact of the conditions on the ingestion pathway communities and more informed protective action decisions.

The SCEMD Director's focus on Day 2 activities was primarily directed at determining which areas had been contaminated with radiation and controlling access to those areas, while also determining which areas had not been contaminated with radiation, but had been evacuated during the first day. SERT staff actions, along with a variety of Federal agency support, were primarily concerned with determining the radiological consequences of the accident, and determining the appropriate protective action decisions. DHEC personnel compared analytical results with EPA Protective Action Guidance (PAG) criteria. Impact on the area road networks and other critical infrastructure (such as rail lines, pipelines, and waterways) was heavily studied, and alternative routes determined to minimize any adverse impact.

SERT personnel maintained continuous contact and coordination with appropriate Federal, State and local agencies throughout the day. Activities and coordination and communication with other State and Federal agencies, further refined determining the precise boundaries of the contaminated areas in the counties, and delineating those sites to prevent cross-contamination.

The University of Clemson Livestock Poultry Animal Health Program, in the absence of SCDA, was the lead agency responsible for determining and implementing protective action decisions regarding radiological contamination of water, food, milk, animals, and

agriculture products within the 50-mile Ingestion Pathway Zone that were issued for specific South Carolina counties impacted during the exercise. An Emergency Preparedness Veterinarian from the Clemson Animal Health Programs represented the SC Department of Agriculture (the only person) at the SEOC, and was the Animal/Agriculture Emergency Response Emergency Support Function (ESF) 17 principal lead.

A delay occurred in the action on an embargo issued verbally but not in print, which affected movement of livestock and meat, poultry products and/or any foodstuffs from contaminated areas. The written embargo was developed by 1700 of Day 2, but it did not correlate with the known contaminated areas, and listed embargoed areas by county rather than pre-identified evacuation zones in the EPZ. This resulted in unnecessarily restricting many areas which were not contaminated. This was corrected, however, by 2100 under the guidance of the SCEMD Director.

The ESF 17 representative was apparently unfamiliar with the protocols within the SEOC which require approval of emergency response directives, coordinated message requirements of such directives, or scope of impact to emergency response actions on other affected jurisdictions, agencies or the public. Animals, crops, foodstuff from food processing plants, milk or dairy products, forage, meat or poultry products could have been transported into and out of the embargoed area overnight. The State Police, those providing security at the control points, and the public had no orders or information regarding the embargo of the affected area.

Additionally, the written embargo, presumed to be issued under the authority of and through established State emergency response protocols, was released from the SEOC without the knowledge, coordination, review or approval of the SCEMD Director, in accordance with established procedures that require all actions be coordinated and approved following staff protocols; to include coordination and dissemination through the PIO and Joint Information System (JIS). This affected the ability of the State to provide this information to the public in a timely manner and had compounding and cascading adverse effects in other evaluated areas, including emergency response activities of the Department of Health and Environmental Control (DHEC). Subsequently, News Release #7 contained detailed information about embargoed products and animals within the impacted counties and was sufficiently addressed with the public and media.

For this capability the following REP criteria were met: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.2, 2.c.1, 2.d.1, 2.e.1

Public Information and Warning Capability Summary: Plume Phase

The State Public Information Officer (PIO) and his support staff successfully demonstrated the ability to deliver coordinated, prompt, reliable, and actionable information to the public, media, and community through the use of clear, consistent, accessible, culturally and linguistically appropriate methods. In response to an accident

at RNP, the State's news releases and EAS messages effectively relayed information regarding the threat or hazard, advised the public of appropriate actions to take, and provided detailed public assistance information.

The public information staff prepared six news releases and three EAS messages which were all approved by the South Carolina Emergency Management Director. All Risk Counties were consulted and agreed on the content of the EAS message before each were sent to WJMX Radio in Florence, South Carolina. Copies of the news releases and the EAS messages were emailed to the Joint Information Center (JIC), and were released and distributed to the media and the public in a timely manner. All information released to the media was consistent with the current PAD, Emergency Classification Level (ECL, and contained the information required by the current REP Guidance.

Alert and notification methods were identified in the plans and were available to alert and notify the public. The methods included: a siren system, EAS broadcasts, NOAA weather radios, a reverse calling system, and back-up route alerting.

The PIO explained that bilingual Spanish/English staff would provide Spanish versions of the news releases and EAS messages. Media Monitors, Social media programs, and Public Inquiry staff members were located at the JIC and managed interaction with the public and media. There were no established trends identified during the exercise.

For this capability the following REP criteria were met: 5.a.1, 5.b.1

Public Information and Warning Capability Summary: Post Plume Phase

SCEMD personnel successfully demonstrated appropriate measures, strategies, and provided printed instructional material for implementing protective action decisions for contaminated livestock, food products, milk, and agricultural production during the RNP exercise. The SCEMD Director clearly remained in control, but used the skills and technical knowledge of the SERT staff as well as supporting Federal agency personnel.

During the day, a priority was placed on providing information to farmers and food processors. The SERT leadership was keenly aware of the economic impact their decision-making had, both on the local citizens as well as the rest of the state and the nation. SCEMD, DHEC and SCDA databases were available to determine the locations of dairy farms, meat and poultry producers, grain, fruit and vegetable farms, and associated food processing plants. The SERT PIO staff took full advantage of these information sources.

Although verbally announced on the first day of the exercise, a delay occurred in the development of a written embargo on the movement of livestock and the movement of meat or poultry products or any foodstuffs from the contaminated areas. A written embargo was developed by 1700, but it did not correlate with the known contaminated areas, and listed embargoed areas by county rather than pre-identified evacuation zones.

This resulted in unnecessarily restricting many areas which were not contaminated. This was corrected by 2100. The SERT then began developing an overall strategy for authorized re-entry of individuals into the restricted zone, to include maximum exposure limits; the maintenance of essential services (such as fire and police protection); the care for farm animals; and the retrieval of important possessions.

Joint Information System

Joint Information Center

Public Information and Warning Capability Summary: Plume Phase

The ability to deliver coordinated, prompt, reliable, and actionable information to the whole community was successfully demonstrated by the participating agencies of the RNP JIC. The public information that was disseminated was accurate, clear, and accessible being released in a timely manner to both the general public and news media.

The JIC served as the central point of contact for the distribution and release of information to the media and public during the emergency at RNP. The JIC operated within a JIS structure and was defined and supported through multiple agencies at different locations. This included the SEOC; Duke Energy's Corporate Offices; the RNP Emergency Operations Facility (EOF); and the risk county EOCs of Darlington, Lee and Chesterfield.

Activation of the JIC was a joint decision between the State of South Carolina and Duke Energy and was initiated following the declaration of Site Area Emergency (SAE) Emergency Classification Level (ECL). For this exercise, in accordance with the XPA, the JIC staff was pre-positioned. The JIC was well equipped and had redundant communications, which included landline phones, facsimiles, and internet connectivity. There were sporadic electronic connectivity issues noted, however these did not impact operations. Both primary and secondary communication systems were established and maintained throughout the exercise with no failures observed. The JIC facility was maintained by Duke Energy and offered ample space for the PIOs and supplemental technical staff of Duke Energy, State of South Carolina, risk counties and the Federal agencies to perform the duties required of them.

For this exercise SCEMD invited members of the National Emergency Management Association (NEMA) PIO working group to participate and/or observe. PIOs from the states of Georgia, Florida, New Hampshire, Rhode Island and Washington participated in the exercise and assisted SCEMD in various capacities as Emergency Management Assistance Compact (EMAC) responders would in an actual event.

The process for preparing and distributing news releases varied among the different agencies. In discussions with state and local representatives it was confirmed that all news releases were prepared and approved at their respective EOCs and then forwarded

via email or posted in WebEOC for further dissemination in the JIC by their respective staffs. The news releases from Duke Energy were prepared in the EOF, and then similarly posted in WebEOC for release in the JIC. The NRC public information staff prepared all releases in the JIC, then distributed in the PIO network. It was through close coordination and collaboration that effective and unified emergency information for the public was achieved within the JIS structure. The agencies provided accurate emergency information and instructions to the public and the news media in a timely manner.

A total of 26 press releases and three EAS messages were received and distributed in the JIC during the exercise. There were five media briefings during the exercise. The spokespersons answered all questions asked of them and were able to discuss what actions had been taken by their organizations.

A critical aspect of keeping the public informed was ensuring the correct information was available and erroneous information was corrected and rumors squelched. The public inquiry and rumor control function for Duke Energy and the State was performed in the JIC with the counties performing rumor control in their respective EOCs. The State rumor control coordinator and Duke Energy PIO frequently kept each other abreast of their inquiries.

For the exercise, Duke Energy staffed a robust simulation cell which was responsible for coordinating the mock media, public inquiry, and social media response functions. Using a software platform named Simulation Deck, the agencies were able to receive and respond to simulated social and digital media inquiries within a controlled virtual environment.

The monitoring of local and national media networks was performed at both the Duke Energy's Media Monitoring Center (MMC) located in Charlotte and the JIC. The MMC maintained the ability to monitor, not only television and radio, but various social media sites. In the JIC, a large wall mounted TV was playing in the Operations Room for monitoring news broadcasts and near the security desk, a large rolling stand with several TVs, Radios, with tape recording capability was utilized.

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

Public Information and Warning Capability Summary: Post Plume Phase

The RNP JIC participants demonstrated their perspective piece of this core capability by providing information and instructions to the public and news media in a continuation of the plume phase portion of the exercise.

A focus point of the ingestion pathway phase was the demonstration of a system to rapidly disseminate ingestion pathway information to predetermined individuals and businesses. Expanding upon this focus point, appropriate measures and preprinted instructional materials were developed for implementing protective actions decisions for contaminated water, food products, milk and agricultural production. With each

protective action decision(s), the PIOs formulated public information release(s) to inform and instruct the public and media. As demonstrated in the plume phase portion of this exercise press releases were prepared in the State and County EOCs and forwarded to the JIC for dissemination. This process continued into the ingestion phase portion of the exercise.

