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U.S. Department of Homeland Security
500 C Street, S.W. Mail Stop 3172
Washington, DC 20472-3172

FEMA

September 21, 2018

SENT VIA E-MAIL

Re: **FEMA FOIA Case Number 2018-FEFO-00454**

This is the final response to your Freedom of Information Act (FOIA) request to the Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA), dated February 09, 2018 and received in this office on February 09, 2018. You are requesting a copy of the final report on the FEMA Exercise Southern Exposure, held in 2015. In addition you are requesting the final reports and the exercise summaries for Quiet Strength 2003 and Forward Challenge 2004.

A search of FEMA's National Preparedness Directorate (NPD) for documents responsive to your request produced a total of 97 pages. Of those pages, I have determined that 95 pages of the records are releasable in their entirety and two (2) pages are partially releasable, pursuant to Title 5 U.S.C. § 552 (b)(6), FOIA Exemption 6. Unfortunately we were unable to locate records concerning exercises Quiet Strength 2003 and Forward Challenge 2004.

FOIA Exemption 6 exempts from disclosure of personnel or medical files and similar files the release of which would cause a clearly unwarranted invasion of personal privacy. This requires a balancing of the public's right to disclosure against the individual's right to privacy. The privacy interests of the individuals in the records you have requested outweigh any minimal public interest in disclosure of the information. Any private interest you may have in that information does not factor into the aforementioned balancing test.

You have the right to appeal if you disagree with FEMA's response. The procedure for administrative appeals is outlined in the DHS regulations at 6 C.F.R. § 5.8. In the event you wish to submit an appeal, we encourage you to both state the reason(s) you believe FEMA's initial determination on your FOIA request was erroneous in your correspondence, and include a copy of this letter with your appeal. Should you wish to do so, you must send your appeal within 90 days from the date of this letter to fema-foia@fema.dhs.gov, or alternatively, via mail at the following address:

FEMA
Office of the Chief Administrative Officer

Information Management Division (FOIA Appeals)
500 C Street, SW, Seventh Floor, Mail Stop 3172
Washington, D.C. 20472-3172

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Provisions of the FOIA allow us to recover part of the cost of complying with your request. In this instance, because the cost is below the $25 minimum, there is no charge.

If you need any further assistance or would like to discuss any aspect of your request, please contact us and refer to FOIA case number **2018-FEFO-00454**. You may send an e-mail to fema-foia@fema.dhs.gov, call (202) 646-3323, or you may contact our FOIA Public Liaison in the same manner.

Sincerely,

ERIC A NEUSCHAEFER

Digitally signed by ERIC A NEUSCHAEFER
Date: 2018.09.21 09:33:11 -04'00'

Eric Neuschaefer
Chief, Disclosure Branch
Information Management Division
Mission Support

Enclosure(s): Responsive Documents (97 pages)

Southern Exposure 2015

After Action Report

The Southern Exposure 2015 After Action Report aligns exercise objectives with preparedness doctrine to include the National Preparedness Goal and related frameworks and guidance. Exercise information required for preparedness reporting and trend analysis is included in this report.

LEADERSHIP REVIEW AND APPROVAL

The Southern Exposure 2015 (SE15) After Action Report (AAR) has been reviewed and approved for publication by the following individuals:

K. L —

Kim Stenson
Director
South Carolina Emergency Management Division

24 Feb 16
Date

LEADERSHIP REVIEW AND APPROVAL

The Southern Exposure 2015 (SE15) After Action Report (AAR) has been reviewed and approved for publication by the following individuals:

R. Michael Glover
Robinson Nuclear Plant, Site Vice President
Duke Energy

2/25/16
Date

LEADERSHIP REVIEW AND APPROVAL

The Southern Exposure 2015 (SE15) After Action Report (AAR) has been reviewed and approved for publication by the following individuals:

Timothy A. Gretch
Deputy Director, Technological Hazards Division
Federal Emergency Management Agency

06 JUN 16
Date

LEADERSHIP REVIEW AND APPROVAL

The Southern Exposure 2015 (SE15) After Action Report (AAR) has been reviewed and approved for publication by the following individuals:

06/16/2016

Marissa G. Bailey
Director, Division of Preparedness and Response
Office of Nuclear Security and Incident Response
U.S. Nuclear Regulatory Commission

Date

LEADERSHIP REVIEW AND APPROVAL

The Southern Exposure 2015 (SE15) After Action Report (AAR) has been reviewed and approved for publication by the following individuals:

David Bowman

Dr. David Bowman
Director, Office of Emergency Response
Department of Energy/National Nuclear Security Administration

3/11/16
Date

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EXECUTIVE SUMMARY

Southern Exposure 2015 (SE15) consisted of a blend of workshops, discussions, and operation-based exercises designed to inform, test, and analyze the whole community's ability to respond to, and recover from, an incident at a nuclear power plant (NPP). The focus of SE15 was on the assessment and improvement of core capabilities across the response and recovery mission areas.

SE15 provided a unique opportunity to plan and execute the first full-scale exercise (FSE) to assess response operations to an incident at a NPP since the implementation of the new frameworks, with the most recent similar exercise occurring over twenty years ago. Endorsed by the Federal Radiological Preparedness Coordinating Committee (FRPCC), which is chaired by the Federal Emergency Management Agency (FEMA), the basic concept was an exercise that focused on the integration of Federal elements in support of a State response, in accordance with the National Response Framework (NRF) and the draft Nuclear/Radiological Incident Annex (NRIA). The implementation of this concept necessitated robust Federal, State, and local government participation; the execution of an integrated planning process. Planning for SE15 was done conjointly by representatives from the South Carolina Emergency Management Division (SCEMD), Duke Energy, FEMA Technological Hazards Division (THD), the Nuclear Regulatory Commission (NRC), and Department of Energy/National Nuclear Security Administration (DOE/NNSA). This group of five co-directors formed a panel called the Executive Steering Group (ESG). A representative from the FEMA National Exercise Division (NED) was selected to facilitate the inclusion of other Federal response partners that would mirror real-world response in order to lend authenticity to and fulfill the FEMA Administrator's requirements of incorporating the whole community.

Figure 1 outlines the timeline of SE15 events, including all five days of exercise play in both July 2015 and September 2015.

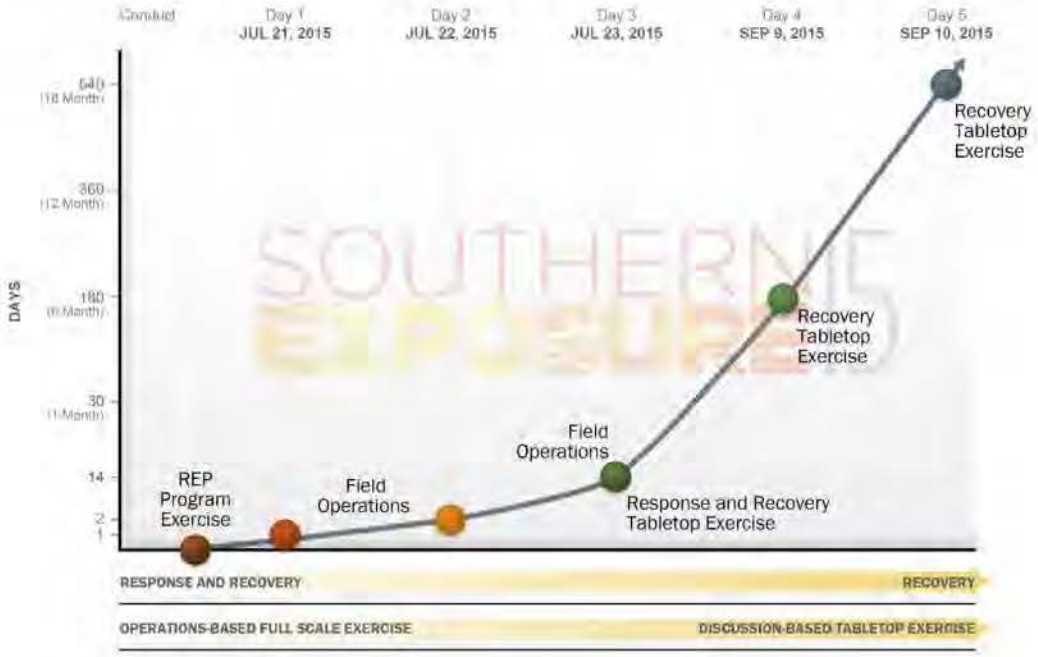


Figure 1. SE15 Overarching Exercise Timeline

Throughout the planning process, SE15 was lauded as a "first of its kind" exercise, moving beyond the typical Radiological Emergency Preparedness (REP) Program graded exercise phase and utilizing newly developed and updated policies and procedures; there were aspects of SE15 that had not been tested in any previous exercise-training environment. Further, this was the first fully-integrated exercise that included an emphasis on the recovery aspects of an incident at a NPP.

While comprehensive evaluation results for the FSE, Day 14 Tabletop Exercise (TTX), and the Recovery TTX can be found within this report, a summary of the more significant outcomes are outlined below:

- Response to a typical non-radiological, all-hazards event is led by a Unified Coordination Group (UCG) made up of a State Coordinating Officer (SCO), a Federal Coordinating Officer (FCO), and a Defense Coordinating Officer (DCO). During SE15, the SCO agreed to expand membership of the UCG to include an official from Duke Energy, the Senior Federal Official for Energy (SFO), a representative from the NRC, and a representative from the Environmental Protection Agency (EPA). These additional Federal representatives on the UCG proved to be valuable resources to the overall response. In an effort to ensure the UCG is appropriately staffed during a radiological event, it is recommended that the makeup of the UCG be incorporated into the NRIA.
- Because many participants did not fully understand the purpose or requirements associated with the implementation of the Price Anderson Act (PAA) or the role of the American Nuclear Insurers (ANI) during a radiological event, there was a lack of awareness and understanding of the potential response/recovery funding and damage compensation available following an incident at a NPP. To ensure a common understanding, Duke Energy, the NRC, ANI, FEMA Individual Assistance (IA), and other Interagency State, local, and industry representatives should engage to define appropriate coordination and public information requirements relating to assistance under all mechanisms, including the PAA and Stafford Act.
- Prior to SE15, guidance regarding which Federal agency was responsible for the overall coordination of the Federal response to a radiological event was unclear. While the NRIA provided minimal guidance, there were no supporting procedures to identify roles and responsibilities of the lead Federal agency; additionally, there were no procedures to support a transfer of that responsibility from the NRC to another agency once the event evolved into one with significant offsite consequences. Per Appendix A, in the days following the conclusion of SE15, White House-level Senior Official Exercises (SOEs) were conducted to address this issue. Participants in these exercises determined that, for an event like the SE15 scenario, the Department of Homeland Security (DHS) (via FEMA) would be designated as the lead Federal agency for coordinating the Federal government's response. Due to this determination, the NRIA should be updated to ensure clear guidance on the position of lead Federal agency. Moreover, the White House is developing a Presidential Directive that will include guidance on the designation of lead Federal agencies for not only NPP incidents, but other events during which the lead Federal agency is not clearly articulated. The NRC and FEMA will collaborate to develop procedures to support this concept and will include demonstration of this in future exercises. The REP Program requires State, local, and nuclear facility staff to demonstrate their ability to effectively respond to and manage an event at a NPP. During a large-scale event, it is understood that State and local resources will become overwhelmed and require additional support from surrounding States and the Federal government. SE15 provided an

opportunity to explore additional areas that would be affected by a NPP event than those typically included in REP graded exercises. During the SE15 planning process, workshops and TTXs were conducted to discuss agriculture, housing, and economic impacts in South Carolina. Because of the success of these pre-exercise events, the outcomes of participant discussions should be used to further enhance the State's preparedness for a radiological event. The State should continue to utilize training events such as these to further define guidance and recommendations that can be used to inform other preparedness policies and procedures.

- Co-location of the Interagency Advisory Team for Environment, Food, and Health (A-Team) personnel with the Federal Radiological Monitoring and Assessment Center (FRMAC) enhanced collaboration and effective responses to both standard and irregular requests for information (RFIs). Due to its effectiveness, the concept of co-location should be incorporated into associated A-Team procedures.
- Coordination in advance of joint press conferences and media briefings ensured agency-specific questions were appropriately addressed and a unified message was delivered to the public. In an effort to streamline this process, advanced coordination for press conferences and media briefings should be incorporated into associated Public Affairs procedures.
- During conduct of the SE15 FSE, Federal teams and personnel deployed to the State Emergency Operations Center (SEOC) did not receive mission assignments or complete a reception, staging, onward-movement, and integration (RSOI) process, leading to confusion and overcrowding on the operations center floor. In addition to executing the mission assignment process, it is recommended that an RSOI process, managed or initiated by the Federal coordinating agency, be implemented for every large-scale response to ensure the appropriate accounting and staging of deployed Federal teams and personnel.
- The failure of DOE's Consequence Management Advance Command (CMAC) to complete the Advanced Party Checklist (APC) significantly delayed the development and execution of the monitoring and sampling plan and hindered coordination between the FRMAC and the South Carolina Incident Management Team (IMT), which was necessary to produce a technical Incident Action Plan (IAP). It is recommended that the APC must be completed by CMAC upon its arrival and initial interaction with the State to ensure the efforts of the FRMAC and the content of the technical IAP align with State objectives and priorities. Additionally, consideration should be given to an expedited process for the development of initial monitoring and sampling plans that allows the completion of Incident Command System (ICS) 204 forms as monitoring and sampling activities are ongoing.
- The Interagency Joint Information Center (JIC) was not efficiently organized, resulting in an uncoordinated message development process for agency-specific press releases and conflicting guidance provided to the public. It is recommended that the Interagency ensure that all guidance and policy documents state that FEMA is the lead organization for public messaging during a radiological event. As the Emergency Support Function 15 (ESF-15) lead organization, FEMA, should determine and implement a strategy to ensure a JIC that is situationally aware and ensures messages are approved before being widely disseminated.

Evaluation of the three-day FSE component was conducted through the collection and analysis of observations and comments submitted by both exercise participants and exercise controllers and evaluators (C/Es). Exercise subject matter experts (SMEs) were sourced from participating

Federal, State, and local government agencies, local hospitals, and industry partners.

SE15 provided the first opportunity in over twenty years to examine national preparedness response to, and recovery from, a significant incident at a NPP. The strengths, areas for improvement, and policy issues identified as a result of the exercise and captured within the body of this report will result in significant improvements to national capabilities, enhancing the ability of the whole community to respond to and recover from future events.

An improvement planning (IP) matrix can be found as a stand-alone document that outlines the areas for improvement and associated recommendations identified during SE15.