The State had one pre-printed brochure available for dissemination. This brochure was a 20-page spiral bound booklet which contained emergency information for farmers within South Carolina. This brochure was created and published by SCEMD, CULPH, and SCDA. There was no state agriculture representatives in the JIC for this exercise. With that, specific agriculture related public information processes were not demonstrated.

There were a total of nine press releases distributed in the JIC during this portion of the exercise, all following the same methods of formulation and release as evaluated during the plume phase portion of the exercise. There were also a total of three press briefings demonstrated in the same fashion as the plume phase.

For this capability the following REP criteria were MET: 3.e.2, 5.a.1, 5.a.3, 5.b.1

DHEC Agency Coordination Center Capability Summary: Plume Phase

The DHEC Agency Coordination Center (ACC) was staffed to support Public Health and Medical Services (ESF 8) and Hazardous Materials Response (DHEC-ESF 10) for state emergency response operations. The ACC coordinates emergency response operations with the SEOC. Also the ACC coordinated activities with the PeeDee Regional Coordination Center (RCC). A physician was assigned to the ACC to make PARs in accordance with the procedure 'DHEC Recommendation for the Use of Potassium Iodide in an Emergency'. The ESF 10 staff member received technical support from an EPA emergency coordinator.

The DHEC ACC successfully accomplished its mission to make recommendations to protect the public. Based on the information available, timely protective action recommendations were made to their counterparts in other South Carolina state and local agencies regarding when the public and emergency workers should ingest KI. The ACC Director and Assistant ACC Director exhibited good command and control over operations in the facility.

Dose Assessment

Environmental Response/Health and Safety Capability Summary: Plume Phase

DHEC personnel successfully demonstrated the capability to ensure the availability of guidance and resources to address radiological hazards in support of responder operations and the affected communities. Following the notification of an Alert at the RNP, the DHEC ESF-10 Dose Assessment team arrived at the SEOC and initiated response

operations to manage the incident.

The DHEC functions for the ESF-10 group included PARs, performing dose assessments, determining the need for KI ingestion, and managing field teams. The Emergency Response Coordinator (ERC) was responsible for making PARs for the ESF-10 group, based on technical advice from the Dose Assessment Coordinator (DAC). Field team coordination was performed at the Mobile Operations Center (MOC). The ERC and DAC demonstrated effective leadership, delegated tasks appropriately, and coordinated response activities with other organizations. Communications capabilities, equipment, supplies, and displays used were sufficient to support emergency operations. The Exposure Control Clerk monitored field exposures for the MOC, Field Teams, and Sample Relay Teams. The Dose Assessment team demonstrated the necessary actions for emergency worker exposure control as appropriate for the exercise.

Following the declaration of a General Emergency (GE), the DAC and the ERC concurred to adding additional zones to the recommended areas based on the variation in the wind direction and increase in the wind speed. Following the beginning of an unfiltered radiological release, the ERC and DAC concurred to adding an additional zone to the evacuated areas and recommended ingestion of KI for emergency workers, institutionalized individuals, and the general public in the evacuated zones. The DAC performed dose projections, which compared within a factor of 10 to the licensee dose projections.

Plume Phase and Post Plume Phase

On Day 2 of the exercise, the DAC, GIS Analysts, and Field Teams integrated with their Federal counterparts at the Southeastern Institute of Manufacturing and Technology, while the ERC and ESF-10 integrated with various Federal agencies in the SEOC. The DAC reviewed the available FRMAC maps requested prioritization of surveys and soil samples in the areas of predicted relocation that had not been evacuated. The sample prioritization process for food was delayed when a written embargo order was not available from ESF-17, because the team did not know what areas and foodstuffs had been embargoed.

The ERC and ESF-10 personnel worked throughout Day 2 to get a sampling plan established and determine the extent of the embargo. FRMAC and Advisory Team personnel were of limited assistance during the day to provide information or advice. The ERC meet with the SEOC Decision Team throughout the day and provided information and recommendations.

On Day 3 of the exercise, the DAC assisted FRMAC in generating data and maps for re-entry into the evacuated zones. The DAC used the FRMAC resources to verify the deposition and relocation models. He provided guidance for consideration of re-entry and return of evacuated residents. He was the single point assessment contact for the State of South Carolina, providing a valuable asset to the technical decision-making

process. He provided input and integrated well with the FRMAC team.

The ERC and other members of DHEC and ESF-10 participated in group discussion groups concerning various aspects of the ingestion phase of the exercise.

For this capability the following REP criteria were met: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.1, 2.b.2, 2.d1, 2.e1, 3.e.1, 3.e.2, 3.f.1 and 4.a.2.

Emergency Operations Facility

Operational Coordination Capability Summary: Plume Phase

RNP Emergency Operations Facility (EOF) is located in the training building on the utility's property. The EOF had liaisons from SCEMD in the main EOF room and DHEC in the adjoining dose assessment room.

During the exercise the State liaisons responded as required to the Alert, SAE, and GE ECLs. They communicated well with the SEOC and the various EOF representatives to ensure that State and County responses and PARs were coordinated according to State of South Carolina's emergency response procedures.

Of note is that during a series of calls between the SCEMD liaison with the county EOCs, it was determined that not all of the sirens were sounding in Darlington County. The SCEMD liaison interfaced and communicated this fact with the EOF utility personnel and helped the County to resolve this issue.

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

Mobile Radiological Laboratory

Situational Assessment Capability Summary: Plume Phase and Post Plume Phase

Members of the DHEC Bureau of Environmental Services successfully demonstrated the ability to receive, prepare, and analyze environmental samples in response to an incident at RNP. Personnel and equipment for the Mobile Radiological Laboratory (MRL) were pre-positioned at the South Carolina National Guard Armory in Darlington on the first day of the exercise in accordance with the XPA. The facility was well laid out, enabling workers to accomplish their tasks with a minimal likelihood of cross contamination. In addition, all workers were focused on contamination control throughout the exercise. Workers wore proper protective clothing and electronic personal dosimeters, and were knowledgeable of administrative dose limits.

MRL carried all necessary equipment and supplies to support emergency operations, and all personnel were proficient in carrying out their procedures. Analytical equipment in MRL consisted of a gamma spectroscopy system, including two high-purity germanium detectors. Although a software problem delayed the analysis of some samples, MRL personnel took appropriate actions to work around the problem and complete their required tasks.

On the second day of the exercise, MRL personnel successfully collocated and integrated their operations with the FRMAC. Samples received from field monitoring teams at the FRMAC sample control point were distributed to various laboratories, including MRL, based on each laboratory's analytical capabilities. MRL increased the types of samples they could accept by entering into an agreement with the EPA laboratory to prepare certain field samples into a geometry which MRL could analyze.

For this capability the following REP criteria were MET: 2.a.1, 2.d.1, 2.e.1, 3.a.1, 4.a.2, 4.b.1, 4.c.1

Field Monitoring Teams

Situational Assessment Capability Summary: Plume Phase

The State of South Carolina Radiological Field Monitoring Teams (FMT) demonstrated the capability to collect field measurements and air samples as described in their plans and procedures. The two field teams, Team Bravo and Charlie, were each comprised of two DHEC employees. The teams demonstrated good communication with the Mobile Operations Center (MOC) and followed direction of the Field Team Controller. Primary communication was via the DHEC ERT radio channel on the state's 800 MHz system.

Field monitoring measurements were obtained and relayed to the MOC via radio and Rad Responder. The input of data into the Rad Responder system slowed the team during the exercise. An air sample was collected by both teams and each team adhered to proper procedures and measurements of the air filter and cartridge. Both teams also demonstrated proper contamination control; sample packaging, labeling and chain-of custody procedures; and use of dosimetry. Proper use of personal protective clothing was demonstrated.

An out-of-sequence raw milk sample was successfully collected by FMT Bravo. A U.S. Department of Agriculture representative assisted in the collection at a local dairy farm. After a 5-minute agitation, the sample was collected using equipment and materials such as sterile gloves, a one-gallon sampling container, and funnel. The team properly packaged, labeled, recorded and delivered the sample to the MOC for processing and radiological analysis.

Later in the exercise the team merged with a U.S. Department of Energy, Radiological Assistance Program (DOE RAP) member smoothly. The DHEC staff worked well with

their federal counterpart and performed additional monitoring and soil sampling according to MOC direction and appropriate procedures.

Post Plume Phase

The FRMAC was activated on the 2nd day of the exercise as part of the Federal response. During the Ingestion Phase of the exercise the South Carolina FMT members were merged with a DOE RAP member and a member of the US National Guard 43rd Civil Support Team (CST). The two DHEC staff were members of the Echo and Golf sampling teams.

The teams were properly briefed for their tasks and provided with dosimetry capable of recording dose limits. Pertinent safety information was also provided to each team by FRMAC staff.

For Teams Echo and Golf, South Carolina DHEC procedures, vehicles, monitoring equipment and supplies were utilized for the exercise. The team demonstrated proper soil and vegetation sampling techniques according to South Carolina plans and procedures. The teams performed their functions while limiting potential for cross contamination by use of lay down pads, glove changes, dedicated sampling equipment and decontamination procedures (all simulated). Sample packaging, custody, transport, and transfer were also demonstrated successfully.

Post Plume Phase

The Ingestion Exercise continued from the previous day. The FMTs were still comprised of a DHEC, DOE RAP and CST staff person. After daily safety briefing and obtaining dosimetry, each team was tasked with traveling to a designated point known to be outside the deposition footprint and moving inward toward the depositional area. Measurements were taken as the teams moved toward the contamination until they reached a point where gamma readings were 0.3 mR/hr. At that location each team conducted an in-situ soil analysis using a FRMAC instrument and collected a soil sample. The team performed the monitoring, in-situ analysis, and sampling according to proper procedures and returned the sample to the sample collection area at the FRMAC.