EXERCISE OVERVIEW

Exercise Name	Southern Exposure 2015 (SE15)
Exercise Dates	**FSE:** Tuesday, July 21 – Thursday, July 23, 2015 **Day 14 TTX:** Thursday, July 23, 2015 **Recovery TTX:** Wednesday, September 9 – Thursday, September 10, 2015
Preparatory Workshops	**Incident Management Workshop:** Thursday, November 20, 2014 **Duke Energy TTX:** Tuesday, February 10, 2015 **National Disaster Recovery Framework (NDRF) Workshop:** Wednesday, May 27, 2015 **PAA and Other Funding Mechanisms Workshop:** Thursday, May 28, 2015 **Response and Recovery Issues and Impacts to South Carolina Agriculture in a Radiation Accident:** Friday, May 29, 2015 **FEMA Response NRIA Workshop:** Thursday, June 18, 2015
Scope	The SE15 exercise scenario involved the release of radiological material at the Robinson Nuclear Plant (RNP) to areas outside the plant boundary. The exercised events caused significant consequences to drive realistic decision-making, resulting in actionable outcomes at both the response and recovery levels. The primary audience for this exercise was first responders, IMTs, and recovery stakeholders, in addition to Federal, State, and local senior decision-makers. SE15 was a Federal integration exercise that allowed for close coordination and planning between the Federal government and South Carolina State agencies.
Core Capabilities	Operational Coordination; Environmental Response/Health and Safety; Critical Transportation; Planning; Economic Recovery; Housing; Public Information and Warning; Situational Assessment; Public Health and Medical Services; and Operational Communications.
Objectives	1. Demonstrate the ability to coordinate mobilization of assets, personnel, and other means of support for a radiological incident, supporting State and local agencies to obtain situational awareness, determine the extent if impact, and initiate operational coordination. 2. Demonstrate the ability to establish and maintain a unified command and coordination in accordance with the National

Response Framework, National Disaster Recovery Framework, Federal Interagency Operational Plans – Nuclear/Radiological Incident Annex, National Incident Management System, revised Environmental Protection Agency Protective Action Guides, and Worker Health Safety Annex.

3. Demonstrate the ability of responding organizations to integrate into local incident command and management organizations using the National Incident Management System, including multi-agency coordination systems, to synchronize National Response Framework and National Disaster Recovery Framework concepts with the processes and concepts outlined by specific department and agency authorities and NUREG-0654/FEMA-REP-1.
4. Demonstrate the ability of the whole community to coordinate and integrate response and recovery activities for the economic and housing recovery core capabilities.
5. Demonstrate the ability of the whole community to exchange critical information to protect public health and safety and the environment, pursuant to the revised National Response Framework, revised National Disaster Recovery Framework, associated Federal Interagency Operation Plans (Response and Recovery), Nuclear Radiological Incident Annex, National Incident Management System, Worker Health and Safety Annex, and Environmental Protection Agency Protective Action Guides.
6. Demonstrate the ability 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 during a response.
7. Demonstrate the ability to develop and provide relevant guidance and resources to address the radiological effects on the economy, environment, agriculture, and public health and safety.

Sponsor

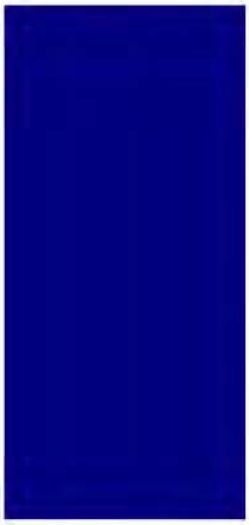
The State of South Carolina

Participating Organizations

A complete list of FSE participants is located in Appendix C; participants in the Day 14 TTX can be found in Section 4; and participants in the Recovery TTX can be found in Section 5.

Points of Contact

- Matthew Durden, SCEMD Exercise Director
  (b)(6) @emd.sc.gov
  (b)(6)
- Tony Pilo, Duke Energy Exercise Director
  (b)(6) @duke-energy.com
  (b)(6)



- Patricia Gardner, FEMA Exercise Director
  Patricia.Gardner2@fema.dhs.gov
  202-329-7573
- Sally Billings, NRC Exercise Director
  (b)(6) @nrc.gov
- Dan Blumenthal, DOE Exercise Director
  (b)(6) @nnsa.doe.gov
- Hampton H. Hart, Jr., ESG Chair, NED
  Hampton.Hart@fema.dhs.gov
  202-786-9580

SECTION 1: AFTER ACTION REPORT FOCUS

The primary goal of the SE15 AAR is to provide a retrospective analysis of the findings that were observed by the evaluators and/or controllers during FSE conduct, in addition to data that was collected by note-takers during the discussion-based TTXs. This report is all-encompassing and includes data on the FSE on July 21, 22, and 23, the Day 14 TTX on July 23, and the Recovery TTX on September 9 and 10, 2015. The TTX discussions were captured in note-format and drew on conversations that took place in pre-identified breakout groups during the course of the exercises. Details about the development of the TTXs can be found in the corresponding sections.

The feedback collected in the AAR will afford future planners and emergency management specialists the opportunity to learn from those that participated in SE15. It is important to note that specific persons were not tested during the exercises, but plans, policies, and procedures at the local, State, and Federal levels were the focus of testing. This format allows participants to interact in a learning environment without the stress of being individually tested.

The bulk of this report focuses on the FSE, as it was the largest and most widely attended portion of SE15. Section 3 identifies strengths, areas for improvement, and best practices, in addition to proposing recommended actions to remedy gaps or recognizing the sustainment of best practices.

The general focus of the AAR is to provide the reader with an overview of the SE15 exercise planning process, conduct, data collection and analysis, and after action proceedings. Located herein are the goals and objectives of the exercise, appropriate analyses of findings, a summary, and a conclusion. The succeeding report should be interpreted as a professional discussion of events that took place during SE15 and should be utilized as such.

SECTION 2: EXERCISE DESIGN SUMMARY

Exercise Purpose and Design

SE15 was a full participation exercise that included both operations- and discussion-based components: a FSE and two TTXs. The exercise was designed in coordination with a FEMA THD REP Program biennial, evaluated exercise that was previously scheduled at the RNP in Hartsville, South Carolina. Planning and associated preparatory events for SE15 built on both real-world incidents and other exercises, including FEMA and NRC policy updates, as well as lessons learned from previous incidents. SE15 was developed to exercise the integration of organizations at all levels of government, while demonstrating the whole community's ability to coordinate and conduct response and recovery operations in response to an incident at a NPP. SE15 enabled stakeholders to test and validate plans, policies, and procedures, while identifying capability gaps, areas for improvement, and efficient utilization of limited resources.

In September 2013, a contingent from the NRC, FEMA THD, and DOE traveled to South Carolina for the initial exploratory meeting with officials from the SCEMD. Planning for SE15 began in March 2014, with successive planning meetings and workshops held on an almost monthly basis until the FSE and Day 14 TTX conduct in July 2015, and Recovery TTX conduct in September 2015. The exercise objectives were developed by the ESG in conjunction with the FEMA REP Program demonstration criteria; the objectives were based on agency-specific objectives that were identified at the beginning of planning and later modified based on additional agency information submitted to the exercise planning team.

The first two days of exercise conduct (Tuesday, July 21 and Wednesday, July 22) were conducted as a FSE; Thursday, July 23 was split into two separate groups: one group participated in a TTX focused on 14 days post-incident; the second group consisted of field monitoring teams who continued to conduct monitoring activities and developed maps and deposition plots. The Day 14 TTX included breakout groups that focused on issues related to economy and infrastructure, environmental agriculture contamination and mitigation, and reentry, return, and relocation. To aid in discussions, a UCG was pre-established with the following representatives: SCO, FCO, DCO, Duke Energy, SFO, the NRC, and the EPA. The UCG met during the course of the FSE to confer on briefing updates developed by each breakout group. Approximately 2,000 people from various agencies participated in the SE15 FSE and Day 14 TTX.

A recovery-focused TTX was conducted on Wednesday, September 9 and Thursday, September 10 in Florence, SC at the Florence Civic Center. The Recovery TTX explored housing, agriculture, and economic recovery at the 6 and 18 month time frames. Approximately 200 people participated in the SE15 Recovery TTX.

Scenario Summary

On the morning of July 21, 2015, the RNP in Hartsville, South Carolina experienced a multi-staged failure, resulting in a breach of containment and release of radioactive materials into the environment. An Alert, and ultimately a general emergency (GE), was declared based on plant conditions. The incident at the NPP was brought under control within two hours. The SCEMD activated the SEOC and implemented the *South Carolina Emergency Operations Plan* and *South*

Carolina Operational Radiological Emergency Response Plan. County emergency operations centers (EOCs) also activated, operating on a 24-hour basis, along with the SEOC.

The scenario involved radioactive materials in such a mixture and magnitude that a whole community response was required. Responders and technical experts needed to evaluate the immediate impact on public health and assess the extent and magnitude of the release on potentially affected populations and environments, take action to prevent further spread of radiological materials, and restore critical infrastructure and key resources.

This scenario was used during all five days of exercise conduct.

SECTION 3: FULL-SCALE EXERCISE ANALYSIS OF CAPABILITIES

Evaluation Methodology

To establish a common framework for evaluating performance during the FSE, the SE15 Control and Evaluation Working Group developed, in consultation with the ESG and agencies supporting the planning effort, an Interagency Exercise Evaluation Guide (EEG). The EEG was organized by the core capabilities comprising the seven SE15 exercise objectives and included targets for success and a series of clarifying questions to be answered, the inputs to which are reflected in the following after action analysis.

A cadre of SME C/Es, sourced through participating Federal and State government agencies, were detailed to pre-identified exercise locations and tasked with the responsibility of collecting information and submitting observations, either hand-written or electronically, in accordance with their assigned portion of the EEG. In addition to the observation collection effort, C/Es also conducted daily end-of-shift meetings, or "hot washes," with exercise responders to obtain additional information, both to clarify what they had observed and to answer remaining questions on the EEG.

Observations and hot wash information were received during the exercise by an Analysis Cell; the Analysis Cell collated, categorized in relation to associated core capability, and analyzed the observations to produce the trends. These trends are listed in the Findings below.

Full-scale Exercise Findings

Operational Coordination

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

Finding 1 (Area for Improvement): In the absence of specific policy guidance, pre-identification of Federal representation on the UCG proved valuable to informing the objectives, priorities, and common operating picture that guided the response during the exercise.

> **Analysis:** As part of the planning process, the Exercise Support Working Group (ESWG) identified the Federal departments and agencies that should be represented on the SE15 UCG, the body responsible for managing Federal, State, and local coordination of field operations in support of the State during the exercise. The guiding concept for recommended Federal membership on the UCG was the inclusion of agencies and their components having statutory authority or possessing key operational capabilities that could inform or enhance the State's response. This concept was in accordance with guidance in the NRF on how the Federal government can best support the State in achieving its established objectives and priorities
>
> Acting as the Governor's authorized representative within the UCG, the SCO and other representatives from the SCEMD initially advocated limiting membership to the FCO, DCO, Duke Energy representative, and himself. They did so out of concern that the State response could be subordinated to an overwhelming Federal response and assumed that

restricting Federal representation would assure the primacy of State objectives and priorities. Despite his inclination to the contrary, the SCO adopted the ESWG's recommendation and ensured that the UCG included the pre-identified members from FEMA, the NRC, DOE, and EPA.

Due to space limitations in the SEOC, the UCG operated from two separate rooms, the first was where the SCO, FCO, and Duke Energy representative were located, and the other where the remaining UCG members were situated. Due to the room separation and subsequent SCO direction that the activities of the other Federal representatives were to be reported through the FCO, the perception was created for those other Federal representatives that they were not formal members of the UCG and had less input into the planning process than originally intended.

As the response progressed and the authorities and capabilities of the various Federal agencies became more apparent, the SCO acknowledged how the State was benefitting from robust Federal representation on the UCG. By the end of Day 2, those Federal agencies that felt the most excluded, namely DOE and the NRC, began to assume more active roles, commensurate with their responsibilities and capabilities.

As a member of the UCG, DOE's SFO served in a technical advisory capacity to ensure that key data, much of which was being generated by the FRMAC, was informing the common operating picture that Federal and State partners were working to generate. The SFO also assisted with the development and approval of UCG objectives and priorities and effectively communicated their intent from a technical perspective to other Federal partners operating at the SEOC.

The NRC, having oversight of the licensee, provided access to key data and analysis to inform the State decision-making process and oversaw the initial Federal actions in response to the event.

SE15 provided State and Interagency representatives the first opportunity to assess the structure and operation of a UCG during a NPP incident. While deficiencies were acknowledged, SE15 allowed participants to identify the need to codify proposed UCG membership.

Recommendation: Recommended UCG membership and rationale for its composition during a NPP event should be clearly articulated by FEMA and the NRC in future updates to the NRIA to the NRF for quick reference for State leadership.

Finding 2 (Area for Improvement): The lack of a process to transition responsibility for coordination of Federal response efforts from the NRC to FEMA resulted in an unclear and ad hoc transfer of responsibility.

Analysis: It was unclear to the NRC and FEMA responders and controllers which elements of Federal coordination FEMA was assuming and when it was assuming them. Communication about the process was unclear and incomplete.

Per the NRIA, the NRC is the primary authority for incidents at NRC-licensed facilities. The NRIA also states that the Secretary of Homeland Security, as the Principal Federal Official for domestic incident management, shall coordinate the Federal Government's resources in response to a major disaster or emergency under certain conditions, to include:

1. A Federal department or agency acting under its own authority has requested assistance of the Secretary,
2. The resources of State and local authorities are overwhelmed and Federal assistance has been requested by the appropriate State and local authorities,
3. More than one Federal department or agency has become substantially involved in responding to the incident, or
4. The Secretary has been directed to assume responsibility for managing the domestic incident by the President.

At approximately 1030 ET on Day 1 of the exercise, following the licensee's declaration of a Site Area Emergency (SAE), the NRC, acting in its capacity as primary authority and having conducted initial coordination with the State and the utility, recognized the severity of the situation and the likelihood of meeting criteria 2 and 3 above and invoked criterion 1 when the NRC Chairman called a simulated Secretary of Homeland Security to request that he assume domestic incident management responsibility for coordination of the Federal response. The simulated Secretary of Homeland Security call informed the NRC that FEMA would assume coordination responsibilities on the Secretary's behalf and the Secretary directed agency-to-agency coordination to facilitate the transition. The NRC staff subsequently contacted FEMA at the National Watch Center, National Response Coordination Center (NRCC), and Nuclear/Radiological Incident Task Force (NRITF), after it had been activated, in order to facilitate a deliberate and methodical transfer of responsibility, but the NRC only received an email late in the day stating that FEMA had assumed responsibility for coordination of Federal response efforts.

The lack of process for transferring responsibility for the coordination of Federal response efforts led to operational uncertainty about which agency was directing Federal actions, both in the National Capital Region (NCR) and within the State of South Carolina, where an NRC Site Team had already deployed to directly support the facility and to whom the NRC gives authority to interact with State, local, and Federal representatives on its behalf. The NRC was not officially informed that a FEMA Incident Management Assistance Team (IMAT) had been deployed and the IMAT was initially deprived of the benefit of the NRC's deep access to utility information and expertise on response issues related to the NRC licensees.

Recommendation: FEMA and the NRC should develop guidance to govern the process of transferring responsibility to coordinate the Federal response as an event expands in scope and complexity. The NRC and FEMA will collaborate to develop procedures to support this concept and will include demonstration of this in future exercises.

Finding 3 (Area for Improvement): There is a lack of awareness and understanding of response/recovery funding and damage compensation that could be available following a radiological event at a nuclear power plant. State and Federal partners who were not involved in the PAA and Other Funding Mechanisms Workshop did not fully understand the purpose or requirements associated with the implementation of the PAA or the role of ANI.

Analysis: As part of the SE15 preparatory events, the Recovery Working Group developed and conducted the PAA and Other Funding Mechanisms Workshop. The purpose of this workshop was to discuss financial responsibilities of specific agencies or organizations associated with recovery from a NPP incident, including the PAA and Stafford Act. The

State of South Carolina, Duke Energy, FEMA, and the NRC were the primary participants in this workshop.

ANI representatives suggested that they would primarily coordinate with the licensee and the State on the establishment of claims centers in the vicinity of reception centers outside the contaminated zone. The workshop also identified that a gap exists in information sharing among key organizations responsible for providing remedies to claimants. Due to existing legal restrictions, ANI is prohibited from sharing personally identifiable information (PII) on evacuated persons and their status as it applies to receiving emergency financial assistance, which could possibly result in a duplication of data collection efforts on the parts of ANI, the State of South Carolina, and FEMA, and any other agencies providing financial assistance.

During the FSE, responders who did not participate in the workshop believed ANI viewed itself as self-sufficient, not needing to communicate or coordinate with the State or other Federal agencies. This belief resulted in unwarranted and uninformed concern regarding the potential for FEMA IA providing duplicative remedies to the same claimants receiving benefits from ANI.

Recommendation: ANI, the NRC, FEMA IA, and other Interagency, State, local, and industry representatives they deem appropriate should engage to define coordination and public information requirements relating to assistance under all mechanisms, including the PAA and Stafford Act.

Finding 4 (Area for Improvement): Federal teams and personnel deployed to the SEOC did not receive mission assignments or complete a RSOI process, which led to confusion and overcrowding on the operations floor.

Analysis: Teams and personnel from numerous Federal departments and agencies deployed to the SEOC to integrate into the State's response; however, no RSOI process was established or implemented to ensure personnel accountability and assign staging locations. Minimal direction resulted in a large number of Federal representatives and team members remaining on the EOC floor without purpose, further crowding an already chaotic response effort.

This problem can, in some measure, be attributed to the planning decision to exclude the mission assignment process from the exercise scope absent consideration of second order effects or mitigating solutions. Had the mission assignment process been executed as it would in a real response, it would have partially alleviated the influx of teams and personnel by addressing resource allocation and providing some direction as to assigned roles and operational placement. However, the mission assignment process will not entirely solve the aforementioned problem, as some Federal teams and personnel will self-deploy in the absence of a mission assignment. Therefore, some Federal RSOI mechanism managed or initiated by the coordinating agency might still be justified to assure efficiency and avoid overwhelming the State response.

Another contributing factor to overcrowding the SEOC was the decision to combine the Interim Operating Facility (IOF), from which Federal responders would separately operate if in a different location, with the SEOC. The underlying intent was to establish a unified and well-coordinated State and Federal response. While the SEOC facility was sufficient

for supporting State operations, it was not large enough to accommodate the size and scope of the Federal response. Had a complete National Incident Management Team deployed, as can be expected in a real-world situation, placing Federal management in the SEOC would likely have resulted in even greater overcrowding and could have resulted in response paralysis where operational coordination was concerned.

Recommendation: In addition to executing the mission assignment process, FEMA should implement and manage a RSOI process for every large-scale response to ensure the appropriate accounting and staging of deployed Federal teams and personnel.

Finding 5 (Best Practice): Co-location of A-Team personnel with the FRMAC enhanced collaboration and effective responses to RFIs.

Analysis: The FRMAC personnel and the A-Team successfully integrated in an effort to address standard and irregular RFIs and data products during the response. Where the FRMAC Assessment is responsible for ascertaining the extent and type of radioactive deposition and identifying where Protective Action Guides (PAGs) have already been exceeded, the A-Team reviews the data and advises State and local response entities in their development of new Protective Action Recommendations (PARs).

The FRMAC and A-Team personnel successfully consulted with one another on standard requests for information and data products such as maximum safe dose assessment values for potable water, animals (to include livestock), food, and agricultural products. Responses to these requests were relayed to the SEOC and JIC for dissemination to the public.

Given the role tobacco plays as a major industry in the State of South Carolina, a request for information was made specific to the impact of radiological contamination on both chewing and smoking tobacco. The FRMAC and co-located A-Team personnel coordinated to produce a set of data products in answer to this atypical request from the State that informed its development of sufficiently detailed tobacco PARs as a key part of the State's response.

The FRMAC and A-Team coordination was effective in large part due to their co-location. In previous exercises, the A-Team and the FRMAC operated without regular face-to-face interaction, which proved less effective than during SE15.

Recommendation: Co-location of A-Team personnel with the FRMAC should be codified as standard operating procedure for large-scale radiological incident responses to ensure better-informed decisions and more rapid support to the State.

Finding 6 (Area for Improvement): The failure of DOE's CMAC to complete the APC significantly delayed the development and execution of the monitoring and sampling plan and hindered coordination between the FRMAC and the South Carolina IMT, which was necessary to produce a technical IAP.

Analysis: A unified battle rhythm and joint objectives for the FRMAC and the State IMT were not established, resulting in uncoordinated planning activities during the initial phase of the response; however, progress was made as the two organizations increasingly worked together over time. According to the *FRMAC Operations Manual*, the CMAC is, upon its arrival to an impacted area, expected to complete the APC in coordination with State representatives in order to establish objectives and priorities and identify how the FRMAC

can best support the State. While a meeting between CMAC and State representatives did occur, the APC was not completed. Had it been, general guidelines and a joint battle rhythm likely would have assured the FRMAC operations comported with State intent at least until the next joint planning meeting or round of coordination.

This omission led to the development of a monitoring and sampling plan without State objectives and priorities at the end of Day 1. On the morning of Day 2, a meeting between the FRMAC and State IMT representatives resulted in the identification of joint monitoring and sampling objectives and priorities, necessitating a complete rewrite of the already-developed monitoring and sampling plan.

The lengthy process involved in producing the new plan and the external requirements placed on those responsible, to include the time-intensive completion of ICS 204 forms, considerably delayed the deployment of field monitoring and sampling teams until late in the operational period. At 0800 ET, ten field teams were awaiting orders; by 1330 ET, only four had been deployed to conduct monitoring and sampling activities. The last team was deployed after 1400 ET. These delays substantially impacted the ability of the FRMAC to provide Federal, State, and local partners with updated data products until the very end of Day 2.

The failure of CMAC to complete the APC also resulted in the FRMAC and the State IMT conducting a number of separate and uncoordinated operational planning meetings throughout Day 2 of the response. The State IMT, for its part, established its own independent planning process and schedule without any input from the FRMAC representatives. Its schedule included an aggressive list of milestones, some of which were communicated to the FRMAC, but did not allow sufficient time for the preparation of needed inputs. Had the APC been completed upon CMAC arrival, a joint battle rhythm would have been established and both entities would have been better able to coordinate their efforts toward producing some variant of a technical IAP.

On Day 3 of the response, the FRMAC and State IMT coordination improved significantly. The FRMAC personnel assumed leadership roles during jointly held tactics meetings and were proactively engaged and provided information to the State IMT. Through the course of these interactions, the IMT became more familiar with the FRMAC operations and how to obtain answers to RFIs, and significant progress was made toward the completion of a technical IAP.

Recommendation: The APC must be completed by CMAC upon its arrival and initial interaction with the State to assure the efforts of the FRMAC and the content of the technical IAP comport with State objectives and priorities. Additionally, consideration should be given to an expedited process for the development of initial monitoring and sampling plans that allows the completion of Incident Command System (ICS) 204 forms as monitoring and sampling activities are ongoing.

Finding 7 (Area for Improvement): A Radiological Operations Branch was added to the Operations Section of the incident command structure to provide a focal point for addressing radiation-specific issues as part of the overall response; due to personnel constraints and the short duration of the exercise, the concept was initiated but not fully executed.

Analysis: Upon arrival of DOE assets to the SEOC/IOF, the FEMA National IMAT Deputy FCO requested the establishment of a Radiological Operations Branch within the Operations Section of the incident command structure. This Branch would presumably be responsible for ensuring that all radiation-related issues and inquiries were coordinated between the FRMAC and the SEOC. It was requested that DOE manage the Radiological Operations Branch due to its inherent responsibilities, capabilities, and resident subject matter expertise.

Unfortunately, exercise artificialities, which included time and personnel constraints, precluded full implementation of the Radiological Operations Branch. However, initial indications were that it would have become an integral part of the incident response, responsible for identifying radiation-specific hazards and supporting planning for future operational periods.

Recommendation: DOE and FEMA should continue to explore means, to include codifying the Radiation Operations Branch concept, to ensure radiation hazards are appropriately considered and addressed as an integral part of a larger response.

Operational Communications

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

Finding 8 (Area for Improvement): The failure to effectively use available platforms to share and display information and data products precluded the establishment of a common operating picture at the FRMAC Incident Command Post (ICP).

Analysis: During the first two days of the FSE, response personnel at the ICP did not make proper use of, or did not have access to, electronic platforms intended to facilitate information sharing among response venues. Consequently, interagency partners experienced challenges maintaining situational awareness and, in some cases, effectively fulfilling their designated roles during the response. For example, the FRMAC did not make effective use of WebEOC, the web portal where the State had been posting information and data, thereby limiting its visibility of decision-making and thought processes that could have informed the FRMAC operational planning. Additionally, the FRMAC had also not been displaying many of its own updated data products until the very end of Day 2, making it challenging for personnel in the ICP to know the status of ongoing activities, plans for the next operational period, or the current extent of radiological contamination.

Additionally, access to the DOE's Consequence Management Web (CMweb) portal was available to a relatively small number of individuals involved in the response. This resulted in the FRMAC data products being slow to reach the full range of Federal, State, and local partners needing them to inform their operational planning and communication efforts, especially at the SEOC and JIC. Lastly, the NRC Liaison Officer (LNO) to the FRMAC, who had access to CMweb, experienced challenges using it to collect operational information. The NRC LNO indicated that CMweb's dashboard or main page lacked an activity summary and indicators that new products had been posted, making it difficult to ascertain the status of the FRMAC response efforts.

As the exercise progressed into Day 3, efforts were made to assure that response status information and other key data were accessed, displayed, and shared, resulting in a significantly improved common operating picture and better informed the FRMAC and IMT operational planning activities.

Recommendation: The FRMAC leadership should establish and maintain the Situation Unit Leader position within the ICP, whose sole responsibility is to facilitate a common operating picture by ensuring that displays, updated data products, and an event log are available and visible to all ICP personnel and provide the appropriate training on procedures and available tools for information management.

Finding 9 (Area for Improvement): While initial notifications progressed according to protocols, ensuring that appropriate Federal, State, and local entities were alerted of the incident, there was confusion regarding the notification procedures for the A-Team and EPA.

Analysis: All expected agencies and organizations were contacted, but there was some confusion regarding the notification process by which the A-Team is activated and the EPA is informed of the FRMAC deployment.

The NRC contacted the A-Team requesting the deployment of an LNO to the NRC operations center, but this request did not result in A-Team activation. SCEMD contacted the Food and Drug Administration (FDA) Operations Center and provided an update on the situation; however, SCEMD did not directly request A-Team activation based on the belief that the responsibility for doing so belonged either to the FDA or the FRMAC. After a significant delay, EPA representatives assisted South Carolina with the notification and request for A-Team activation.

The request for EPA assistance to the FRMAC was delayed due to the belief that the FRMAC must be on-site prior to the request; however, the current FRMAC standard operating procedure (SOP) states that once the DOE Consequence Management Response Team (CMRT), which is the primary DOE component of the FRMAC, is deployed, a notification to the EPA will occur.

Recommendation: A-Team representatives should provide clarification on how and when the A-Team can be activated to ensure that the proper process is followed.

Finding 10 (Area for Improvement): The use of overly technical terminology in initial interpretations of radiological modeling and data products made it challenging for non-technical audiences to incorporate associated information into operational planning efforts.

Analysis: The products and briefings provided by the FRMAC to Federal, State, and local responders were overly complicated and challenging for non-technical personnel to comprehend. The main issue with these briefings and products was that the materials provided did not communicate information with end users in mind. These materials instead contained overly technical language instead of lay terms or practical comparisons that might facilitate a wider understanding of information the FRMAC intended to communicate. Consequently, Federal, State, and local personnel who received the products could not translate or communicate important information to their counterparts, affecting their ability to respond.

In addition to being overly technical, some briefings also lacked important and useful information integral to decision-making efforts. For example, provided briefings did not

illustrate the proximity of population centers and key critical infrastructure relative to impacted areas, and map products did not clearly indicate areas surrounding the plant already identified for evacuation. It is unclear if these needs were communicated to the FRMAC prior to its development of the products, but many of these variables and considerations should be included in standard product sets.

The challenge created for State and local response personnel by highly technical briefings did not go unnoticed by the FRMAC personnel, who addressed these issues as the response progressed. After receiving feedback indicating that products and briefings were difficult to understand, the FRMAC LNO to the SEOC began tailoring presentations of National Atmospheric Release Advisory Center (NARAC) modeling products and information in a way that interagency partners and other non-technical personnel could understand and utilize.

Recommendation: The FRMAC should ensure that standard data products include additional information to support a broad range of non-technical personnel such that they can process and communicate it to their response stakeholders and better inform decision-making processes. Additionally, FRMAC should be prepared to deliver just-in-time training to interagency partners during a response and before/during exercises to improve understanding of the types and content of its technical products.

Situational Assessment

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

Finding 11 (Area for Improvement): Pre-deployment training provided to blended monitoring teams with more experienced team members was effective; however, limited implementation guidance from the FRMAC resulted in challenges with the execution of the monitoring and sampling plan and a lack of standardization in sample collection and submission processes.

Analysis: Ten blended field monitoring and sampling teams consisting of representatives from Federal and State organizations were deployed as part of the response. These teams were very knowledgeable and accomplished their assigned tasks with the information and direction provided to them by the FRMAC. Senior members on the monitoring and sampling teams conducted pre-deployment training and provided less-experienced members with additional instructions to ensure that all personnel were able to complete their assignments.

Pre-deployment instructions provided to the field teams by the FRMAC were vague, consisting of minimal guidance and direction. These teams were also not provided products depicting contaminated areas or printed roadway maps and directions to ensure all contaminated areas are avoided. Each team relied on its own personal global positioning system (GPS) devices for navigation, creating the potential for transiting through contaminated environments to get to assigned monitoring and sampling locations.

During the sample collection process, the tablets used to transmit data to the Radiological Assessment and Monitoring System (RAMS) database routinely failed and were relatively unreliable. When a tablet failed, it caused significant delays as efforts were made to replace the tablet while in the field. These challenges were partially mitigated by certain teams

capturing data on paper, using their personal GPS devices to record sample locations, and providing that data to the appropriate personnel once back at the ICP.

Absent guidance and direction to the contrary, each organization represented on the blended teams traditionally operates using its own set of procedures and protocols. This resulted in the inconsistent packaging of samples across all ten teams because the FRMAC provided insufficient pre-deployment guidance to the field teams. An example of different outcomes involved three of the field monitoring teams placing the required security seal on the outside of the sample collection bag instead of on the sample itself, resulting in laboratory analysis personnel having to break the seal to retrieve the sample control form.

On Day 3 of the response, additional guidance and maps were provided to the field teams and clarification was given pertaining to the sample packaging process.

Recommendation: Prior to deployment of field monitoring teams, the FRMAC should ensure that all personnel are knowledgeable regarding the use of their assigned equipment and are provided with the appropriate information to safely and successfully complete their tasks. This includes providing pre-deployment equipment, sample collection training, and updated mapping products with directions to assigned locations.

Environmental Response/Health and Safety

Conduct appropriate measures to ensure the protection of the health and safety of the public and workers, as well as the environment, from all hazards in support of responder operations and the affected communities.