For this capability the following REP criteria were MET: 1.e1, 3.a.1, 3.b.1, 4.a.3

Capability Summary- Relocation Reentry and Return (IPX):

Operational Coordination Capability Summary: Post Plume Phase

During the fourteen day post incident table top exercise, participants of the relocation, reentry, and return breakout group responded to scenario driven questions by discussing critical desired outcomes and associated priorities, potential solutions, challenges, and key actions. Members of the breakout group included representatives of local, State, and

Federal agencies.

For relocation, the group discussed short term and long term housing that may be available in South Carolina to accommodate displaced residents. They also discussed the impacts the relocation of residents would have on the communities where they are sent, such as an ability to absorb the influx in schools, healthcare facilities, and public safety organizations. For reentry, the group discussed authorization and prioritization of residents and private sectors wishing to reenter the pre-identified relocation area. They also discussed personal protective equipment (PPE) requirements, exposure control equipment, entry and exit points, and monitoring and decontamination of those allowed to reenter. The return discussion focused a lot of time on the emotional impacts it would have on the residents and the unified messaging that would need to be distributed to address it. They also discussed the priorities for the remediation process and re-opening of things like critical infrastructure, government facilities, businesses, schools, homes, and human services.

Much of the relocation, reentry, and return conversations revolved around the responsibilities and contributions of the different agencies to address the tasks and how they could integrate to successfully accomplish the mission. Many challenges were introduced that did not contain a solution, however, the group demonstrated their willingness and ability to work together and combine their resources and expertise to address any issues that may arise.

For this capability the following REP criteria were MET: 2.d.1, 2.e.1, 3.e.1, 3.f.1

3.3.2 Risk Jurisdictions

3.3.2.1 Darlington County

Operational Coordination Capability Summary: Plume Phase

The staff of the Darlington County Emergency Services Office successfully demonstrated the capability 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. They effectively used their plans and procedures to alert, notify, and mobilize emergency personnel and activated the Emergency Operations Center (EOC) facilities in a timely manner

Darlington County EOC had sufficient space, supplies and equipment. There was a kitchen, bunk room, and offices to support visiting mutual aid organizations as well as resources in the adjacent 911 Center and Emergency Medical Services (EMS) to support operations. There was a 100kw generator outside the EOC with fuel for protracted operations and another generator at the adjacent Sheriff's Department to serve as a backup resource.

The EOC was appropriately equipped with supplies and redundant communications equipment to successfully conduct emergency response activities. The Emergency Preparedness Manager (EPM) and County Administrator demonstrated solid leadership skills throughout the exercise. Direction and control of the multi-agency operation included staff from the county, state and non-governmental entities.

Staff updates occurred at prescribed times or as the situation warranted. This provided situational awareness and facilitated timely coordination and protective action decision making among agencies. All EOC personnel demonstrated a high degree of knowledge for their respective agency functions. They were proactive and organized while coordinating with internal and external partners. Organizational activities were entered into WebEOC. Position binders and checklists served as quick reference as necessary.

Initial notification of an Alert ECL came to the County 911 Center from RNP. The Center served as the warning point for the County and made immediate contact with the County Administrator and EOC Manager who served as the County Emergency Preparedness Manager (EPM). All subsequent notifications from RNP and the SEOC came directly to the EOC.

All RNP ECL notifications were processed over the Selective Signaling System (SSS) telephone system which was the primary means of notification. Each notification was followed by a fax message and all voice notifications were authenticated. The commercial telephone was used as an alternate means of notification and coordination.

Following the Alert ECL declaration, the EOC Manager directed his assistants to begin staff notifications. Key EOC staff responded to the EOC and the facility was declared operational.

Each of the designated players and ESFs manned the 25 positions in the EOC. In addition to designated city and county personnel, the American Red Cross (ARC), South Carolina Highway Patrol (SCHP) and SCEMD Liaison, school representatives and the RNP Liaison participated throughout the exercise. Emergency responders from multiple disciplines were experienced and proficient in their responsibilities, including the use of potassium iodide (KI), dosimetry, waterway clearance, traffic management including Traffic Control Points and Access Control Points for efficient evacuation and public safety, resource management, and reporting procedures.

South Carolina Department of Natural Resources (SCDNR) staff assigned to carry out Lake Robinson waterway warnings retrieved 800 MHz radios from the Darlington County Sheriff's Office and appropriate gear for the assignment. The radios were capable to deliver reliable communications between DNR officers and the Darlington County EOC.

During the exercise, law enforcement personnel efficiently worked to ensure needed resources were deployed in a timely manner to relieve any evacuation delays. Law

enforcement agencies demonstrated the ability to effectively communicate with other agencies and the county Public Information Officer (PIO) to disseminate timely and accurate information.

Although school was not in session during this exercise, a school representative was available for questions. He demonstrated knowledge of procedures for ensuring the safety and accountability of students and staff following well established, conditioned procedures.

Darlington County maintained KI and dosimetry kits at the EOC for distribution to emergency workers. This equipment was evaluated by FEMA during an April 13, 2015 SAV. The EPM stated that equipment inventory matched the allocations shown in the SCORERP.

For this capability the following REP 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

Public Information and Warning Capability Summary: Plume Phase

The Darlington County PIO successfully demonstrated the ability to provide timely information to Darlington County citizens should an incident occur at the RNP. The PIO frequently coordinated with State and county personnel at the JIC to ensure media releases and press briefings accurately represented county and citizen interest. Press releases were reviewed and approved by the EOC Manager and County Administrator prior to dissemination. Sirens and EAS Messages were appropriately coordinated with Lee and Chesterfield counties as well as the state before implementing.

Activation of sirens within the community was not without challenges and required deviation from the XPA. In conjunction with the precautionary early notification, Darlington County attempted to activate sirens for all three (Darlington, Chesterfield, and Lee) counties. This was unsuccessful, likely because of a problem with accessing the siren system in Darlington County. The EPM had some initial difficulty logging into the siren system, but eventually appeared to gain access after multiple attempts. During this time, the Darlington County EPM quickly ordered the PIO to make contact with Lee County to initiate the siren activation which was apparently successful, however the status of siren activation was not visible to Darlington County. While attempting to re-boot the siren computer, attempts to access the system were unsuccessful due to password rejection. Attempts to gain the appropriate password from the plant were also unsuccessful. Subsequent communication with Lee County confirmed the activation of the sirens. Darlington County's quick reaction to the failure of the siren computer is commendable.

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

Operational Coordination Capability Summary: Post Plume Phase

Darlington County successfully demonstrated development, coordination and implementation of PADs for Relocation, Reentry and Return of evacuees. Day 2 focused on water, food supplies, milk, and agricultural concerns. Two conference calls were held at 1030 and 1400. Each discussion provided a current assessment of radiological conditions but FRMAC maps were either not available or in a location not known by EPM. This made it difficult to make immediate and long-term recovery decisions and plans.

The EPM then called the Lee County emergency manager to determine the best approach for addressing re-entry of citizens located in the areas outside of deposition area. Once maps were located, implementation plans for traffic control points (TCP) routes and radiation checkpoints for reentry and return were determined. Map products provided an excellent depiction of deposition on affected areas and initiated further discussions between counties regarding controlled reentry, and ingestion factors concerning water, food supplies, milk, and agricultural production during the post-plume phase exercise.

3.3.2.2 Darlington County

Public Health and Medical Services Capability Summary:

Darlington County Emergency Medical Services (EMS) staff successfully demonstrated their activities under the Triage and Pre-Hospital Treatment Target Capability during the Medical Services Drill (MSD). After receiving a call for assistance the EMS team dispatched emergency medical service resources, which provided appropriate contamination control for the victim and the EMS team, and pre-hospital medical treatment. Communications were established and maintained between the EMS team and Carolina Pines Regional Medical Center (CPRMC). The EMS team managed their exposure from transit to the victim through demobilization. While the ambulance was en-route to the hospital, medical information and estimated time of arrival was provided to the hospital on the contaminated injured patient.

CPRMC staff and RNP radiological control technicians successfully demonstrated the capability to decontaminate a contaminated injured patient during this MSD. Upon notification from the Darlington County EMS staff, the CPRMC Radiological Response Team immediately initiated the hospital's preparation of a Radiological Emergency Area. They were assisted by RNP radiological control technicians for radiological support. The patient was transported and decontaminated with medical care taking priority. The team demonstrated exceptional teamwork, contamination control, monitoring techniques and patient care during the drill.

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

3.3.2.3 Chesterfield County

Operational Coordination Capability Summary: **Plume Phase**

Chesterfield County Emergency Management staff successfully maintained a unified and coordinated operational structure while integrating critical stakeholders. Activation of the Chesterfield County EOC was accomplished in accordance with their plans and procedures. Staff were notified and mobilized to the EOC in a timely manner using the Page Gate pager system. The EOC was equipped with redundant communications capabilities and had sufficient supplies, displays, and exposure control equipment to support extended operations. The Chesterfield County Emergency Management Director (EM Director) coordinated and directed incident actions for Chesterfield County and kept EOC staff informed of incident status. The Director utilized frequent staff briefings to engage EOC staff and encourage an open dialog to maintain situational awareness and ensure appropriate response actions were accomplished.

Chesterfield County was not impacted by the plume, however the Director discussed actions they would take if they were affected with the EOC staff. They discussed the relocation of schools, the relocation of access and functional needs populations, and backup route alerting. Traffic and access control points were activated and utilized for several exercise injects. The Director participated in all protective action decision coordination conference calls with stakeholders. The Chesterfield County EOC staff successfully demonstrated their knowledge, professionalism and teamwork.