Finding 12 (Sustain Practice): Successful interagency coordination on the development of the health and safety plan ensured that the full range of potential hazards to responder safety was addressed.

Analysis: Deployed personnel from the Occupational Safety and Health Administration (OSHA), EPA, Centers for Disease Control and Prevention (CDC), South Carolina Department of Health and Environmental Control (SCDHEC), A-Team, and the FRMAC coordinated efforts to develop a joint worker health and safety plan that accounted for the range of anticipated responder situations. The ability of the interagency to successfully coordinate and present unified health and safety recommendations is crucial in assuring responder safety.

In addition to the overall health and safety plan, SCDHEC and OSHA successfully coordinated their response to an inquiry concerning nursing home workers and the possible health effects resulting from radioactive contamination. This coordination assisted in bridging the gap between worker health and safety and a valid public health concern.

Recommendation: Ensure that radiological health and safety planning includes aspects of all hazards. Include training on all radiological aspects of health and safety planning.

Public Health and Medical Services

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

Finding 13 (Area for Improvement): Just-in-time training conducted by the Radiation Emergency Assistance Center/Training Site (REAC/TS) was well received; however the amount and complexity of the technical information presented proved challenging for some participants to understand.

Analysis: REAC/TS provided just-in-time training to McLeod Regional Medical Center (RMC) staff prior to the arrival of contaminated patients. It was the first time McLeod RMC personnel received training from REAC/TS, and it was generally well received. Some Emergency Department (ED) staff indicated the health physics portion of the training was more complex than necessary for their purposes. However, all participants agreed that the training improved their understanding of the prescribed medical response to radiological incidents and put them at greater ease in terms of how to deal with contaminated patients.

Recommendation: Continue to refine the just-in-time training conducted by REAC/TS to present the required material with an emphasis on mitigation of risks for hospital employees and required information.

Finding 14 (Sustain Practice): McLeod RMC successfully demonstrated the ability to assess, triage, and decontaminate evacuees.

Analysis: McLeod RMC staff established a triage area outside of the hospital for the purpose of decontamination and patient monitoring. Hospital staff were provided appropriate personal protective equipment (PPE), although some of the larger sizes of decontamination garments were not readily available. Medical supplies and monitoring equipment stored at the facility were adequate for providing patient care during the exercise.

Patients that arrived were screened by nurses using a newly developed triage form. Hospital staff agreed that, overall, the new process worked well, though the triage form may be too long if a large number of patients arrive simultaneously. Patients were then sorted based on contamination level, and were decontaminated using the inflatable decontamination tent. While some small process improvements were identified throughout the exercise, overall triage and decontamination operations were well-organized and conducted in a professional, effective manner.

The ED was appropriately marked and prepared to receive contaminated patients. Once inside, individuals with no other medical complaints, save minor internal contamination readings, were released and instructed on how to be monitored in the future. The decision to make seven millirems the admission threshold was based on thorough conversations between the ED and Nuclear Medicine staff, and informed by national standards.

Overall, McLeod RMC demonstrated knowledge and understanding of the decontamination, triage, and treatment process for radiation accident victims. It is clear that the hospital is dedicated to training and preparing for a radiological or nuclear incident.

Recommendation: Continue to exercise with hospitals outside the REP Program who receive contaminated individuals.

Public Information and Warning

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

Finding 15 (Best Practice): Coordination in advance of joint press conferences and media briefings ensured agency-specific questions were appropriately addressed and a unified message was delivered to the public.

Analysis: During the exercise, three joint press conferences were conducted in an effort for key and senior members of Federal and State agencies to communicate a coordinated message to the media and public. These agency representatives were effective at responding to the questions they received, and as a result, they met their intended goal. This success was attributed to the pre-event huddles during which agency representatives prepared as a group with key JIC personnel supporting them. These huddles also provided speakers an opportunity to share information regarding the status of the response, thereby making them all more aware and better informed.

Recommendation: Prior to joint press conferences, participants should conduct pre-conference huddles to prepare and share information and situation updates.

Finding 16 (Area for Improvement): The interagency JIC was not efficiently organized, resulting in an uncoordinated message development process for agency-specific press releases and conflicting guidance provided to the public.

Analysis: The interagency JIC was established by Public Information Officers (PIOs) representing Duke Energy, the State of South Carolina, the NRC, EPA, and DOE. Once it was determined who the interagency JIC manager would be, no clear organizational structure was established making the objectives and priorities under which the JIC would operate unclear.

Due to the lack of organization within the interagency JIC, information sharing between agencies was minimal, as was demonstrated through multiple organization-specific and un-approved press releases. For example, Duke Energy PIOs appeared to have extensive technical knowledge of the incident and the most current reactor status; however, in initial and subsequent briefings, it was clearly demonstrated that few other agencies had received this information.

Each agency operated within its own stovepipe, and there was minimal effort to coordinate a "Whole of Government" public affairs response. Due to the lack of a formalized organizational structure, a battle rhythm was never established, despite suggestions that the JIC would benefit from it. Furthermore, the lack of organization resulted in no formal vetting process for media and press releases. Instead, participants independently produced agency-specific releases without substantial coordination. A number of press releases were shared among interagency partners after they had already been disseminated.

Prior to the first media briefing, the Senior Site Controller called a Pause of Exercise (PAUSEX) for the JIC in an effort to emphasize the need for participating agencies to communicate and coordinate with one another prior to releasing information. Following

this PAUSEX, coordination within the interagency JIC improved, and eventually an interagency press release was developed by the NRC and subsequently approved and transmitted for public distribution.

There was minimal situational awareness in the interagency JIC throughout Day 2 of the exercise. This was not confined solely to the JIC and was a general theme across the entire response, but without the most up-to-date knowledge of the incident, information presented was significantly delayed and at times entirely irrelevant. Furthermore, information and data developed by the FRMAC was not incorporated into interagency press and public releases; this information would be critical in informing the public on the extent of radiological contamination.

Recommendation: FEMA Public Affairs should ensure that all guidance and policy documents state that FEMA is the lead organization for public messaging during a radiological event. As the ESF-15 lead organization, FEMA should determine and implement a strategy to ensure a JIC that is situationally aware and ensures messages are approved before being widely disseminated.

Mass Care Services

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

Finding 17 (Best Practice): Reception Center operations were conducted efficiently and effectively, using an appropriate ICS organizational structure, thereby addressing the needs of evacuees.

Analysis: The American Red Cross (ARC) was assigned responsibility for evacuee registration and shelter coordination, which was completed through the National Shelter System database, and it encouraged evacuees to list family members and use the Safe and Well website to aid in family reunification. SCDHEC executed ESF-8 actions such as the distribution of potassium iodide (KI) prophylaxis to evacuees and assessed medical, mental, and physical requirements for persons who were limited in mobility, sight or hearing, suffering from emotional distress, or had other special needs. SCDHEC also operated as the liaison between the reception center and the SEOC in Columbia. Security at the reception center was provided by the Florence Police Special Weapons and Tactics (SWAT) unit and the fire departments combined into Emergency Response Teams (ERTs) in order to accomplish efficient evacuee monitoring and decontamination. Additionally, traffic control at the reception center was well-managed and ample space was available in the parking lot to conduct vehicle decontamination if required.

Recommendation: None.

Exercise Design

The following findings address exercise design issues identified during the execution of the 3-day FSE.

Finding 18 (Area for Improvement): The extent of play for some participating agencies was not clearly defined throughout the planning process and led to confusion during the execution of SE15.

Analysis: Throughout the planning process some participating agencies never clearly articulated or documented their intended extent of participation in the exercise. This information is critical to an exercise planning team's exercise design requirements, to include the identification of response elements that must be replicated through exercise control mechanisms. One example of this shortfall was exhibited by FEMA with regard to the participation and involvement of the NRCC and NRITF. FEMA's failure to clearly articulate the NRCC and NRITF levels of participation until just prior to execution created an insurmountable burden for the Joint Exercise Control Group (JECG) and had a cascading negative impact on other participants, particularly to the NRC and the State of South Carolina, during the exercise.

Recommendation: All agencies who intend to participate in a given exercise should provide a clearly defined extent of play agreement early in the planning process to ensure sufficient stimuli is available or that appropriate simulation can be prepared.

Finding 19 (Area for Improvement): Restricting Federal Interagency participation during the FSE, to approximately 12 hours, undercut the potential for meaningful learning opportunities and problem-solving activities.

Analysis: Full-scale participation for the Federal interagency occurred for approximately two hours at the end of Day 1 and 10 hours on Day 2. Only the FRMAC continued to participate on Day 3 with the management and execution of field and assessment activities. Activities ceased at all other locations, to include the SEOC, JIC, and the NRC operations centers, with most personnel instead participating in the simultaneously occurring Day 14 Response and Recovery TTX.

At the conclusion of Day 2, the interagency had finally begun to establish its footing, with proper battle rhythms and a better understanding of differing Federal and State roles and responsibilities. Because this nascent progress abruptly ceased at the end of Day 2, there was no opportunity to see further progress, which would have inevitably occurred, in terms of addressing coordination issues among and within the SEOC, JIC, and the FRMAC or in solving problems establishing a common operating picture.

Recommendation: Ensure that future exercises allow sufficient time for the full accomplishment of objectives and opportunities for the training audience to show tangible progress in its response.

Finding 20 (Area for Improvement): Briefings developed by the exercise control staff to simulate night shift progress did not meet the varying needs of each organization or response structure.

Analysis: The simulated night shift turnover briefing provided to the oncoming day shift rightly contained basic objectives and activities from the previous operational period. However, since each organization and response structure requires varying levels and types of information, this generic turnover briefing did not meet the operational needs of all participating organizations.

In an effort to develop a turnover briefing with all the information required for all response entities, an exercise night shift operational planning section was included in the overall JECG assignment document with representatives from all participating organizations. At the conclusion of the daytime activities and the transition to exercise night shift operational

planning section, these identified representatives did not adequately provide the information required to develop the morning's turnover briefing thus resulting in a generic overarching briefing to the oncoming shift of the next operational planning period.

Recommendation: When simulating an operational period, clearly establish requirements and the appropriate level of detail necessary for the development and delivery of shift turnover products or ensure future exercises involve 24-hour per day participation.

SECTION 4: DAY 14 TABLETOP EXERCISE SUMMARY OF CONCLUSIONS

The Day 14 TTX built upon Days 1 and 2 of the FSE and focused on recovery issues 14 – 30 days post-incident. The TTX helped participants examine the core capabilities needed to respond to and recover from potential effects and consequences of a NPP incident. Key takeaways from the Day 14 TTX informed the design and development of the Recovery TTX conducted in September 2015.

Day 14 TTX Format

The Day 14 TTX scenario centered on a large-scale radiological incident at a commercial NPP in Hartsville, South Carolina that required the coordination of multiple local, State, Federal, nongovernmental, and private-sector resources. Residential, commercial, educational, medical, agricultural, and environmental infrastructures were adversely affected by the large-scale release of radiological material.

Participants engaged in a moderated plenary session, as well as facilitated breakout discussions focused on specific challenges or problem sets and the associated ten core capabilities (listed in the previous section). The breakout discussions were divided into the following four topic areas:

1. Unified Coordination Group;
2. Return, Re-entry, and Relocation;
3. Environmental and Agricultural Contamination and Mitigation (to include initial waste management); and
4. Economic and Infrastructure Effects.

Discussions focused on consequences and decision-making from days 14 through 30 following the incident. Facilitated questions for each breakout session allowed participants to discuss community-driven desired outcomes and priorities, equities, and authorities, as well as roles and responsibilities related to housing, human services, environmental response, safety, agriculture, waste management, economic effect, and recovery.

Day 14 TTX Scenario

14 days post-incident, no appreciable changes to radioactive contamination were evident beyond a reduction in the amount of iodine deposited on the ground. The RNP emergency planning zones (EPZs) A-0, B-1, C-1, D-1, B-2, C-2, and D-2 remained in an evacuated status (approximately 3,000 individuals). The plant unit remained in a stable condition and plant operators were recirculating water in the reactor vessel to keep the nuclear fuel cool and maintain the unit at a safe temperature.

Also by Day 14, the Governor issued an Emergency Declaration; the FRMAC was established in Florence; and the National IMAT had deployed to the FRMAC. The FRMAC was conducting aerial monitoring operations and had field-monitoring teams spread throughout the deposition area conducting monitoring and environmental sampling. A JIC was established and co-located with the FRMAC. The State ERT coordinated continually with local and Federal partners. The UCG, which had been stood up during the operational phase, continued to operate.

Embargoes had been placed on products and animals in six counties: Clarendon, Florence, Williamsburg, Darlington, Lee, and Sumter. The embargoes prevented movement of animals (e.g.,

livestock, poultry, and horses); meat or poultry products or any foodstuff from food-processing plants; and forages, food, or crops in or out of the affected area until further notice.

ANI, acting on behalf of RNP, provided immediate EFA to qualified evacuees who lived and/or worked within the recommended evacuation zone, including reasonable allowance for food, shelter, transportation, and reimbursement for any wage loss.

Day 14 TTX Findings

Overarching Finding

- **Crafting, communicating, and distributing clear, honest, consistent, and coordinated public information is paramount.**

  Participants noted that public perception will have a considerable effect on successful response and recovery operations. As such, distribution of truthful, clear, coordinated, unified, and consistent public messages is of the utmost importance. Public messages need to include detailed and actionable directions, clearly convey risks of exposure, identify safe and restricted areas, and create realistic expectations for the public. Public information should thoughtfully address the perceived disconnect between guidance and messages (e.g., areas that are safe for return but still have embargoes in place). To instill public confidence, public information needs to be disseminated from a known and trusted local community leader that is visibly supported by public health authorities. The information should also be validated by an external party (e.g., a university).

Unified Coordination Group

- **Balanced composition of State, Federal, and private-sector interest in the UCG is needed to coordinate a unified response that supports the needs of individual communities in a "Home Rule State"[1] like South Carolina.**

  Participants agreed that the composition of the UCG should be dynamic and flexible, based on the evolving needs of response and recovery operations. For the SE15 scenario, it should include—at minimum—the FCO, SCO, and representatives of the NRC and Duke Energy. The UCG should also include any additional entities with statutory response authorities.

  In a "Home Rule State" such as South Carolina, response authority does not reside with the State emergency management organization but instead with the local municipalities and Governor. The SCEMD's role is to enable and support decisions made at the local level. Therefore, participants agreed that the structure of the UCG needs to incorporate and focus the response on the desires of the individual communities affected by the emergency.

  Participants noted that these requirements are consistent with the description of the UCG in the NRF[2]. Participants also requested that the UCG be small and manageable, which could be enabled through the creation of advisory groups.

[1] In a "Home Rule State," cities, municipalities, and/or counties pass laws and govern themselves. See Article III of Amendments to the South Carolina Constitution.

[2] Page 40 of the *National Response Framework* states, "The UCG comprises senior leaders representing Federal and State interests and, in certain circumstances, tribal governments, local jurisdictions, and the private sector. UCG members must have significant jurisdictional responsibility and authority. The composition of the UCG varies from incident to incident depending on the scope and nature of the disaster."

Finally, participants noted that the UCG should either be co-located with the JIC or include a liaison to the JIC to ensure that public messages are approved and disseminated through the proper channels.