For this capability the following REP 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

Public Information and Warning Capability Summary: Plume Phase

Chesterfield County successfully demonstrated their ability to provide coordinated, prompt, reliable, and actionable information to the media and the public through the use of clear, consistent, accessible information and warning, in a timely manner

The PIO successfully demonstrated the ability to inform the public through the use of emergency messages and displayed experience and knowledge of the process for disseminating Press Releases. All releases followed the same procedure of approval and dissemination. Exercise injects provided a great platform for the Director to adjust the response to the emergency, but also to update press releases. TCPs and the evacuation routes were changed due to accidents and impediments. The PIO produced press releases to reflect the new evacuation routes. She also identified through press release, the schools which were relocated and where parents could pick up students. A total of five press releases were created.

During a county and State conference call, a decision to activate the fixed siren system was coordinated. Darlington County attempted to activate the system and the computer failed. Lee County immediately activated the sirens for all the counties. The Director discussed the procedures with the EOC to perform back up route alerting if any sirens in

Chesterfield County failed to sound. County EMS would advise the residents of the evacuation over loud speakers, directed by the EOC EMS representative and the Director.

Calls and injects provided the PIO sufficient play and challenged her throughout the exercises, the PIO demonstrated knowledge of the Public Inquiry procedures during the exercise. A total of eleven (11) Public Inquiry calls were received and processed by the PIO.

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

3.3.2.4 Lee County

Operational Coordination Capability Summary: Plume Phase

The leadership and staff of the Lee County Emergency Management Division successfully demonstrated the capability to establish a unified and coordinated operation structure and process that integrated all critical stakeholders and supported the execution of core capabilities during the RNP exercise.

Emergency support personnel were pre-positioned in the EOC in accordance with the XPA. The Lee County EM staff explained how they would normally be alerted and mobilized using the primary automatic calling system and a manual call down system. These systems and methods could efficiently alert, notify, and mobilize emergency personnel and facilities in Lee County.

The Selective Signaling System (SSS) and the conference bridge line telephone were the primary means of communications between Lee County, other Risk Counties, State agencies and the utility. Other communications systems, such as commercial telephones, radios, and computer systems like WebEOC, were also available to maintain proper communications and coordinate response actions. No communications equipment failures were observed. Lee County EM staff kept the EOC staff informed of current plant conditions through frequent staff briefings. During the course of the exercise Lee County EM Staff took part in conference calls, coordinating siren and Emergency Alert System (EAS) activation; each activation successfully ensured public notice and warning.

Space inside the EOC was at a premium; however it did not adversely affect operations. Wall space was used to display numerous maps of the 10-mile Emergency Planning Zone (EPZ), information relating to weather conditions, plant conditions, evacuation status, significant events, and a projection screen. There were facsimiles, copiers and 14 workstations with laptop computers. Plans and procedures were on hand at each ESF workstation and were followed by all Lee County personnel. Message logs were maintained via the State WebEOC and internal logs.

Lee County EM Staff successfully demonstrated the ability to make coordinated PADs in order to protect the public and do so in a timely fashion. With the assistance of the

Assistant Emergency Management Director, the EM Director successfully made necessary coordination with the SCEMD, Chesterfield and Darlington County using an open Conference Bridge Line. Lee County also requested additional Ludlum Model 3s and Portal monitors through the State redistribution plan. The Lee County Command team worked extremely well together ensuring the situational awareness of its staff and senior county officials and the timeliness of protective action decisions.

The Lee County Radiological Officer successfully issued the appropriate dosimetry and Potassium Iodide (KI) to emergency workers (EW) who had responsibilities that could result in an exposure to radiation. All personnel issued dosimetry were also provided just in time training on its wear, use, and reporting and recording requirements. The Radiological Officer explained during an interview the appropriate way to use documentation, the exposure and KI record keeping forms. He also stated that he would collect the exposure and KI record information at the end of each shift.

At the Alert status Emergency Welfare Services (EWS) workers telephonically notified persons registered with functional and access needs to determine if they would require assistance with evacuation if it were recommended, and to inform them they should start preparation for evacuation. Transportation assets to include busses with lift capabilities were verified as available and alerted. At the Site Area Emergency (SAE) evacuation of persons with functional and access needs was successfully started.

Lee County does not have any schools or licensed day care centers within the 10-mile EPZ.

When the SAE was declared, Lee County Law Enforcement Officers safely established the County's two preplanned traffic control points (TCPs). Prior to deployment to the TCPs, officers were provided dosimetry, KI, and just-in-time training. Through interview, officers were obviously well prepared in all aspects of traffic control to include correcting impediments to traffic flow.

Overall, the EMD and EOC Staff demonstrated a high degree of competence, professionalism, and the ability to protect the health and safety of the public and emergency workers in the event of an incident at the RNP.

For this capability the following REP criteria were MET: 1.a.1, 1.b.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

Public Information and Warning Capability Summary: Plume Phase

The Lee County Director and PIO demonstrated the ability to prepare and disseminate accurate and timely information to notify the public of an emergency situation at RNP prior to the SAE ECL declaration. Following the SAE ECL declaration, Lee County, due to siren activation difficulty in Darlington County, with concurrence from the State of South Carolina, Chesterfield County and Darlington County activated the alert siren

system [a silent siren test] on behalf of all counties; there were no siren failures. In addition, the South Carolina EOC assumed responsibility for preparing EAS Messages and News Releases for timely dissemination to the public through the JIC.

While no siren failures were noted, the Lee County Sherriff's Office, per the XPA, discussed how backup route alerting and notification of the public would be completed within a reasonable time following the detection of a failure of the primary alert and notification system. Representatives from the Lee County Sherriff's Office and Lee County Fire-Rescue had been trained to perform backup route alerting, utilizing their county issued vehicles which include mobile sirens, a public address system and horns to notify the public. Pre-scripted warning messages, as well as route information and maps, were available in the Lee County TCP Procedure.

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

3.3.3 Support Jurisdictions

3.3.3.1 Florence County Reception Center

Environmental Response/Safety and Health Capability Summary:

During the July 21, 2015 RNP Exercise the Florence County Emergency Response Team (ERT), successfully demonstrated the Environmental Response/Health and Safety Capability at the Reception and Congregate Care Center (RCCC) located at the Florence County Civic Center, 3300 W. Radio Drive, Florence, South Carolina. The ERT successfully demonstrated the ability to monitor and decontaminate evacuees.

Equipment and supplies necessary for monitoring and decontamination efforts were stored in mobile ERT trailers for rapid deployment. Upon arrival, the ERT quickly established the RCCC monitoring and decontamination stations with all equipment inventories verified and operational checks properly conducted. Traffic control equipment including signage, directional arrows, cones and barrier tape were properly deployed per procedures by the responding fire and law enforcement representatives using flow diagrams indicated in the plan.

The safety briefing covered all pertinent areas relative to dosimetry and management of radiological exposure for EWs at the RCCC as described in the Florence County's emergency plans and procedures. This was validated through separate interviews of two EWs immediately following the briefing during which both adequately described how to manage their dosimetry, report and record findings, turn back values, and where to return the dosimetry at the end of their shifts. The EWs had protective clothing and equipment which minimized contamination within the reception center. There were sufficient supplies for this process. The personnel monitoring stations were well laid out as per county procedures, and cross-contamination did not occur. The RCCC had adequate procedures and resources to accomplish monitoring and decontamination of EWs and

evacuees. In accordance with the XPA, two personnel were found to be contaminated and subsequently successfully decontaminated.

Monitoring personnel stated that pets and service animal monitoring would be conducted by hand using the Ludlum Model 3s. If an animal was found to be contaminated, decontamination was the responsibility of the owner. The animal would accompany the owner through the decontamination shower process. The pet owner would also be responsible to provide food and shelter for them, since the American Red Cross only permitted service animals and not pets into the mass care center.

A separate table was set up in the RCCC for potassium iodide (KI) distribution staffed by Florence County Health Department and DHEC representatives to answer questions and distribute KI if needed; however, no distribution of KI took place during the exercise. The KI supply of 160 packets of 20 tablets was up to date with an expiration date of October 2017. Also available and provided were instructions on KI use and forms for tracking its distribution. The DHEC staff, through interview, demonstrated a good understanding of their plans and procedures for KI distribution.

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

3.3.3.2 Florence County Reception Center

Mass Care Services Capability Summary:

Florence County representatives for the Department of Social Services (DSS), ARC, and DHEC successfully demonstrated that the Florence County RCCC was equipped with adequate resources to provide services and accommodations consistent with ARC planning guidelines.

The ARC managed the RCCC with DSS representatives in charge of registration of evacuees as they enter the facility. Representatives from DHEC were available to provide guidance, distribution, and recording of KI distribution.

The ARC Manager carefully instructed the registration staff on procedures for determining if evacuees attempting to enter the RCCC had been monitored for contamination and decontaminated as appropriate. They were told to only register and allow RCCC access to evacuees that presented a blue colored sticker. The blue-colored sticker would indicate that the evacuee had been monitored and was clean or monitoring indicated contamination levels of 300 counts per minute or less. The ARC Manager explained that only evacuees wearing a blue-colored sticker should be coming to the RCCC and if an evacuee were to show up with a red-sticker or no sticker that they were to be directed back to the decontamination operation.

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

Section 4: Conclusion

Overall, the Region's national level ingestion phase REP exercise was a success. Officials and representatives from our federal partners, State of South Carolina, the risk counties of Chesterfield, Darlington, Lee, host county Florence, the ingestion counties of Dillion, Marlboro, Marion, 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.

FEMA wishes to acknowledge the efforts of the many individuals who participated and made this exercise a success. Protecting the public health and safety is the full-time job of some of the exercise participants and an additional assigned responsibility for others. Still others have willingly sought this responsibility by volunteering to provide vital emergency services to their communities. The introduction of national level exercise scenario into the design phase of the exercise was embraced by the team, and they exhibited a high degree of eagerness to improve emergency management and response at all levels.

State and local emergency response organizations demonstrated knowledge of their emergency response plans and procedures and successfully implemented them. An example of this was when the Darlington County EPM had difficulty in activating the sirens for the three Risk Counties. The Lee County Emergency Management quickly established communications and coordinated the siren activation in a timely manner. The lack of initial coordination meetings and Federal Agencies beginning play on Day 2 prior to coordinating activities with the State caused some confusion. However, as the exercise progressed the coordination and communications improved and allowed the State and Federal Agencies to work better together. It was also apparent, that it is necessary to have all State Agencies with the ability to affect transportation and consumption of food, livestock and products for the general public should have representatives participate in the exercise.

During this exercise, FEMA did not identify any Level 1 or Level 2 findings.

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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				
		EOC/DOSE	JIS	Chesterfield County	Darlington County	Lee County
Unusual Event	N/A	N/A	N/A	N/A	N/A	N/A
Alert	0753	0758	N/A	0753	0753	0754
Site Area Emergency	0929	0942	0940	0941	0937	0937
General Emergency	1042	1048	1056	1055	1049	1051
Simulated Rad. Release Started	1200	1200	1200	1200	1200	1200
Simulated Rad. Release Ended	1540	1540	1540	1540	1540	1540
Facility Declared Operational	0819	0950	0945	0800	0849	0815
Exercise Terminated						
Declaration of State of Emergency Local		N/A	N/A	1116	1122	1150
State		0930	1050	1010	1010	1010
Early Precautionary Actions: Waterway Clearance, Fishing and Hunting Ban, Stored Feed and Water for Livestock, Distribute KI to Emergency Workers		1009	1049	1009	1009	1009
1st Siren Activation		1029	N/A	1029	1029	1029
1st EAS Message		1029	1029	1029	1029	1029
2nd Protective Action Decision: Evacuate Zones: A0, B1, C1, C2, D1, D2		1125	1140	1125	1121	1123
2nd Siren Activation		1145	N/A	1145	1145	1145
2nd EAS Message		1145	1145	1145	1145	1145
3rd Protective Action Decision: Evacuate Zones: A0, B1, B2, C1, C2, D1, D2		1245	1250	1244	1244	1240
3rd Siren Activation		1300	1300	1300	1300	1300
3rd EAS Message		1300	1300	1300	1300	1300
KI Decision: Ingest KI in Affected Areas Emergency Workers General Public		1245	1245	1245	1245	1245

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Appendix B: Exercise Evaluators and Team Leaders

Regional Assistance Committee (RAC) Chair: Conrad Burnside

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

Location	Evaluator Team	
EOF	Rick Button	EPA
JIC	J. T. Ackermann R Spence J. Simpson	FEMA
SEOC Sim Cell	O. Spencer M. Dolder B. Swiren	FEMA FEMA ICF
WebEOC/Decision Line Monitor	R Shaw	FEMA
Dose Assessment - SEOC	J Harworth	
Dose Assessment – DHEC	Jill Leatherman	ICF
DHEC ACC	L. Generette	EPA
DHEC/MOC	M. Campbell	ICF
Mobile Laboratory	J. Fill	FEMA
FMT1	K. Earnshaw	ICF
FMT2	B. Ray	ICF
Waterway Warning	L. Lewis	FEMA
EAS (WJMX)	R. Nash	FEMA
Chesterfield County EOC	M. Bradley A. Sera	FEMA
Darlington County EOC	L. Rink B. Rembert J. Simpson	FEMA
Carolina Pines Medical Regional Medical Center	J. Harworth R. Shaw	FEMA
Lee County EOC	Q. Ivy W. Cushman E. Houghton	FEMA FEMA ICF
Florence County Civic Center	Gary Bolender Kent Tosch Gregg Dawkins Danny Loomis	ICF

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Appendix C: Acronyms and Abbreviations

Acronym	Meaning
AAR	After Action Report
ARC	American Red Cross
ACC	Agency Coordination Center
ARES	Amateur Radio Emergency Services
DHHS	Department of Health and Human Services
DHS	Department of Homeland Security
DEMNET	Duke Energy Management Network
DENR	Department of Environment and Natural Resources
DOH	Department of Health
DRD	Direct Reading Dosimeter
DSS	Department of Social Services
E-Mail	Electronic Mail
EAS	Emergency Alert System
ECL	Emergency Classification Level
EMC	Emergency Management Coordinator
EMNet	Emergency Management Network
EMS	Emergency Medical Services
ENF	Emergency Notification Form
EOC	Emergency Operations Center
EOCM	Emergency Operations Center Manager
EOF	Emergency Operations Facility
EOP	Emergency Operations Plan
ESD	Emergency Services Director
EW	Emergency Worker
EWD	Emergency Worker and Vehicle Monitoring and Decontamination
EPZ	Emergency Planning Zone
FEMA	Federal Emergency Management Agency
FMT	Field Monitoring Team
GE	General Emergency
GIS	Geospatial Information System
GPM	Gallons Per Minute
HAB	Hostile Action Based

Acronym	Meaning
HAZMAT	Hazardous Materials
HSEEP	Homeland Security Exercise and Evaluation Program
IAP	Incident Action Plan
IC	Incident Commander
ICP	Incident Command Post
ICS	Incident Command System
JIC	Joint Information Center
JIS	Joint Information System
KI	Potassium Iodide
LP	Local Primary
MHz	Megahertz
MRL	Mobile Radiological Laboratory
MSD	Medical Services Drill
NIMS	National Incident Management System
NOAA	National Oceanic and Atmospheric Administration
NRC	Nuclear Regulatory Commission
NUREG-0654/ FEMA REP-1	NUREG-0654/FEMA-REP-1, Rev. 1, *"Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980*
NWS	National Weather Service
OCA	Owner Controlled Area
OEM	Office of Emergency Management
OOS	Out of Sequence
ORO	Offsite Response Organization
PAD	Protective Action Decision
PAR	Protective Action Recommendation
PIO	Public Information Officer
PNS	Primary Notification System
PRD	Permanent Record Dosimeter
R	Roentgen
RACES	Radio Amateur Civil Emergency Service
RASCAL	Radiological Assessment Systems for Consequence Analysis
RCCC	Reception and Congregate Care Center
REP	Radiological Emergency Preparedness

Acronym	Meaning
RERP	Radiological Emergency Response Plan
RDO	Radiological and Decontamination Officer
RPS	Radiation Protection Section
SAE	Site Area Emergency
SRB	Security Road Block
SEOC	State Emergency Operations Center
SERT	State Emergency Response Team
SITREP	Situation Report
SOG	Standard Operating Guide
SOP	Standard Operating Procedure
SPARTA	State Preparedness and Resource Tracking Application
SSS	Selective Signaling System
SW	South West
SWP	State Warning Point
TV	Television
TCP	Traffic Control Point
WebEOC	Web-based Emergency Operations Center
WP	Warning Point
XPA	Extent of Play Agreement

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Appendix D: Extent-of-Play Agreements

DAY 1 (EARLY/PLUME PHASE)

Robinson Steam Electric Plant

INGESTION PATHWAY FULL PARTICIPATION
RADIOLOGICAL EMERGENCY PREPAREDNESS EXERCISE
July 21-23, 2015

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 an exception is not listed in this document the demonstration of the function/activity will include the use of all the resources listed in appropriate plans/procedures and/or guides. Any issue or discrepancy arising during exercise play may be re-demonstrated if allowed by the Regional Assistance Committee (RAC) Chairman (FEMA Region IV) 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*

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.

1. Capability Target: Emergency Operations Management

Performance Measure: *Procedures to alert and notify personnel will be demonstrated and personnel will respond only upon notification. Identified communications will be operational. Equipment, monitoring instruments and dosimetry must be available and will be operational which includes an affixed current calibration and range of readings sticker if applicable; quantities of Potassium Iodide (KI) and expirations will be verified.*

Critical Task 1: 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; F.1, 2 H.3, 4; Criterion 1.a.1)

All participating state and local government personnel will activated in accordance with plans and procedures as dictated by scenario events. Alert rosters will be provided to FEMA evaluators. Responders may be prepositioned in an area near their reporting location to wait for notification and decrease mobilization time.

Critical Task 2: Facilities are sufficient to support the emergency response. (NUREG-0654/FEMA-REP-1, H.3; G.3.a; J.10.h; J.12; K.5.b; Criterion 1.b.1)

County EOCs were evaluated during county Staff Assistant Visit (SAV), to meet this eight year requirement.

SAVs were conducted in:
Darlington County: 13 April 2015 @1400
Lee County: 16 April 2015 @0900
Chesterfield County: 16 April 2015 @1100
Florence County: 16 April 2015 @1500

Critical Task 3: 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 a conference bridge line to conduct protective action discussions/decision making.

Critical Task 4: 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, equipment, and their calibration were verified during SAVs.

2. Capability Target: Protective Action Decision (PAD) Making

Performance Measure: *Key personnel with leadership roles will provide direction and control; protective action decision making will be demonstrated by the OROs. Following activation of the EOC, staff and organize the EOC in accordance with the comprehensive emergency management plan (CEMP) and the requisite policies, procedures, and directives.*

Critical Task 1: 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 A.1.d; A.2.a, b; A.3; C.4, 6; Criterion 1.c.1)

State direction and control will be at the State Emergency Operations Center (SEOC). County direction and control will take place at the Chesterfield, Darlington, and Lee County Emergency Operations Centers (EOCs). Florence County EOC will be located in their mobile command vehicle at the Florence City/County Civic Center. The Department of Health and Environmental Control (DHEC) Mobile Operations Center (MOC) will be pre-positioned at the South Carolina Army National Guard Armory, 1764 Harry Byrd Hwy, Darlington, SC. All telephone calls to **non-participating agencies** will be made by calling the simulation cell (simcell). FEMA evaluator will be given access to the simcell as needed.