Return, Reentry, and Relocation

- **Decision-making tools (particularly geographic information system (GIS) and location-enabled products) need to be clear, consistent, easily consumable, and actionable.**

  In a "Home Rule State," local leadership will need decision-making tools to augment their ability to make informed decisions. These tools need to be clear, consistent, easily consumable, and actionable. GIS and other location-enabled products are key tools that the FRMAC, SCEMD, and others can produce to meet this need. However, with various entities producing multiple products, participants noted that the products and accompanying narratives and guidance should be consistent and coordinated across all entities. Participants also noted that these products should be shareable with the general public to support consistent public messaging.[3]

- **Providing care for domestic and livestock animals will be a priority for the residents of South Carolina; reentry operations must consider requirements to support reentry of people back into the affected area to care for their animals.**

  Participants noted that after the incident—and potentially before areas have been cleared for reentry—the residents of South Carolina will desire to return to their property to care for domestic and livestock animals. County emergency managers participating in the exercise indicated that they will not enforce evacuations. With residents returning to potentially contaminated properties to provide humane care of their animals, participants noted that there will need to be mechanisms to monitor individuals in the short- and long-term, as well as mechanisms to protect those entering the potentially contaminated area. Short-term monitoring should include use of dosimeters to identify exposure levels and radiation monitoring at controlled entry and exit points to ensure that contamination is not spread. Long-term monitoring should include a registry and a medical consequence database to track and assess long-term health effects of radiation exposure. The recommendation is to determine requirements and thresholds to allow residents back into the affected area to care for their animals.

- **Response and recovery guidance do not identify a Federal agency as the proponent of remediation.**

  The ability to remediate contaminated land and infrastructure will be critical in a recovery effort. This lack of clarity in addressing remediation creates ambiguity in how to approach this task and what resources are available or constrained in supporting this task. The recommendation is to identify a Federal agency to assist with further development of remediation guidance.

[3] See the first key finding of this report for more information on the importance of public messaging.

Environmental and Agricultural Contamination and Mitigation

- **Radioactive waste disposal will present both short- and long-term challenges, as well as technical and policy challenges.**

  During the exercise, participants questioned what to do with the large amount of radioactive waste that will result from the incident. Initially, a majority of the radioactive waste will remain in the contaminated area, but a portion of the waste (e.g., clothing) will be collected at decontamination locations. Participants identified that, in the short-term, this waste will need to be secured and contained to prevent further contamination. This may present challenges for the counties and may require additional law enforcement to provide security at interim storage areas. Participants recommended minimizing collection points and developing temporary staging areas to limit the number of areas that need to be isolated and secured.

  In the long-term, responsible parties will need to determine the plan for waste disposal, to include transportation, disposal location, and funding. Participants identified a number of technical challenges associated with long-term storage or disposal, including the following:

  - Guidance will be needed for the destruction of crops and depopulation of contaminated farm animals. Composting in-place was the recommended approach for farm animals.
  - The SCDHEC would be responsible for regulatory oversight of radioactive waste management activities including interim storage and transportation. SCEMD, the NRC, local officials, SCDHEC, Duke Energy, EPA, DOE, and private industry will all be involved in low-level waste management activities in some manner.
  - There would be no local capacity for interim storage of radioactive waste associated with the event. Storage of radioactive waste will need to be consistent with regulatory guidance and will require coordination with the SCDHEC, EPA, and the NRC. SCDHEC would be responsible for regulatory oversight of radioactive waste management activities including interim storage and transportation of radioactive wastes associated with the event.
  - The disposal capacity for low-level radioactive waste in the United States is limited to four sites and each respective site may not have the ability or capacity to dispose of large volumes of this type of low-level radioactive waste.
  - All actions taken should be risk-based to reduce the chance of additional radioactive contamination and exposure, and should consider all available options to attempt to minimize costs.

  Participants anticipated policy challenges associated with storage and disposal of radiologically contaminated material. Residents and environmental groups may resist having radioactive material transported or stored within their jurisdictional boundaries. To address these issues, participants suggested the possibility of a landfill at the NPP, limiting the conveyance of radioactive wastes as much as possible, and acquiring waste disposal site waivers for long-term disposition or disposal at Federal facilities.

  The recommendation is to work with SMEs to identify technical and policy changes that should be recommended for both short- and long-term radiological waste disposal. Once recommendations are made, follow-through should be conducted on each recommendation within the assigned agency.

- **The State's current Hazardous Material (HAZMAT) Plan does not provide sufficient detail to address low-level radiological waste.**

  The ability to collect, transport, store, and dispose of low-level radioactive waste in the initial recovery can be managed within the resource and capability of the State, but capacity to address large volumes generated by destruction of adulterated crops, contaminated livestock, and over time remediation actions, are beyond the State's ability. The March 2012 Federal Principal Level Exercise (PLE) addressed the conceptual framework for radioactive waste management, but did not detail the implementation of a plan to conduct waste management. The recommendation is for SCDHEC to work to update the State's HAZMAT Plan to address low-level radiological waste issues.

- **Laboratory capacity is limited, and samples will need prioritization for processing.**

  To define the extent of contamination, participants estimated that thousands of samples may be generated weekly, possibly for years. In addition, monitoring and sampling will need to continue for an unknown duration to identify whether the area of contamination is changing (e.g., due to moving sediment and water, weather, natural decay, and dilution) and to identify and continue to show if areas and products (e.g., produce) are safe. The FRMAC brings significant sampling capabilities and capacity to the response, but their capacity is not unlimited. The FRMAC has a formal process to leverage nation-wide laboratory capacity; however, time will be a constraint, as it may take days for samples to be processed by these laboratories. Finally, the FRMAC does not support sampling of food and personal effects, and the United States Department of Agriculture (USDA) has limited food-sampling capacity. Due to these laboratory sampling constraints, the State, in coordination with local jurisdictions, as well as the FRMAC, will need to establish sampling priorities and may need to consider other ways to increase sampling capacity (e.g., international assistance).

  The recommendation is for SCDHEC to identify the appropriate process to prioritize laboratory samples collected during a radiological incident.

Economic and Infrastructure Effects

- **Many factors could negatively affect the economy, and estimating and quantifying the economic disruption will be challenging.**

  Participants expected the economic disruption resulting from this scenario to be vast and unlikely to be fully understood until many years after the incident. As such, quantifying the extent of economic disruption will be challenging. Factors likely to affect the economy include:

  - Mass migration and loss of the tax base due to the necessary relocation of the population from contaminated areas, as well as from public perception and risk aversion;
  - Remediation and loss of business materials, equipment, facilities, and products;
  - Loss of jobs and tax revenue due to closure of the NPP;
  - Loss of jobs and tax revenue due to closure and relocation of other businesses;
  - Displacement of workers from the affected communities; and

- Decreased tourism.

To retain its residents, protect the tax base, and ensure economic recovery and resilience, participants identified that the State will need the following:

- A strong national-messaging campaign focused on economic issues (e.g., identify exports as safe and encourage tourism);
- Incentives to keep residents in the State;
- A "toolbox" of business support, including available business-assistance programs from all levels of government, marketing outreach, and job retraining; and
- Contractors and other entities that can assist with remediation.

The recommendation for this finding is for the South Carolina Department of Commerce (SCDOC) to identify all factors that may affect the economy and processes for estimating and quantifying the economic distribution.

Day 14 TTX Participant List

Day 14 TTX participants was comprised of local, State, and Federal participants, including those from mitigation and resilience communities; emergency managers and recovery personnel; NPP, laboratory analysis, and technical personnel; SMEs; and select stakeholders and partners from private-sector, nongovernmental, and academic institutions.

Local Jurisdictions

- Chesterfield County, South Carolina
- Darlington County, South Carolina
- Florence County, South Carolina
- Lee County, South Carolina
- Oconee County, South Carolina

State of South Carolina

- Department of Agriculture
- SCDHEC
- Department of Insurance
- Department of Natural Resources (DNR)
- Department of Public Safety (DPS)
- Department of Social Services (DSS)
- Department of Transportation (DoT)
- SCEMD
- Division of Technical Operations
- South Carolina Law Enforcement Division (SCLED)
- Office of Regulatory Staff
- Office of State Fire Marshal
- Task Force 1

Nongovernmental Organizations (NGOs) and Associations

- ARC

- Institute of Nuclear Power Operations (INPO)
- Nuclear Energy Institute (NEI)
- The Salvation Army

Federal Departments and Agencies

- USDA
- Department of Defense (DoD)
- DOE
- Department of Health and Human Services (DHHS)
  - FDA
  - CDC
  - A-Team for Environment, Food, and Health
- DHS
  - FEMA
- Department of Labor (DOL)
  - OSHA
- EPA
- NRC

Private Sector

- ANI
- Blue Cross Blue Shield (BCBS) of South Carolina
- Duke Energy
- McLeod Regional Medical Center
- National Alliance for Public Safety GIS
- Sand Hill Telephone Cooperative
- South Texas Project Electric Generating Station
- Southern Nuclear
- St. Lucie Nuclear Power Plant
- VC Summer Nuclear Station

Academic Institutions

- Clemson University
- Francis Marion University
- North Carolina A&T State University

Other States

- Alabama
- Florida
- Georgia
- New Hampshire
- North Carolina
- Rhode Island

SECTION 5: RECOVERY TABLETOP EXERCISE

Executive Summary

Exercise Scope

This exercise was a recovery-focused TTX held September 9 – 10, 2015 at the Florence Civic Center located at 3300 W. Radio Drive, Florence, South Carolina 29501. The Recovery TTX was a continuation of the SE15 FSE and Day 14 TTX that took place July 21 – 23, 2015 in South Carolina. Exercise play followed the Recovery Support Function (RSF) structure and was based on decisions made during the FSE and Day 14 TTX components of exercise play.

In preparation for the SE15 Recovery TTX, and in response to recognition of the time constraints and therefore inability to address all desired topics during the TTX, the Recovery Working Group and the USDA/Clemson Cooperative Extension developed three workshops to further address topics of interest. The three workshops include the NDRF Workshop, the PAA and other Funding Mechanisms Workshop, and the Response and Recovery Issues and Impacts to South Carolina Agriculture in a Radiation Accident Workshop.

Exercise Purpose

The SE15 exercise scenario involved an incident at the RNP resulting in the release of radiological material into the environment beyond the site boundary. The same scenario used for the FSE play was used for the Recovery TTX; scenario updates were provided to players to demonstrated expected response and recovery activities leading up to 6 and 18 months post-incident. The purpose of the Recovery TTX was to discuss recovery activities at 6 and 18 months post-incident. Throughout discussions, participants identified what activities would take place, possible obstacles as they related primarily to economic and housing recovery efforts, and policy and doctrine issues that could impede recovery operations.

Exercise Structure

This exercise was a multi-media, facilitated, discussion-based exercise. Players participated in the following two modules:

- **Module 1:** Recovery 6 Months Post-Incident
- **Module 2:** Recovery 18 Months Post-Incident

Each module began with a scenario update that summarized key events occurring within the specified time period. After the updates, pre-identified participants belonging to the UCG functional group convened to set priorities for each of the functional groups based on exercise goals and objectives.

After the updates, participants reviewed the situation and engaged in functional group discussions of appropriate recovery issues. For this exercise, the functional groups were broken out by RSFs and were as follows:

- UCG
- Economic Recovery (Agriculture-Focused) Group
- Housing Group

Once the functional group discussions were completed, the UCG reconvened as a group with the rest of the participants as an audience. Group presenters for each group acted as liaisons and provided briefings to the UCG with the following information:

- Recommended solutions to proposed problems/questions based on current policies
- Resource gaps for the UCG to discuss, including recommended/possible solutions
- Gaps in policy
- Key challenges
- RSF-specific goal(s) to support the development of the Recovery Support Strategy (RSS)

During the second day of exercise play, the initial breakout session focused on identification of activities that would have taken place over the past year of recovery, as well as current operations as they relate to the RSF.

As available, functional groups included one or more PIOs to provide guidance and input as to how public messaging of decisions would take place.

Agencies had the opportunity to provide legal counsel for exercise discussions that assisted in the interpretation of policy and doctrine.

Summary of Findings

Observations Summary

- The ability to effectively respond to and recover from a disaster, integrating all available resources, is predicated on a common framework of policy, doctrine, and plans.
- Current Federal frameworks explicitly address response to and recovery from natural disasters, but do not provide the same clarity for response to and recovery from a radiological incident. The need to align current guidance to better address radiological incidents was highlighted during exercise play.
- A further review of the policy, programs, and doctrine associated with response to and recovery from a radiological incident is warranted to ensure that all stakeholders are knowledgeable of the resources and capabilities available to respond to and recover from a radiological incident.
- There is a need to recognize incidents at NPPs as similar to natural disasters as well as determine how funding of response and recovery efforts would be made available.
- Further discussions regarding information sharing are critical to effective case management and preventing duplication of benefits.

Policy, Doctrine, and Plans

- Strengths
  - **South Carolina Recovery Plan:** The exercise allowed South Carolina to identify special considerations for recovery and modifications to the South

Carolina Recovery Task Force (SCRTF) to address recovery for the duration of the incident. A radiological incident-focused addition to the South Carolina Recovery Plan was drafted and implemented for refinement during SE15.

- **Outreach and Education Task Force:** SCEMD developed a concept to address information, education, and outreach to support the Recovery Task Force based on lessons learned from Fukushima and community-desired outcomes. The design concept for the SCRTF may be transferred to addressing other disasters as it goes beyond just public information outreach.

- Areas for Improvement
  - **Disaster Recognition:** National policy could be improved to recognize the impact of a radiological incident, absent a Stafford Act declaration, and the need for corresponding authorities to employ Federal resources to support and sustain recovery operations. Further evaluation of the Stafford Act must also occur to assess what, if any, declaration could be made in the event of an incident at a NPP.
    - Supplemental discussions should also address the process for quantifying damages incurred.
  - **Agriculture Industry:** Through the Recovery TTX, the State assessed plans, process, responsibilities, and authorities to respond to, and recover from, a radiological incident. The State identified planning gaps and assumptions that require refinement as they relate to the agriculture industry and its relationship to domestic and international consumer confidence.
  - **Low-Level Radioactive Waste (LLRW):** The Joint Waste Management Plan supports the consolidation, storage, transportation, and disposal of LLRW. The March 2012 PLE identified the capability, but not the mechanisms to execute waste management of LLRW.
  - **Late Phase Cleanup Goals:** South Carolina identified the need to develop a process for the State to determine and implement long term clean-up goals to assist in transitioning from an emergency back to steady-state. These processes would be developed with the support of Federal entities including, but not limited to, the EPA, DOE, and the FDA.
  - **Database Sharing:** The inability to share information, due to legal policy, impedes efforts to serve the impacted population and may create mistrust and/or reduce confidence in the government at all levels. Restrictions on information sharing impedes on efforts to support the impacted population through case management, establishment of a long term health registry, and awareness of support provided across Federal agencies and by ANI to avoid duplication of benefits.
  - **Remediation:** Identification of a lead agency to support remediation and a programmatic decision on how to fund these actions is not covered in the PAA, current EPA policy, or the NRIA which has created a gap in authorities and funding.

    - It is critical for decisions makers to agree to an acceptable level of remediation in order to begin determining how the remediation process would take place.

- **Case Management Plan:** Participant discussion recognized the vast amount of IA that may be made available during a radiological incident and the need to understand and track what assistance is provided to whom. Additionally, Case Management would serve as an all-encompassing process to provide not only financial but supplemental assistance such as medical.
    - The State will review the current case management plan to ensure the lessons learned associated with evacuee registration, resource availability, and health assessment integration are incorporated.

Training and Resources

- Strengths
    - **FRMAC LNO Training:** The FRMAC LNO training provided insight on the details and requirements to develop products necessary to inform decisions.
        - There is a need to expand the capabilities to develop maps including actionable information to contribute to timely decision making and support response and recovery.
    - Preparatory Recovery-Focused Workshops:
        - **Response and Recovery Issues and Impacts to South Carolina Agriculture in a Radiation Accident Workshop (Also referred to as the "Agricultural Workshop"):** This workshop brought both experts and response and recovery professionals together to broaden the pool of information available and understanding of the limitations and capabilities in responding to an event of this scale and magnitude.
        - **PAA and Other Funding Mechanisms Workshop:** Modification of the initial "PAA Workshop" to include other funding mechanisms allowed for a broader scope of discussion and helped support discussions during the Recovery TTX. The Workshop also allowed for explanation of the PAA, the support ANI can and cannot provide under the PAA, how the NRC supports the administration of funds under the PAA, and identification of programs and other funding sources available from other Federal agencies.
        - **NDRF Workshop:** The Workshop familiarized participants with the doctrine, roles, and responsibilities within the NDRF. Further, the Workshop challenged participants to assess agency responsibilities and accelerated the participants' immersion into the exercise and Recovery TTX.
- Areas for Improvement
    - **Radiological Training:** A just-in-time or executive-level radiological training session would have been beneficial for State agency leadership and decision makers to understand risk management and the science behind the protective action decisions (PADs) over time.

- **FRMAC Product-Sharing:** The sharing of shape files to assist GIS teams with developing tools is critical to assist in response and recovery decision making efforts. While a plan was developed to share the files, it was not followed during exercise conduct.
    - The plan established outlined a process for which the FRMAC would place the files into an agreed upon folder. Instead, the files were sent in .pdf files which restricted access to specific data to assess impacts in a timely fashion.

Exercise Design

- Strengths
    - **Scope/Topics:** Inclusion of recovery issues (via the Recovery TTX) in the overall SE15 scope provided a platform to address topics not previously examined at this level or magnitude. These discussions generated many new questions and identified gaps and issues that require resolution by the Federal government to support response and recovery.
        - Additionally, the focus on agriculture topics in the Recovery TTX allowed for detailed discussions about the severity of the impacts on not only South Carolina's, but the national and international economies.
    - **Inclusion of the PAA:** The PAA was new to many in terms of application, limitations, and constraints. Inclusion of discussions specific to the PAA allowed for individuals to develop a better understanding of how the provisions would be implemented after an event, to include the generation, coordination, and submission of the NRC's Plan of Distribution. While there is a need for additional discussions, many false assumptions and misconceptions were clarified through preparatory workshops, Recovery TTX planning meetings, and exercise conduct.
    - **ANI:** Inclusion of ANI in both the exercise preparation and execution assisted in removing misperceptions and poor assumptions about the indemnitor's role and its financial and legal limitations under the PAA.
    - **Plan of Distribution of Funds:** The NRC's development and exercise use of a potential Plan of Distribution of Funds generated valuable discussion about stakeholders' priorities with respect to financial reimbursement to the private and public sector.
        - Exercise participants are asked to provide further input for the NRC's Plan of Distribution of Funds.
    - **Interagency Support:** Integration of interagency representation into the recovery component of the exercise was beneficial in identifying discussion topics and developing planning assumptions; USDA, the NRC, and U.S. Department of Housing and Urban Development (HUD) were instrumental in supporting the housing and economic recovery focus areas.
- Areas for Improvement

- **Design:** Adequate time was not allotted to brief-back portions of exercise play, therefore not allowing for in-depth cross-section discussions.
    - Future exercises should allow for supplemental time, stimulated by discussions questions to drive cross-functional group discussions during brief back sessions. By allotting additional time and providing the facilitator with questions to drive conversation, exercise participants would be able to discuss topics and issues raised in other functional group breakouts.
- **Design:** While the Recovery TTX broadened discussion areas to include agriculture economic impacts, discussions were scoped to only address this portion of the economy and not look at the entire economic impact on South Carolina in the event of an incident at a NPP.
    - Incorporate non-agriculture economic impact discussions; this may require the inclusion of sub-functional groups or supplemental discussion questions.
- **Workshops:** The three recovery-focused workshops were rescheduled from the second quarter of Fiscal Year 2015 (FY15) to the third quarter, thereby not allowing enough time for further assessment of information.
    - Recommend including summaries of findings from workshops as handouts for the exercise participants.
- **Scenario Development for Recovery TTX:** Due to the continuation of the scenario from July exercise play, certain information from the Day 14 TTX and the FSE play was needed to drive the development of the Recovery TTX. Two required decisions during the Day 14 TTX regarding population return and reentry were not made during exercise discussion. These decisions were needed to shape the scenario updates for the Recovery TTX. The absence of these player actions created additional assumptions to shape the scenario.
    - Exercise planners were forced to simulate decisions regarding return and reentry that would have been identified by the UCG early in response efforts.

Summary of Recommendations

The following do not represent all recommendations following the SE15 Recovery TTX, but are representative of the high level issues identified through player discussion. Additional recommendations are identified throughout the "Participant Discussions/Findings" section.

- Recommend future ingestion exposure pathway EPZ exercises continue to focus on 2-3 RSFs to illustrate capabilities and limitations.
- Align State policy, programs, and doctrine with Federal policy, programs, and doctrine to enhance response and recovery.
- Share lessons learned and best practices with other stakeholders.

- Support increased frequency of ingestion exposure pathway EPZ exercises to build capability and further develop State and local capacity to respond to, and recover from, a radiological incident.

Participant Discussions/Findings

The following summaries are based on player discussion and supplemental input provided through the SE15 Recovery TTX Hot Wash and submitted Participant Feedback Forms. Discussions are grouped by focus area. As appropriate, sections include the following three sub-sections:

- **Observations** – High-level review of player discussion as well as key decisions or lessons learned
- **Recommendation** – Recommended actions provided by players or identified following a review of themes in player discussions
- **Supplemental Player Discussion** – Additional player discussion not included in observations; may include supplemental information to observations

The notes are structured in this manner to provide an overview of all player discussion, while clearly identifying key decisions or summaries of dialogues and recommended follow-on activity.

Operational Environment

The State identified the following as the top concerns for recovery operations:

- Funding for long term recovery efforts
- Keeping residents within South Carolina
- Understanding and addressing the cascading impacts (i.e., economic consequences to non-contaminated products grown/built in South Carolina)

Disaster Declaration

- **Observations:**
  - The existence of the PAA (and the EFA program) and the technological nature of the hazard, among other reasons, may preclude FEMA's ability to justify a major Stafford Act declaration that would potentially address the unmet needs of the impacted population.
    - *Player action during July 21 exercise play led to a decision to grant an Emergency Declaration; this Emergency Declaration was continued, as part of exercise design, until 6 months post-incident.*
  - The absence of a Stafford Act declaration could adversely affect the ability of Federal agencies to provide support.
  - Federal agencies could potentially be mission-assigned without a Stafford Act declaration to support the gathering of information to support Federal awareness if they did not otherwise have authority to gather information and a Stafford Act declaration is reasonably likely and imminent; agencies would not be mission-assigned to provide support directly to the State.

  - This discussion referred specifically to potentially mission-assigning EPA to continue monitoring efforts to ensure a Federal awareness of the level of impact.

- **Recommendation:**
  - Consideration should be given to providing a Major Disaster Declaration with only Category B (Direct Federal Assistance (DFA)) support in the event of an incident at a NPP.
    - Much of the needed IA is provided through the PAA/ANI
  - FEMA to further evaluate the activation of IA programs under an Emergency Declaration.

- **Supplemental Player Discussion:**
  - The DHS Secretary may identify a Federal Resource Coordinator (FRC) for response without a Stafford Act declaration.
  - FEMA IA would not be available without an Emergency or Major Disaster Stafford Act declaration.

Please see the "Supporting Federal Agencies" sub-section for further information regarding EPA authorities depending on a disaster declaration.

Please see the "PAA/ANI" section for further information on the PAA, ANI, and EFA.

UCG Construct

- **Observations:**
  - 6 Months Post-Incident
    - Based on pre-exercise discussion, the UCG included the following:
      - FCO
      - SCO
      - SCDHEC Representative
      - EPA Representative
      - NRC Representative
      - Federal Disaster Recovery Coordinator (FDRC)
      - State Disaster Recovery Coordinator (SDRC)
  - 18 Months Post-Incident
    - The UCG/coordination entity drastically shifted at 18 months post-incident. Based on player discussion, the UCG would be replaced by a less-structured decision making entity consisting of the SDRC, FDRC, SCDHEC, and county representatives. This entity would not be a formal UCG structure.
      - A regional EPA representative would serve in an advisory role as EPA would continue monitoring operations alongside SCDHEC.

        - The NRC would still be heavily engaged in the decision making process with the financial support from the PAA, ongoing long-term waste removal, transportation, and storage issues.
    - As the focus turns more towards recovery, the State is likely to hire/contract the SDRC position for a Recovery Czar, whose focus would be on long-term recovery operations state-wide. The individual brought in would be experienced with recovery operations so the State may focus on other efforts.

- **Recommendation:**
    - Determine which Federal agency would serve as Federal lead for recovery operations.
    - Further discuss State representation (such as the South Carolina Department of Agriculture (SCDA)) within the UCG or coordination entity due to agricultural impacts on the State economy.

- **Supplemental Player Discussion:**
    - The SCO and FCO would have transitioned their responsibilities to the SDRC and FDRC prior to 18 months post-incident.
    - The State would be the lead for the overall recovery operation; the FDRC would be the primary lead for Federal recovery operations.

Recovery Office

The Joint Field Office (JFO) may not continue activation at 6 months post-incident, but a Recovery Office, led by the State, would be established within a few months post-incident.

County Operations

- **Observations:**
    - Safety and security efforts are the responsibility of the local law enforcement entity. If this entity is overwhelmed, supplemental support from the State or other entities would be provided, as available.
        - An assessment should be conducted to determine the capacity of each local law enforcement agency to develop an understanding of potential personnel gaps in the event of a radiological incident.
    - Long-term security of the affected area will be vital to both preventing the potential spread of contamination and maintaining public confidence. This will be difficult to coordinate and expensive to execute. Counties will likely task local law enforcement with maintaining a perimeter around areas not safe for return, but local law enforcement will be overwhelmed with the resource requests.

South Carolina Recovery Task Force

- **Observations:**

- The SCRTF is a structure by which South Carolina organizes recovery operations. Additional teams may be added or removed to address specific issues such as housing gaps.
- The SCRTF is focused on keeping residents within the State, not specifically within the impacted communities.
- The South Carolina Education and Outreach Task Force would be activated within 6 months of the incident.

Supporting Federal Entities

- **Observations:**
  - EPA funding and authority are constrained by law without the existence of a Disaster Declaration and Mission Assignment. EPA asserts assessment capabilities under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) [also referred to as Superfund], but would be limited in its remedial capacity.
  - USDA has mapping data of farms and would be able to identify which farms are within the impact zone. This data is not available prior to a disaster and therefore could not be used for planning purposes. Lastly, this data is different than that maintained in Homeland Infrastructure Foundation-Level Data (HIFLD) working groups Homeland Security Infrastructure Program (HSIP) Gold dataset.
    - *More information about HSIP and HIFLD can be found at: http://www.dhs.gov/infrastructure-information-partnerships*
  - EPA is expected to take lead of the FRMAC from DOE by 6 months post-incident.
    - The FRMAC is only responsible for monitoring/sampling, not clean-up activities.
  - A case could be made for EPA to continue monitoring efforts longer than initially planned as a way to support the Federal government's information needs; if approved, this effort would be 100% funded.
  - Code of Federal Regulations (CFR) Title 44 – Emergency Management and Assistance states EPA is responsible for long-term monitoring. While the CFR does not include funding authorizations, the request for funding may be sent to Congress as part of the proposal for additional funding of activities outside or not covered by the PAA.
  - USDA has programs that enable the Federal government to provide direct and financial assistance to certain agricultural producers after a disaster. However, these programs are currently triggered by a "natural disaster" and would therefore not be an option in a radiological incident.
- **Recommendation:**

- Review the existing statutes and regulation to determine a process to ensure funding of EPA's long-term monitoring efforts and leadership of the FRMAC operations in the absence of a Stafford Act declaration.
- Develop and maintain a contact list for recovery efforts.

- **Supplemental Player Discussion:**
  - Policy/guidance is unclear as to which agency is the "Federal lead" for the recovery operations.
    - *Discussion regarding the Federal lead for remediation is included in the "Lead Federal Agency – Remediation" section.*
  - The A-Team is a valuable resource that should be engaged throughout recovery operations for guidance by SMEs.
  - EPA may have a different role if the incident is a result of a terrorist attack.
  - The Food and Nutrition Service (FNS) within USDA would be able to provide the Supplemental Nutrition Assistance Program (SNAP) which provides food stamps to those economically challenged by the NPP incident.

PAA/ANI

The NRC developed the NRC's draft Plan of Distribution of Funds for the purpose of the SE15 Recovery TTX. The NRC's draft Plan of Distribution of Funds provided was only intended to drive exercise discussion and was not intended to establish a precedent for the content, structure, or process for other Plans of Distribution of Funds that may be developed in the future. The NRC is looking to gather input from the SE15 Recovery TTX participants on the content of the NRC's draft Plan of Distribution.

- **Observations:**
  - The PAA creates an insurance system for damages incurred as a result of a nuclear power plant incident; it does not designate the agencies responsible/authorized for various operations. The NRC is required, by the PAA, to submit a Plan of Distribution of Funds to the Federal District Court, recommending how to categorize and prioritize claimants for the limited amount of funds made available by PAA requirements. The Court would ultimately make a decision on how funding would be distributed. If funding of all needed response and recovery activities is not available under the PAA or Federal District Court authorization, an additional request for funding would need to be submitted to Congress.
  - It is expected that, based on the severity of the incident, not all classes of claimants described in the NRC's draft Plan of Distribution of Funds would be compensated before funding required by the PAA is exhausted. Therefore, all potentially valid classes of claimants should be included in the NRC's Plan of Distribution of Funds so that those not compensated by existing insurance layers may be clearly shown as an unmet need in excess of aggregate liability and elevated to Congress in a request for supplemental funding, per the PAA.

        - ANI does not expect that the insurance funds would be used to compensate depreciation of value of uncontaminated homes nor for loss of tax revenue. It would be up to the Federal District Court to determine the priority of claims, such as State and local government expenses incurred in evacuating the public.
    - While ANI, through the EFA program, will provide living expenses and lost wages to those directly affected by the evacuation, those who evacuate outside of the official order or who lose income indirectly may not be included in the EFA program.
    - Under the PAA, the Federal District Court may decide to allocate some portion of the PAA insurance funds to decontaminate individually owned homes. The amount provided would be part of the Federal District Court's decision and it is not clear if, or how much of, these funds would be used to pay these costs.
        - Regardless of the amount paid, the homeowner will maintain ownership of the contaminated homes.

- **Recommendation:**
    - Identify potential compensation for county operations that are unlikely to be compensated under the PAA.
        - Compensation for any county operations would be provided retroactively through a claims process, potentially months after the costs were incurred.
        - The PAA does not "fund" covered State/local costs, but rather reimburses.
    - Discuss the difference between the State ordering an evacuation and the State ordering relocation and how that may impact the EFA provided by ANI.
    - Additionally, discuss how the difference may impact those individuals that are relocated for a period of time after the evacuation order has been lifted.