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

In accordance with plans and procedures.

Critical Task 3: 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).

In accordance with plans and procedures during out of sequence activities and exercise play.

Critical Task 4: PADs are made, as appropriate, for groups of persons with disabilities and access/functional needs. (NUREG-0654/FEMA REP-1, D.4; J.9; J.10.d, e; Criterion 2.c.1)
In accordance with plans and procedures.

3. Capability Target: Protective Action Implementation

Performance Measure: *Demonstrate the capability to implement emergency worker exposure control; KI decision for institutionalized individuals and the general public; protective actions for persons with disabilities and access/functional needs; schools; traffic and access control and impediments to evacuation.*

Critical Task 1: 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)

In accordance with plans and procedures.

Critical Task 2: KI and appropriate instructions are available if a decision to recommend use of KI is made. Appropriate record-keeping of the administration of KI for institutionalized individuals (not 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 the county EOCs during out of sequence activities and exercise play.

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

Darlington, Lee and Chesterfield Counties will discuss their plans and procedures to satisfy this criterion. A list of potential special population citizens will be provided for the FEMA evaluator to review.

Critical Task 4: 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)

Traffic and Access Control Points (TACPs) are predetermined. The South Carolina Highway Patrol, Department of Natural Resources, Lee and Chesterfield Counties were done via discussion as scenario dictates. Decision making and management of TACPs for the response will be accomplished at the Chesterfield County and Lee County EOCs as part of exercise play.

Darlington County conducted these evaluations on April 21, 2015, beginning at 0900. The following TCPs will be evaluated:

16A - W. Old Camden Rd & W. Bobo Newsome Hwy- SCHP
16C - W. Bobo Newsome Hwy & W. Carolina Ave- HPD
16D - W. Bobo Newsome Hwy & S.5th St- DCSO

Critical Task 5: Impediments to evacuation are identified and resolved. (NUREG-0654/FEMA REP-1, J.10.k; Criterion 3.d.2)

Actions to identify and remove impediments to evacuation will be by discussion with the responsible law enforcement agency at each county EOC, as scenario dictates.

Core Capability: Public Information and Warning – *State/County EOCs, Joint Information Center (JIC), Lake Clearing*

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.

4. Capability Target: Emergency Notification and Public Information

Performance Measure*: Sirens and the EAS System will be activated in a timely manner to alert the general public along with waterway warning and back up route alerting in case of failure of the primary alert and notification system.*

Critical Task 1: 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, 5.a.3, 5.b.1).

The State will coordinate PADs with Chesterfield, Darlington and Lee Counties' chief elected officials or designee, as scenario dictates. At the appropriate decision points and as scenario dictates, silent tests of sirens will be conducted and the Emergency Alert system (EAS) will be activated. A "test message" EAS message will be transmitted to the Local Primary (LP-1) EAS station (WJMX Florence, S.C.). 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.

Critical Task 2: 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).

This task will be discussed at the respective county EOCs, as scenario dictates.

Critical Task 3: Waterway warning is completed within 45 minutes following the initial decision by authorized offsite emergency officials to notify the public of an emergency situation. (NUREG-0654 /FEMA REP-1, E.6; Appendix 3.B.2.c; Criterion 5.a.3)

This task will be demonstrated on July 21, 2015, with South Carolina Department of Natural Resources launching from Easterling Landing.

Critical Task 4: OROs provide accurate subsequent emergency information and instructions to the public and the news media in a timely manner. 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, 7; G.3.a; G.4.a, c; Criterion 5.b.1)

The State, Darlington, Chesterfield and Lee Counties will demonstrate the ability to disseminate accurate information and instructions to the public and news media through the Joint Information System (JIS).

Public inquiry for the state will be demonstrated at the Joint Information Center (JIC) at Duke Energy Progress, 1755 Mechanicsville Road, Florence, SC. County public inquiries will be demonstrated at the respective county EOCs. Public inquiry personnel will provide the FEMA evaluator with a call log.

Core Capability: Environmental Response/Health and Safety- *Emergency Worker Decontamination (EWD), Reception Center Congregate Care (RCCC), State Dose Assessment*

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.

5. Capability Target: Protective Action Decision (PAD) Making

Performance Measure: *OROs authorized to send EWs into the plume exposure pathway exposure pathway zone (EPZ) must demonstrate a capability to assess and control the radiation exposure received by emergency workers and have a decision chain in place, as specified in the ORO's plans/procedures, to authorize emergency worker exposure limits to be exceeded for specific missions. As appropriate, OROs must demonstrate the capability to make decisions on the distribution and administration of KI as a protective measure for emergency workers. OROs must have the capability to independently project integrated dose from projected or actual dose rates and compare these estimates to the PAGs. OROs must have the capability to choose, among a range of protective actions, those most appropriate in a given emergency.*

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

In accordance with plans and procedures

Critical Task 2: Appropriate protective action recommendations (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)

In accordance with plans and procedures

Critical Task 3: 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)

In accordance with plans and procedures

6. Capability Target: Protective Action Implementation

Performance Measure: *OROs must demonstrate the capability to provide EWs (including supplemental resources) with the appropriate direct-reading and permanent record dosimetry, dosimeter chargers, KI, and instructions on the use of these items.*

Critical Task 1: 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)

In accordance with plans and procedures

Critical Task 2: KI and appropriate instructions are available if 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)

This task will be discussed at the SEOC during exercise play as the scenario dictates and will be demonstrated at county reception centers.

7. Capability Target: Field Measurements and Analyses

Performance Measure: *OROs must demonstrate the capability to deploy field measurement teams (FMTs) with the equipment, methods, and expertise necessary to determine the location of airborne radiation and particulate deposition on the ground from an airborne plume.*

Critical Task 1: Field teams (2 or more) are managed to obtain sufficient information to help characterize the release and to control radiation exposure. (NUREG-0654/FEMA-REP-1, C.1; H.12; I.7, 8, 11; J.10.a; Criterion 4.a.2)

In accordance with plans and procedures, to include the integration of SC field teams with other state or federal assets

Critical Task 2: Ambient radiation measurements are made and recorded at appropriate locations, and radioiodine and particulate samples are collected. Teams will move to an appropriate low background location to determine whether any significant (as specified in the plan and/or procedures) amount of radioactivity has been collected on the sampling media. (NUREG-0654/FEMA-REP-1, C.1; H.12; I.8, 9; J.10.a; Criterion 4.a.3)

In accordance with plans and procedures

Critical Task 3: Field teams (2 or more) demonstrate the capability to make appropriate measurements and to collect appropriate samples (e.g., food crops, milk, water, vegetation, and soil) to support adequate assessment and protective action decision making. (NUREG-0654/FEMA-REP-1, C.1; I.8; J.11; Criterion 4.b.1)

This criterion may be demonstrated on Day 1 if the radioactive release is terminated and additional sampling requirements are implemented. If not, it will be evaluated on Day 2.

In accordance with DHEC plans and procedures

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

The DHEC mobile radiological laboratory will be located with the MOC at the South Carolina Army National Guard Armory 1764 Harry Byrd Hwy, Darlington, SC. Evaluation of the DHEC fixed radiological laboratory will be TBD.

8. Capability Target: Support Operations and Facilities

Performance Measure: *Demonstrate the capability to implement radiological monitoring and decontamination of evacuees, while minimizing contamination of the facility. OROs must also have the capability to identify and register evacuees at reception centers.*

Critical Task 1: 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)

In accordance with plans and procedures

Critical Task 2: 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)

In accordance with plans and procedures

Critical Task 3: KI and appropriate instructions are available if 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)

This task will be discussed at the SEOC during exercise play as the scenario dictates and will be demonstrated during emergency worker out of sequence activities.

Critical Task 4: 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)

Courtesy evaluations requested: Chesterfield and Lee Counties

A minimum of 6 individuals will be processed through the reception process and at least 2 individuals (male and female) will be simulated contaminated.

The General Population Decontamination Points are being evaluated on the following dates:

Chesterfield County: 5 May 2015; Chesterfield Senior High School
Lee County: 6 May 2015; Lee Central High School
Florence County: 21 July 2015; Florence City/County Civic Center

Appropriate methods will be demonstrated or discussed for personnel decontamination. Water will not be used in demonstrating personnel decontamination.

Critical Task 5: 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)

Courtesy evaluations requested: Chesterfield, Darlington and Lee Counties

Arrangements will be made for water to be used in decontaminating vehicles. Appropriate methods should be demonstrated or discussed for personnel decontamination.

EW/Equipment Decontamination Points were or will be evaluated on:

Darlington County: 21 April 2015 @1000; Darlington County Fire Station 2
Chesterfield County: 5 May 2015 @1000; Chesterfield Senior High School
Lee County: 6 May 2015 @1000; Lee Central School
Florence County: 21 July 2015 @1000; Florence City/County Civic Center

Core Capability: Mass Care –*Reception/Congregate Care*

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.

9. Capability Target: Support Operations and Facilities

Performance Measure: *The evaluator will conduct a walk-through of the center to determine, through observation and inquiries, that the services and accommodations are*

consistent with applicable guidance. Congregate care staff must also demonstrate the capability to ensure that evacuees, service animals, and vehicles have been monitored for contamination, decontaminated as appropriate, and registered before entering the facility.

Critical Task 1: 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 J.10.e, f; Criterion 3.b.1)

KI will not be distributed but procedures for distribution will be discussed during out of sequence activities and exercise play at the state and county EOCs.

Critical Task 2: 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; J.10.h; J.12; Criterion 6.c.1)

In accordance with plans and procedures during county reception center activities

Core Capability: On-Scene Security and Protection- *Traffic Access Control Points (TACP)*

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.

10. Capability Target: Protective Action Implementation

Performance Measure: *Demonstrate the capability to select, establish and staff traffic control and access points; identify and resolve impediments to evacuation; distribute dosimetry and KI; and implement and manage EW exposure control.*

Critical Task 1: Equipment (to include communications), maps, displays, monitoring instruments, dosimetry, KI, and other supplies are sufficient to support emergency operations. (NUREG-0654 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)

In accordance with plans and procedures

Critical Task 2: 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 J.10.e, K.3.a, b, K.4; Criterion 3.a.1)

In accordance with plans and procedures

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

In accordance with plans and procedures

Critical Task 4: Impediments to evacuation are identified and resolved. (NUREG-0654 J.10.k; Criterion 3.d.2)

In accordance with plans and procedures

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.

11. Capability Target: Protective Action Implementation

Performance Measure: *Demonstrate the ability to implement PADs for schools.*

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

Darlington County simulated school relocations by interviews with key school staff members on April 22, 2015, starting at 1400. The schools evaluated included the following:

Carolina Elementary
West Hartsville Elementary
Governor's School for Science and Math
First Presbyterian Church Pre-school
Kellytown Baptist Church Pre-school

Chesterfield County will simulate school relocations by interviews with key school staff members on May 5, 2015, starting at 1000 at the Chesterfield County EOC. The schools being evaluated include the following:

McBee Elementary School
McBee Head Start
McBee High School

Core Capability: Public Health and Medical Services – *Medical Services Drill*

Definition: Provide lifesaving medical treatment via emergency medical services and related operations and avoid additional disease and injury by providing targeted public health and medical support and products to all people in need within the affected area.

12. Capability Target: Support Operations and Facilities

Performance Measure: *Demonstrate the capability to transport contaminated injured individuals to medical facilities and provide medical services.*

Critical Task 1: 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)

A Medical Services Drill was conducted on April 22, 2015. The drill commenced at 0830, at the Hartsville EMS Base, 402 S. 4th Street, Hartsville, SC 29550. The EMS crew proceeded to Darlington County Fire Station #17 located at 2380 North Center Road, Hartsville, SC 29550. The drill concluded at the Carolina Pines Medical Center located at 1304 W. Bobo Newsome Highway, Hartsville, SC 29550.

Critical Task 2: 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 J.10.e, K.3.a, b, K.4; Criterion 3.a.1)

Emergency personnel used a prop to simulate Permanent Record Dosimeters (PRDs) to monitor and control radiation exposure.

Potassium Iodide (KI) for emergency workers was simulated by using a prop identified as KI. PPE was utilized in accordance with the plans and procedures.

Critical Task 3: The facility/ORO has the appropriate space, adequate resources, and trained personnel to provide transport, monitoring, decontamination, and medical services to contaminated injured individuals. (NUREG-0654 /FEMA REP-1, F.2; H.10; K.5.a, b; L.1, 4; Criterion 6.d.1)

One FEMA evaluator traveled in the ambulance carrying the patient or was provided a radio to listen to communications between the ambulance crew and the hospital while patient was enroute. In the event that the ambulance had to respond to real life events, another county owned vehicle could have been used to transport the contaminated injured person to the hospital.

EXTENT OF PLAY AGREEMENT
DAY 2 (Intermediate Phase)

Robinson Steam Electric Plant

INGESTION PATHWAY FULL PARTICIPATION
RADIOLOGICAL EMERGENCY PREPAREDNESS EXERCISE
July 21-23, 2015

NOTE: Day 2 activities will focus mainly on field team and field activities. State and County EOC activity will depend on field results and: re-evaluating PADs from Day 1; evaluating actions taken for evacuated citizens; evaluating potential future actions for agricultural activities and food and water supplies; and potential future areas that may need to be re-located.

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) Chairman (FEMA Region IV) 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) and Emergency Operations Facility*

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.

1. Capability Target: Protective Action Decision (PAD) Making

Performance Measure: *Key personnel with leadership roles will provide direction and control; protective action decision making will be demonstrated by the OROs. Following activation of the EOC, staff and organize the EOC in accordance with the comprehensive emergency management plan (CEMP) and the requisite policies, procedures, and directives.*

Critical Task 1: 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 A.1.d; A.2.a, b; A.3; C.4, 6; Criterion 1.c.1)

State direction and control will be at the State Emergency Operations Center (SEOC). County direction and control will take place at the Chesterfield, Darlington, and Lee County

Emergency Operations Centers (EOCs). Chesterfield, Darlington, Lee and Florence County will have limited EOC activation and participation on July 22, 2015. All telephone calls to **non-participating** agencies will be made by calling the simulation cell (simcell). FEMA evaluator will be given access to the simcell as needed.

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

State: In accordance with plans and procedures.

Counties: This will be achieved through discussion at the respective county EOC or via phone call.

Critical Task 3: Radiological consequences for the ingestion pathway are assessed and appropriate protective action decisions are made based on the ORO's planning criteria. (NUREG-0654/FEMA REP-1, A.3; C.1, 4; D.4; J.9, 11; Criterion 2.d.1).

In accordance with plans and procedures.

Note: The Advisory Team, FRMAC Assessment Scientists and NARAC scientists evaluate data based on PAGs and provide products to assist with visualization of situation. Together with the Advisory Team, FRMAC Health and Safety Scientists can advise the command level health and safety professionals (and others) on concerns related to radiological protection for workers. If needed, the scientists may consult REACT/S professionals to assist with more detailed medical advice. This may occur from the field or via the home team.

Critical Task 4: Timely post-plume phase relocation, reentry, and return decisions are made and coordinated as appropriate, based on assessments of the radiological conditions and criteria in the ORO's plan and/or procedures. (NUREG-0654/FEMA REP-1, I.10; J.9; K.3.a; M.1; Criterion 2.e.1)

In accordance with plans and procedures

Note: The organization's procedures for making PADs and implementing protective actions are based upon PAGs that are consistent with EPA recommendations; and the process followed to ensure coordination of PADs with all appropriate jurisdictions.

Together with the Advisory Team, FRMAC Assessment Scientists and NARAC scientists evaluate data based on PAGs and provide products to assist with visualization of situation

Critical Task 5: Decisions regarding controlled reentry of emergency workers and relocation and return of the public during the post-plume phase are coordinated with appropriate organizations and implemented. (NUREG-0654/FEMA REP-1, E.7; J.10.j; J.12; K.5.b; M.1, 3; Criterion 3.f.1)

The procedures for controlling road access to sheltered and/or evacuated areas, including organization(s) responsible for staffing TCPs and Access Control Points (ACPs) will be conducted via discussion at respective EOC's or via telephone with appropriate decision makers.

Continuing environmental radiation measurements and dose assessments; establishing restricted and buffer zones; controlled reentry into restricted areas; and the return of the public to previously evacuated areas will be discussed through data and products produced from field monitoring activities.

2. Capability Target: Protective Action Implementation

Performance Measure: *Demonstrate the capability to implement emergency worker exposure control; KI decision for institutionalized individuals and the general public; protective actions for persons with disabilities and access/functional needs; schools; traffic and access control and impediments to evacuation.*

Critical Task 1: 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)

This task will be evaluated in accordance with plans and procedures based on exercise scenario progression. These activities will be conducted through discussion and/or demonstrated with appropriate personnel.

Core Capability: Public Information and Warning– State/County EOCs, Joint Information Center (JIC), Lake Clearing

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.

3. Capability Target: Emergency Notification and Public Information

Performance Measure: Sirens and the EAS System will be activated in a timely manner to alert the general public along with waterway warning and back up route alerting in case of

failure of the primary alert and notification system.

Critical Task 1: The ORO demonstrates the availability and appropriate use of adequate information regarding water, food supplies, milk, and agricultural production within the ingestion exposure pathway emergency planning zone for implementation of protective actions. (NUREG-0654/FEMA REP-1, A.3; C.1, 4; J.11; Criterion 3.e.1)

In accordance with plans and procedures

Critical Task 2: Appropriate measures, strategies, and pre-printed instructional material are developed for implementing protective action decisions for contaminated water, food products, milk, and agricultural production. (NUREG-0654/FEMA REP-1, G.1; J.9, 11; Criterion 3.e.2)

In accordance with plans and procedures

Critical Task 3: OROs provide accurate subsequent emergency information and instructions to the public and the news media in a timely manner. 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, 7; G.3.a; G.4.a, c; Criterion 5.b.1)

In accordance with plans and procedures

Core Capability: Environmental Response/Health and Safety - *Emergency Worker Decontamination (EWD), Reception Center Congregate Care (RCCC), State Dose Assessment*

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.

4. Capability Target: Protective Action Decision Making

Performance Measure: *OROs authorized to send emergency workers into the plume exposure pathway EPZ must demonstrate a capability to assess and control the radiation exposure received by emergency workers and have a decision chain in place, as specified in the ORO's plans/procedures, to authorize emergency worker exposure limits to be exceeded for specific missions. As appropriate, OROs must demonstrate the capability to make decisions on the distribution and administration of KI as a protective measure for emergency workers. OROs must have the capability to independently project integrated dose from projected or actual dose rates and compare these estimates to the PAGs. OROs must have the capability to choose, among a range of protective actions, those most appropriate in a given emergency.*

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

In accordance with plans and procedures

Critical Task 2: Radiological consequences for the ingestion pathway are assessed and appropriate protective action decisions are made based on the ORO's planning criteria. (NUREG-0654/FEMA REP-1, A.3; C.1, 4; D.4; J.9, 11; Criterion 2.d.1)

In accordance with plans and procedures

Note: Together with the Advisory Team, FRMAC Assessment Scientists and NARAC scientists evaluate data based on PAGs and provide products to assist with visualization of situation. The Advisory Team, FRMAC Health and Safety Scientists can advise the command level health and safety professional (and others) on concerns related to radiological protection for emergency workers. If needed, the scientists may consult REACT/S professionals to assist with more detailed medical advice. This may occur from the field or via the home team.