- **Supplemental Player Discussion:**
    - The PAA is:
        - A Federal statute enacted in 1957 to encourage the private development of nuclear power.
        - Provides legal requirements for financial protection of the public in the event of a nuclear incident.
        - Provides the legal framework for how financial protection will be disbursed to the public impacted by a nuclear incident.
    - There are two layers of financial protection under PAA:
        - The Primary Financial Protection Layer is the maximum amount of financial protection available in the market place, which is currently $375 million. ANI is the sole provider.
        - The Secondary Financial Protection Layer, administered through ANI, is funded by a retrospective premium that is assessed after an incident.

If a nuclear incident were to occur in which the primary layer ($375 million) was insufficient, all NPP operators would be charged a premium up to $127.3 million per reactor. With 103 reactors, the Secondary Financial Protection Layer provides up to an additional $13.112 billion.

- The total amount of these two layers, is approximately $13.5 billion.
- Under PAA, if the Federal district court with geographic jurisdiction determines that covered damages due to the incident may exceed the limit of liability, total payments by indemnitors like ANI shall not exceed 15% of the aggregate public liability limit absent court approval.

- This retrospective premium amount is adjusted every five years based on inflation.
- ANI expects that individuals whose bodily injuries are caused by exposure to radionuclides released from the nuclear power plant would be compensated.
- Under the PAA, "…in the event of a nuclear incident involving damages in excess of the amount of aggregate liability, the Congress will thoroughly review the particular incident and will take whatever action is determined necessary and appropriate to protect the public from the consequences of a disaster of such magnitude."

- Tax revenue is not covered under the PAA. Regardless of the situation, home and property owners will still be legally responsible to pay property taxes unless a legislative decision is made to address this issue.
  - Participants discussed working with the Department of Treasury to postpone taxes.
- Nothing in PAA prohibits the Federal District Court from authorizing the compensation of those in impacted areas in surrounding states (i.e., North Carolina could receive compensation for an incident at the RNP in South Carolina).
- The PAA does not address reimbursement of Federal agencies. Compensation from the insurance funds depends on the licensee being legally liable for damages. It is highly unlikely that Federal response would be considered a legal liability of the licensee or damages.
- Emergency financial assistance is provided by ANI to the population under an evacuation order initiated by a State or other official, authorized by the State to initiate an evacuation. For South Carolina the officials that can authorize an evacuation is the governor or local fire marshal.
- EFA is provided, by ANI, to cover the cost of lodging, food, transportation (mileage), and lost wages. As applicable, ANI would expect to base the amount of EFA on per diem rates using cost of living values within an affected area. Determination of such rates may be based on various sources, including the per diem rates set by the General Services Administration (GSA).

    - Evacuees will be issued debit cards unless they request checks.
    - Since the length of the evacuation order may not be determined, it is contemplated that debit cards may be re-funded for an extended time period up to the time the evacuation order is terminated. Debit cards can be re-funded remotely, without the need for the evacuee to return to a claim center.
    - EFA is not provided for pet food or mortgage assistance. It is expected that individuals would use the compensation for lost wages to continue to pay their mortgages and other like expenses.
  - ANI must ensure all individuals receiving financial support are not on a national security watch list such as the Specially Designated Nationals List (SDN) (i.e., the "Sanctions List") maintained by the Office of Foreign Asset Control (OFAC) within the Department of Treasury.
    - Various banking laws apply and without proper identification to ensure individuals are not on the SDN, the individuals cannot be provided with funds. There are potential civil and criminal penalties associated with insurance companies providing funds to those on the SDN.
    - Individuals without proper government-issued identification may be assisted by the State's systems to verify identification.
    - Migrant farm workers may not have the proper paperwork to prove their identity or eligibility.
    - Expatriates working for multinational corporations would be able to use their visas or passports as forms of identification verification.
  - ANI has learned from the BP/Deepwater Horizon event that it may be required to notify certain claimants of potential tax obligations and in some cases might be required to withhold taxes, as the Internal Revenue Service (IRS) requires. As required by the IRS, individuals would be required to pay taxes based on the certain financial assistance (e.g., lost wages) provided by ANI.
  - The latent injury provision in the PAA addresses bodily injury claims that may arise in the future.
  - ANI expects that businesses located within the evacuation zone will receive financial assistance. The Federal District Court may have the authority to broaden the classes of businesses entitled to compensation.
  - South Carolina law says a State of Emergency lasts 15 days with the authority given to the State Legislature to extend it as needed. It is unclear if/how long the legislature may extend the State of Emergency.

Plan of Distribution

- The NRC's draft Plan of Distribution of Funds used for SE15 identifies six classes of claimants, prioritizing distribution of funding based on level of need.
  - State and local governments are not a high priority; those impacted most are identified as the first class of claimants.

- For the purposes of this exercise, the NRC participants proceeded as if input and buy-in would be sought from all major stakeholders (e.g., the State of South Carolina, other Federal agencies, etc.) in order to lend weight to the proposed plan as it might be considered by the court. The NRC participants believed that this could potentially simplify and shorten the court's decision-making process, resulting in faster resolution and improved certainty of outcomes.
- The State will be able to create founded estimates on needs/projected expenses to have an understanding of how far into the proposed claimant classes funding would be available, should the version submitted by the NRC be accepted in whole. By understanding when funding may be exhausted, it will allow the State to work with counterparts to begin identifying where to obtain the additional, needed funding.
  - This will also prepare the State for any counties that may be bankrupt before funding is available.
- There is no mandated process or associated timeline for the Federal District Court to adopt a Plan of Distribution.
- As supplemental information on the damages incurred is made available, the Court may decide to amend the Plan.
- South Carolina expressed concern about the likelihood of unavailable funds for compensating the proposed lower priority classes of claimants, including funding county activities. Due to the potentially long timelines for developing a Plan of Distribution of Funds and the decision by the Court, South Carolina is concerned that counties would be bankrupt before compensation is available, thereby impacting the ability to continue with operations such as reentry control.
- It is not expected that all requests to Congress will be funded.

Information Management/Sharing

Information management and sharing is a key element to providing timely support to the impacted population while ensuring public and private assistance is within the legal constructs.

Duplication of Benefits/Data Sharing

- **Observations:**
  - The following issues related to data sharing were identified:
    - Legal sharing of PII with Federal agencies and ANI providing IA
    - Large volumes of potentially conflicting data
    - Using incompatible systems between the various supporting agencies and organizations
    - Duplication of benefits
    - No current system for sharing information between all levels of government and the private sector exists
  - There is a need for a single system/process to include all beneficiaries and what support has been provided from which entities.

- **Recommendation:**
  - Review privacy sharing laws to determine legal ability to share information.
    - Consider making revisions for emergency situations; possibly require disaster recognition or develop a process for requesting a waiver during emergencies.
  - Develop a data sharing system to manage the collection and sharing of personal information.
    - The process for developing the system must identify the types of information to collect from the impacted population and the resources needed.
    - Creating this system will require a computer matching agreement between agencies.
    - The system must also include the requirement of consent by the individual providing personal information.
- **Supplemental Player Discussion:**
  - There are legal restrictions of what data may be shared and with whom.
  - Following Hurricane Sandy, FEMA developed a system to share similar information with other Federal agencies but it is not accessible by State agencies or private entities, such as ANI.
  - The individual receiving assistance and providing information would have to provide voluntary written consent for the information to be shared. However, ANI cannot make assistance contingent on evacuees allowing ANI to share their personal information.

Case Management

For the purpose of this discussion, casework is the opening of a case to resolve immediate needs (e.g., food, clothing, shelter, etc.) of displaced residents while case management is an all-inclusive management and handling of all losses, beyond those immediate needs. It is understood that each case of the must be individually addressed.

- **Observations:**
  - The purpose of case management is to ensure impacted residents have a single point of contact for their needs including health management, housing management, etc.
  - There is a need for a single organization/group to manage and maintain the case management process for all individuals impacted by the disaster.
  - ANI does not provide funding for case management; claim adjusters hired by ANI are only responsible for processing EFA claims for those individuals who qualify.
  - The State is ultimately responsible for the management of each case, but expects to delegate the responsibility to a third party due to the financial and personnel requirements for managing the effort.

- Once the State, in conjunction with the identified supporting entity, has a system in place for managing the cases, effective messaging of the available resources and the procedure for opening a case/beginning the process will become key for timely support to the impacted community.

- **Recommendation:**
  - Develop a South Carolina Case Management Plan for managing each individual case, including the reporting structure, needed resources, delegation of authorities, and funding streams.

- **Supplemental Player Discussion:**
  - A specific organization/group should be solely responsible for the case management effort.
    - This may be a role a Voluntary Organizations Active in Disaster (VOAD) can fill, but the information sharing will be an issue. Additionally, the VOAD will need financial support in able to sustain long-term operations.
  - The individuals/group that would be leading the case management effort will need proper training.
    - Counselors will be necessary to support case managers in addressing the psychological impacts.
  - The process for managing the cases should be established at the Disaster Recovery Center (DRC) within hours of the incident to ensure effective management of the impacted population.
    - The system should be based locally to coordinate all available benefits from the State, local, Federal, and/or private sector.
  - The case management process should not focus on keeping the individuals/families within the impacted communities but rather relocating individuals/families to non-impacted areas within the State.
  - Effective case management will require a thorough understanding of all available programs.
  - Some individuals/families may already qualify and be receiving benefits from Federal housing programs pre-incident. When evaluating available support, case managers will have to be aware of non-disaster programs that impacted the population may be eligible for.
  - The following list of questions were created to support case managers in understanding the needs of the affected population:
    - Where can those displaced individuals/families go for temporary relocation?
    - How long will the individuals/families be able to stay in these temporary locations?

- What support (e.g., schools, healthcare, and employment) is needed for these individuals/families?
- What systems are needed to allow for the individuals/families to return to a normal life? How can they be made available?
- What support can be provided to these individuals/families?
- What/where are the systems that can help these individuals/families begin the transition to return to normalcy during this period?
- What steps will be taken to ensure the displaced population has a say in where they are relocated to?

Population Tracking

- **Observations:**
  - Various entities will need population tracking data for various reasons. This includes, but is not limited to:
    - SCDHEC, for long-term health monitoring.
    - Counties, for information sharing or document delivering (i.e., tax documents).
    - CDC and Agency for Toxic Substances and Disease Registry (ATSDR), for supporting tracking efforts.
- **Recommendation:**
  - Evaluate the population tracking model used in response to the September 11, 2001 terrorist attacks to determine if it can serve as the foundation for a potential method for South Carolina.

Acceptable Level of Risk/Reentry and Return Decisions

Also referred to as "how safe is safe".

- **Observations:**
  - The process for determining "how safe is safe" for an evacuated population has not been formalized. The expected process is that SCEMD and SCDHEC, using PAGs developed by the EPA and information provided by the A-Team, would make a recommendation to the Governor who would ultimately make the decision for the State. It is expected that all impacted counties would be involved in the recommendation development process with SCEMD and SCDHEC, thereby ensuring a unified recommendation.
  - It is expected that the decisions on return would be made within the first few weeks post-incident.
  - Public perception will have an impact on the identification of safe zones for return/reentry and may even drive these areas to be expanded.
- **Recommendation:**
  - Develop a state guiding document (i.e. Standard Operating Procedure (SOP)) for the decision process on determining acceptable level of risk, including

certifying properties as safe for return, and further define return decisions. The document should include the necessary information to determine the level of risk the State would accept and the process for public messaging. It was recommended that SCDHEC develop a baseline re-entry level for decisions to be made upon in a real world situation. The development of the document should outline the process for using the EPA Protective Action Guides (PAGs) in making a decision, and a determination for the target dose limit.

  - It was recommended that SCDHEC develop a baseline level of acceptable risk for reentry operations that can be used for decision-making processes.

- Evaluate the capacity and capability for counties to implement return and reentry decisions, identifying any needed support from the State.

- **Supplemental Player Discussion:**
  - There are currently numerous resources and guidelines, including the EPA PAGs, for determining an acceptable level of risk. The State needs to develop the process(es) for taking recommendations and, based on the particulars of an actual situation, making a decision. There is no need to make a concrete decision in advance of a situation, but determining the process and how a recommendation and therefore decision may be altered based on a situation, is critical for making timely decisions for public safety.
    - When discussing the modification of the levels of acceptable risk in a situation, stakeholders from the impacted community should be involved in the decision making process
  - When determining acceptable levels of risk, the following should be discussed:
    - Return/Reentry
    - Agriculture products for consumption versus non-consumption.
      - The fact that consumer perception may have a greater impact on these decisions than science and the FDA derived intervention levels (DILs) should be taken into consideration.
    - The repurposing of land from its original use and how the levels of acceptable risk may vary for different uses of the land
  - While the decisions to allow for return will be based on the scientific data from sampling efforts, the infrastructure needed to support the community must be in place.
    - Identifying the needed infrastructure will take place through the engagement with the impacted population.

Population Relocation

- **Observations:**
  - The EPA PAGs are temporary projections used to minimize public risk. Rough recommendations based on the PAGs would be made on the first day of the

incident, as minimal testing is done within the first few hours, however there would need to be supplemental monitoring and sampling to revise the decisions as the situation evolved.

- There is a concern that those individuals relocated into new communities may be stigmatized. While those relocated will not be hazardous to others, they may be treated differently because they were relocated from the impacted area.
- The current living environment of the population should be a consideration when deciding on the relocation site. For example, if much of the impacted population lives in rural communities, relocation to an urban environment may be a difficult adjustment.
    - Additionally, the capability/capacity of the infrastructure (e.g., school systems) to absorb an influx in the population should be a consideration.

- **Recommendation:**
    - Identify methods to mitigate the impacts of a stigma associated with the relocated impacted population.
    - The State's goal is to keep residents within the State, though not necessarily in or near the impacted communities.

Public Decision Not to Return

- **Observations:**
    - There is potential for individuals to make the personal decision not to return, even if informed of the safety in returning. It is expected that this choice is not a result of sociological issues but educational or psychological issues. This could be based on lack of information or confidence in decisions made. Radiological incidents have an added psychological obstacle as the damage caused by radiation is not visible.
        - The initial actions, recommendations, and messaging by those in charge must be dealt with on a positive note. If decisions makers appear to react out of fear, the public will lose trust, thus leading to a greater challenge in returning to normalcy.
    - The possibility of providing mortgage release for individuals that do not return needs further discussion.
    - There was no specific class of claims in the NRC's draft Plan of Distribution of Funds for compensation of homeowners whose homes lose value as a result of the incident.
- **Recommendation:**
    - Further discuss mortgage relief support available or the acquisition of property by a public or private entity.
    - Evaluate the possibility of including compensation of homeowners for loss of property value due to the incident in the NRC Plan of Distribution.

- **Supplemental Player Discussion:**
  - The potential for individual decisions not to return shows the need for strong public messaging and community outreach. The responsibility of addressing this issue may be delegated to the South Carolina Housing or Recovery Task Forces.
  - If decontamination is not a viable option, ANI expects the Federal District Court to authorize compensation for the loss of homes directly contaminated by the incident. It is expected that the funds would be used for the mortgage payments on the home.
  - ANI does not expect the Federal District Court to authorize compensation for the cost of a home if it is deemed safe for return; therefore ANI does not expect to provide compensation for individuals that decide to walk away from homes that have been deemed safe for return.
  - The State/local governments may discuss purchasing homes at a discounted price from those homeowners that do not want to return, though the homes are safe.
    - Consideration may be given to provide this option to the private sector.
    - Purchasing homes at a discounted price can negatively impact the tax base.
  - If homeowners turn their homes over to the lenders, instead of foreclosing, the decision will still appear on credit reports as a debt.