Critical Task 3: Timely post-plume phase relocation, reentry, and return decisions are made and coordinated as appropriate, based on assessments of the radiological conditions and criteria in the ORO's plan and/or procedures. (NUREG-0654/FEMA REP-1, I.10; J.9; K.3.a; M.1; Criterion 2.e.1)

In accordance with plans and procedures

Note: Personnel and equipment that will be involved in dose assessment may use any of the following methods identified; however, this is not an all-inclusive list. Computer software and documentation, including data input procedures that will be used. Alternate methods that may be used (e.g., hand calculations); information/variables to run the model, including proper units of measure.

Together with the Advisory Team, FRMAC Assessment Scientists and NARAC scientists evaluate data based on PAGs and provide products to assist with visualization of situation.

FRMAC Field Monitoring Staff may assist in distribution and collection of dosimetry. This may include assistance with record keeping activities.

5. Capability Target: Protective Action Implementation

Performance Measure: *OROs must demonstrate the capability to provide emergency workers (including supplemental resources) with the appropriate direct-reading and*

permanent record dosimetry, dosimeter chargers, KI, and instructions on the use of these items.

Critical Task 1: 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)

This task will be demonstrated by field monitoring teams in accordance with plans and procedures.

6. Capability Target: Field Measurements and Analyses

Performance Measure: *OROs must demonstrate the capability to deploy FMTs with the equipment, methods, and expertise necessary to determine the location of airborne radiation and particulate deposition on the ground from an airborne plume.*

Critical Task 1: Field teams (2 or more) are managed to obtain sufficient information to help characterize the release and to control radiation exposure. (NUREG-0654/FEMA-REP-1, C.1; H.12; I.7, 8, 11; J.10.a; Criterion 4.a.2)

In accordance with plans and procedures

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

This criterion may be demonstrated on Day 1 if the radioactive release is terminated and additional sampling requirements are implemented.

In accordance with plans and procedures.

Note: FRMAC Field Teams will perform monitoring and sampling activities in accordance with incident action plan.

FRMAC Laboratory Analysis and Assessment staff may assist state radiation health professionals in performing calculations, determining which materials should be sampled and how they should be analyzed. Lab Analysis may also perform field analysis, send samples to fixed laboratories, or catalog the results of these assessments.

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

In accordance with plans and procedures.

Note: FRMAC Laboratory Analysis may perform field analysis, send samples to fixed laboratories, or catalog the results of sample assessments.

FRMAC Laboratory Analysis and Assessment staff may assist state radiation health professionals in performing calculations, determining which materials should be sampled and how they should be analyzed. Lab Analysis may also perform field analysis, send samples to fixed laboratories, or catalog the results of these assessments.

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EXTENT OF PLAY AGREEMENT
DAY 3 (Intermediate/Early Recovery Phase)

Robinson Steam Electric Plant

INGESTION PATHWAY FULL PARTICIPATION
RADIOLOGICAL EMERGENCY PREPAREDNESS EXERCISE
July 21-23, 2015

NOTE: Day 3 activities will consist of two simultaneous exercises. SCDHEC/DOE will continue to support their field exercise, while the whole community will participate in a Response and Recovery tabletop exercise focusing on response and recovery operations 14 days post incident.

Core Capability: Operational Coordination - State and County Emergency Operations Centers (EOCs) and 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.

1. Capability Target: Protective Action Decision (PAD) Making

Performance Measure: *Key personnel with leadership roles will provide direction and control; PAD making will be demonstrated by the OROs. Following activation of the EOC, staff and organize the EOC in accordance with the comprehensive emergency management plan (CEMP) and the requisite policies, procedures, and directives.*

Critical Task 1: 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 A.1.d; A.2.a, b; A.3; C.4, 6; Criterion 1.c.1)

SCEMD will have overall direction and control and coordinate and communicate with the counties, other State agencies and all federal agencies. The counties will review PADs, relocation, re-entry, return recommendations and discuss how they will coordinate the activities necessary to implement the final decisions. Counties should also be prepared to discuss how they would integrate State and Federal assets into their county processes.

Critical Task 2: Radiological consequences for the ingestion pathway are assessed and appropriate protective action decisions are made based on the ORO's planning criteria. (NUREG-0654/FEMA REP-1, A.3; C.1, 4; D.4; J.9, 11; Criterion 2.d.1)

In accordance with plans and procedures

Critical Task 3: Timely post-plume phase relocation, reentry, and return decisions are made and coordinated as appropriate, based on assessments of the radiological conditions and criteria in the ORO's plan and/or procedures. (NUREG-0654/FEMA REP-1, I.10; J.9; K.3.a; M.1; Criterion 2.e.1)

In accordance with plans and procedures

Critical Task 4: Decisions regarding controlled reentry of emergency workers and relocation and return of the public during the post-plume phase are coordinated with appropriate organizations and implemented. (NUREG-0654/FEMA REP-1, E.7; J.10.j; J.12; K.5.b; M.1, 3; Criterion 3.f.1)

In accordance with plans and procedures

Core Capability: Public Information and Warning - *State/County EOCs, Joint Information Center (JIC), Lake Clearing*

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.

2. Capability Target: Emergency Notification and Public Information

Performance Measure*: OROs must demonstrate that a system exists for rapid dissemination of ingestion pathway information to predetermined individuals and businesses.*

Critical Task 1: The ORO demonstrates the availability and appropriate use of adequate information regarding water, food supplies, milk, and agricultural production within the ingestion exposure pathway emergency planning zone for implementation of protective actions. (NUREG-0654/FEMA REP-1, A.3; C.1, 4; J.11; Criterion 3.e.1)

In accordance with plans and procedures

Critical Task 2: Appropriate measures, strategies, and pre-printed instructional material are developed for implementing protective action decisions for contaminated water, food products, milk, and agricultural production. (NUREG-0654/FEMA REP-1, G.1; J.9, 11 Criterion 3.e.2)

In accordance with plans and procedures

Critical Task 3: OROs provide accurate subsequent emergency information and instructions to the public and the news media in a timely manner. 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, 7; G.3.a; G.4.a, c; Criterion 5.b.1)

In accordance with plans and procedures.

Note: FRMAC PIO may assist in crafting the message given to the public

Core Capability: Environmental Response/Health and Safety -- *Emergency Worker Decontamination (EWD), Reception Center Congregate Care (RCCC), State Dose Assessment*

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.

3. Capability Target: Protective Action Decision (PAD) Making

Performance Measure: *OROs authorized to send emergency workers into the plume exposure pathway EPZ must demonstrate a capability to assess and control the radiation exposure received by emergency workers and have a decision chain in place, as specified in the ORO's plans/procedures, to authorize emergency worker exposure limits to be exceeded for specific missions. As appropriate, OROs must demonstrate the capability to make decisions on the distribution and administration of KI as a protective measure for emergency workers. OROs must have the capability to independently project integrated dose from projected or actual dose rates and compare these estimates to the PAGs. OROs must have the capability to choose, among a range of protective actions, those most appropriate in a given emergency.*

Critical Task 1: Radiological consequences for the ingestion pathway are assessed and appropriate protective action decisions are made based on the ORO's planning criteria. (NUREG-0654/FEMA REP-1, A.3; C.1, 4; D.4; J.9, 11; Criterion 2.d.1)

In accordance with plans and procedures.

Note: The Advisory Team, FRMAC Health and Safety Scientists can advise the command level health and safety professional (and others) on concerns related to radiological protection for workers. If needed the scientists may reach for REACT/S professionals to assist with more detailed medical advice. This may occur from the field or via the home team.

Critical Task 2: Timely post-plume phase relocation, reentry, and return decisions are made and coordinated as appropriate, based on assessments of the radiological conditions and criteria in the ORO's plan and/or procedures. (NUREG-0654/FEMA REP-1, I.10; J.9; K.3.a; M.1; Criterion 2.e.1)

In accordance with plans and procedures.

Note: State and local officials may use all available resources to aid in this decision making process. The Advisory Team, FRMAC Assessment Scientists and NARAC scientists may evaluate data based on PAGs and provide products to assist with visualization of situation.

4. Capability Target: Protective Action Implementation

Performance Measure: *OROs must demonstrate the capability to provide emergency workers (including supplemental resources) with the appropriate direct-reading and permanent record dosimetry, dosimeter chargers, KI, and instructions on the use of these items.*

Critical Task 1: 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)

This task will be demonstrated by field monitoring teams. Also, look at record keeping and who is responsible for retrieving dosimetry at the end of shifts, recording daily exposure results, tracking exposure, and sending PRDs for processing.

5. Capability Target: Field Measurements and Analyses

Performance Measure: *OROs must demonstrate the capability to deploy FMTs with the equipment, methods, and expertise necessary to determine the location of airborne radiation and particulate deposition on the ground from an airborne plume.*

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

In accordance with plans and procedures

Note: Ongoing field team activities should involve determining what areas need further sampling, what type of samples are necessary, and determining PAGs.

DHEC and field teams would also still be involved in the logistics of ongoing exposure monitoring of the general population and monitoring personnel re-entering controlled areas.

FRMAC Laboratory Analysis and Assessment staff may assist state radiation health professionals in performing calculations, determining which materials should be sampled and

how they should be analyzed. Lab Analysis may also perform field analysis, send samples to fixed laboratories, or catalog the results of these assessments.

Critical Task2: The laboratory is capable of performing required radiological analyses to support protective action decisions. (NUREG-0654/FEMA-REP-1, C.1, 3; J.11; Criterion 4.c.1)

In accordance with plans and procedures.

Note: FRMAC Laboratory Analysis and Assessment staff may assist state radiation health professionals in performing calculations, determining which materials should be sampled and how they should be analyzed. Lab Analysis may also perform field analysis, send samples to fixed laboratories, or catalog the results of these assessments.