Clean-Up/Remediation

- **Observations:**
  - Under the PAA, ANI can provide compensation for the decontamination of homes if the Federal District Court determines that compensation is in accordance with the Plan of Distribution of Funds adopted by the Federal District Court. ANI expects to provide funding for decontamination of homes if the expected cost of decontamination does not exceed the value of the home before the incident.
  - South Carolina does not have the funding to conduct remediation operations. The authority/responsibility for remediation operations has not been identified.
  - South Carolina will have to decide the requirements for allowing for return and re-occupancy of the homes; it is not clear which State/local entity would be authorized to determine the level at which it is safe for occupancy.
  - Initial perceptions on which Federal agency was lead for the remediation operations were quickly challenged. While CERCLA authorizes EPA to respond to releases, or threatened releases, of hazardous materials, it clearly states that EPA is not authorized to conduct remediation activities for purely radioactive materials released from a NPP.

- The State does not know if there will be a requirement of homeowners to conduct remediation of properties.
- Under the PAA, ANI may pay for the for decontamination of a property if the Federal District Court determines that such payments are in accordance with the adopted Plan of Distribution. However, ANI would not take ownership of the property should the owner decide not to return.
- Participant discussion considered the seizing, under eminent domain, by the local government or purchasing of property by the NPP for properties which may not be financially beneficial to remediate. It may also be possible for a third party to purchase or acquire the property, with no requirement for remediation by creating an alternative use for the property (e.g., solar energy farms).

- **Recommendation:**
  - Develop a State remediation strategy to serve as an outline for conducting remediation operations. This Strategy must address the timeline and coordination of clean up, waste management, certification process, traffic control, etc.
  - Develop a State process of determining levels to which offsite contamination must be reduced, ideally, with input from affected stakeholders.
  - Identify a Federal agency to assist with further development of remediation guidance.
- **Supplemental Player Discussion:**
  - The decision making process for decontamination or demolition of contaminated properties will include a cost-benefit analysis (CBA) and community input. The community input would help determine at what point citizens would make the decision to return. The State and counties do not want to remediate areas in which the population would not return, even if deemed safe.
    - When conducting the CBA, consideration should be given to the required infrastructure for the community to be re-established and the availability of those services. Decisions would be a joint effort by State and local government entities, with recommendations or guidance from Federal SMEs.
  - The Recovery Federal Interagency Operational Plan (FIOP) and RSS identify which agencies are responsible for which operations; the RSS would be developed approximately 2-3 months post-incident. It is expected that there may be modifications to the strategy as additional information is gathered or circumstances change.
    - *The RSS was not developed as part of the SE15 Recovery TTX.*

- Currently, there is no clear designation of authority for which State agency can determine the levels to which offsite contamination must be reduced and how contaminated land use would be controlled.
    - SCDHEC would likely follow the guidance set by EPA and coordinate all decisions with local, State, and Federal governing entities.
- Due to the CERCLA exclusion, it is not clear which Federal agency is the lead for clean-up/remediation or how remediation operations would be funded.
    - Follow-on discussion questioned who owned the contaminants and if that party should be responsible for clean-up. The PAA makes the utility financially responsible, up to a limit, for damages resulting from a release like that in the SE15 scenario. Clean-up costs that are a legal liability would be compensated under the PAA, though not necessarily by the funds available due to the utility's liability. If the approximately $13.5 billion in aggregate utility liability were exhausted by higher priority claims, in accordance with the Federal District Court's adopted Plan of Distribution, then the need for funding covered clean-up costs would likely be brought to Congress via the President's compensation plan, as contemplated by the PAA.
- There is concern that not mandating remediation of all private properties will result in only partially remediated neighborhoods; therefore creating a concern for those that return about the safety of their property and potential effect on their health.
- Since SCDHEC does not have enough personnel to complete clean-up activities, contractors would be brought in. Following the completion of remediation actions, contractors would conduct a supplemental release survey.
    - A certain percentage of the sampling will be resurveyed by SCDHEC to verify findings.
- Following remediation efforts, SCDHEC expects to conduct a thorough survey/re-evaluation of the property to ensure it meets the standards set by the State/counties.

Waste Management Strategy

- **Observations:**
    - The Waste Management Plan must address how and where to store contaminated waste, the process for transportation of materials, and the funding streams.
    - Contracting companies hired to support remediation efforts are required to follow regulatory requirements and would work with South Carolina under regulatory license reciprocity. South Carolina would agree to enforce the Federal laws ensuring the contractors are qualified, properly inspected, and conducting supplementary field inspections to guarantee/ensure the quality of the radiological remediation operations.

        - Funding for these contractors has not been identified.
        - The Conference of Radiation Control Program Directors (CRCPD) has developed the following resources:
            - Radioactive Waste Broker & Decontamination Services: http://www.crcpd.org/StateServices/CommercialServices/RadWasteBrokerServices.pdf
            - Radioactive Site Investigation and Decontamination Services: http://www.crcpd.org/StateServices/CommercialServices/rpt-decon-services.pdf
    - As previously stated, CERCLA has a specific exclusion which prevents EPA from having the authority or funding to conduct remediation activities under the SE15 scenario.

- **Recommendation:**
    - Determine the process and authorities for transporting and storing low-level contaminated waste, including a review 49 CFR Parts 100-185 and 10 CFR Part 71.5.

- **Supplemental Player Discussion:**
    - Consideration must be made for the large amount of contaminated crops that will require disposal.
    - The option of placing contaminated waste in the highly contaminated areas was proposed (i.e., exclusion areas identified as the purple portions of mapping products).
    - It is not clear who is responsible for waste removal, how the waste would be transported, or where it would be transported.
    - If a cover crop is used to keep particles in place on impacted farmland, it must be included in the Waste Management Plan.
    - The following contractors/resources were identified for potential disposing of low-level contaminated waste:
        - Barnwell Disposal Site and Energy Solutions
        - Waste Control Specialists (located in Texas)
        - Other health physicist (HP) companies that provide similar services
    - Operational guidelines released in 2013 identify and explain the number of hours workers may be in contaminated areas, these limitations would also apply to those removing waste.

Economic Impacts

- **Observations:**
    - The USDA Secretary of Agriculture has the authority to regulate inter-state and international agriculture products. South Carolina has jurisdiction within the State.

- It is not clear which entity is responsible for regulating radiation levels on cars, container ships, and other transportation vessels.
- South Carolina regulates products within the State and USDA/FDA regulates products outside of the State. South Carolina, USDA, and FDA would coordinate decisions to avoid varying levels of acceptance of products.
- The Small Business Administration (SBA) does not provide support to farmers.
- Various sources of guidance for farmers were identified for remediation efforts and minimizing loss of profit. Please see the "Guidance for Farmers" sub-section.
- State and Federal unemployment resources would be available for those no longer employed. Please see the "Unemployment Resources" sub-section.
- Neither the loss of animals nor their disposal would not be covered under Animal and Plant Health Inspection Service (APHIS) due to an indemnity clause, as the loss is not a result of disease.
    - *Further information can be found in the FEMA Carcass Disposal Concept of Operations (CONOPS) Executive Summary, page 1.*

- **Recommendation:**
    - Further review existing policy to identify the lead agency for monitoring radiation levels for intra- and inter-state, and international transportation vessels to ensure safety of products.
        - A suggestion was made to modify existing monitoring technology at cargo ports used for imports to also monitor exports for radiation. The monitoring of exports is the responsibility of U.S. DOT.
            - DHS also operates the Domestic Nuclear Detection Office (DNDO) which manages domestic nuclear detection efforts and may be an additional resource.
    - Identify how to incentivize consumers to purchase products from South Carolina.
    - Further evaluate the process for coordinating sampling efforts across all sectors during the recovery phase.
    - Further discuss the value and risk of, and available programs to fund, planting cover crops in order to keep the soil in place or for phytoremediation during the first 6 months post-incident.
    - Further evaluate the identified options for State/local government support for impacted farmers and develop a simplified handout.
    - Develop a framework for assessment of wide-area radiological incidents and the socio-economic impacts to citizens and businesses State-wide, regionally, and nationally.
- **Supplemental Player Discussion:**

- Economic Impact
- A total embargo of the State would be imposed; no products, including animals, would be put into the market to ensure there is no exporting of contaminated products.
- South Carolina has a large port in Charleston for international exports and multiple railways for inter- and intra-state commerce.
    - Swipe tests and other monitoring efforts will have to take place, but it is unclear which entity would be responsible or what levels/standards would be used.
- USDA has a native sampling methodology for testing products, with supporting contracts in place.
- USDA and the Farm Service Agency both have the capability to identify which farms are affected.
- USDA may be able to have an internal emergency declaration in the absence of a Stafford Act declaration, which would open various USDA emergency programs.
    - USDA may be able to put moratoriums on loans provided to those impacted by the incident.
- The ongoing responsibility for testing and ensuring safety of products would shift from the local farmers to the producers.
- There is a concern for a black market to form to sell equipment that is removed from the contaminated areas without being properly or officially decontaminated/destroyed.
- The stigma of a radiological/nuclear incident will not be limited to the impacted area, but rather be felt throughout the entire State and possibly the whole region; this is likely to affect businesses and their profits.
    - Based on case law interpreting the PAA, it is unlikely that compensation would be provided to those not directly impacted by the incident (i.e., those suffering from losses due to the stigma of the incident) as the NPP is unlikely to be held liable.
- Resuspension of contaminants along Interstates 20 and 95 and private railroad tracks (CSX and Norfolk Southern) would raise questions as to the safety of inter-state commerce and travel, despite the low-level of risk compared to the consumption of products grown along these routes.
- Businesses indirectly impacted, such as those that use transportation corridors located in the impact area, will need to consider alternative transportation routes and modes.
- Considerations for tracking the migration of wildlife will be necessary for maintaining awareness of the possible spread of contamination.

The following non-agriculture impacts were identified:

- Tourism associated with the Bojangles' Southern 500 held at the Darlington Raceway
- Technology companies based in South Carolina
- Transportation routes
- Overall state-wide tourism
- Large offices/headquarters for major businesses (e.g., BMW, Sonoco)
- McLeod Farms in Chesterfield County and the dependency on water from lake/creeks for producing peaches

Unemployment Resources

- Those no longer employed due to the incident would be eligible to apply for Unemployment Insurance through the U.S. DOL.
- The Disaster Unemployment Assistance Program under the South Carolina Department of Employment and Workforce would be available under a Stafford Act Major Declaration.
  - This program provides support for 26 weeks and also applies to those self-employed.
  - This program will not be available if a Stafford Act Major Declaration is not declared.
- Databases can be used to help farmers identify employment opportunities for their employees.
- The South Carolina Department of Commerce (DOC) has a team dedicated to identifying industries within a geographic area that would be affected by a potential disaster. The team would help identify locations for industries to relocate to, with the intention of keeping them near their original location.
- The DOC would use an existing industry database and dedicated team to contact economic developers. This team would work to understand the needs of the impacted industries and evaluate options to keep the business near their current location.

Guidance for Farmers

The following options were identified as potential guidance to provide impacted farmers:

- Planting of horseweed would pull out cesium and reduce, by more than an estimated 89%, radioactivity in the soil.
  - *This method of remediation is still in the experimental stage.*

As possible, repurpose crops such as cotton, corn, soybeans, and other oil producing seeds to remove the contamination.

- Plant cash crops.
- Use bioremediation methods on contaminated soil.

- Identify alternative uses for land (i.e., solar farms which may help in compensating for loss of electrical power from the damaged NPP).
- Transform land no longer viable into waste storage.
  - This will require an agreement with either the State/local government or a contracting firm to manage the waste.

The following were identified as potential options for the State and local governments to provide supplemental support to the impacted agriculture industry and would require further discussion by those governing bodies:

- Place the impacted forestry in a conservation reserve program.
- Government purchases crops at a reduced price to minimize loss felt by farmers.
- Evaluate modification of methods used for cleaning chemically contaminated land for cleaning radiologically contaminated land.
- Rezone portions of contaminated land for alternative use.

Public Messaging

- **Observations:**
  - Using recognized professionals in their area of expertise (i.e., doctors to explain the health effects, environmental scientists/officials to explain effects on the environment) to convey decisions and provide information will help with public understanding.
    - The dairy industry, and possibly other impacted industries, has designated PIOs that would be engaged to ensure common messaging through the JIC Unified Command (UC) structure.
  - A large challenge will be explaining to the public why it is safe to live in a location but not safe to eat the food grown there.
  - Development of a website would allow for a single source for all information, including frequently asked questions, resources and programs available, and usable mapping products.
    - Providing mapping products and creating other features to help the public understand the different impacts of the incident and the decision making process for reentry/return will enhance public awareness of the impacted areas.
    - In the aftermath of the Fukushima Daiichi nuclear disaster, Japan created a mapping approval agency to make sure maps were accurate and consistent; SE15 participants suggested further discussing the use of the FRMAC in this capacity, in addition to their monitoring efforts.
  - Maps provided to the public should be developed with zones based on safety levels. There is concern that using hard lines on the maps may lead to misunderstanding with public interpretation, i.e., why is the population on the left side of the line allowed to return but not the population on the right side.

- Messaging efforts must target both domestic and international audiences, explaining the safety of products from both Charleston, South Carolina [international port] and the rest of South Carolina.
- Stickers/logos could be used to convey that products from South Carolina have been screened and cleared for distribution.

- **Recommendation:**
  - Develop a process for messaging product safety to the domestic and international consumers, including explaining the decision-making process.
- **Supplemental Player Discussion:**
  - Public Safety Messaging
    - The JIC will be critical for messaging in the first few months of response/recovery operations.
    - Hard dates should be avoided as possible as it is critical to set reasonable goals and deadlines to ensure no loss of public trust.
    - Consistent and clear messaging, explaining the decision making process, and any outcomes of the process is essential to ensure public trust in decision makers.
    - Public messaging will have to address rumor control.
    - Emphasis needs to be placed on listening and understanding the public concerns and ensuring that the messaging addresses those concerns versus simply pushing out a bulk of information.
    - Efforts should be made to maintain communication with the impacted population and follow up post-incident to, at a minimum, determine if supplemental support/assistance is needed.
    - Having emergency responders inhabit the areas deemed safe could be one way to create public confidence for returning.
    - Face-to-face community engagement meetings early in the process will be critical for gaining public trust.
      - Town hall meetings may be necessary for developing relationships with the impacted population and understanding the needs for returning or re-establishing a new community.
      - This will also provide government entities points of contact for the population.
    - Community relations experts may be more valuable and beneficial versus public meetings as remediation will likely be site-specific.
    - Sustenance farmers will have to be specially addressed as there is no way to regulate their activities, but there is a great need to caution them against eating certain food they may grow.

  - OSHA may coordinate with South Carolina Commerce and other State agencies to provide risk communications with unions and trade associations.
  - Resources available to the public and to the impacted business sectors should be publicly advertised.
  - A list of options for returning or relocating should be provided to the public to make choices that best suit their needs and preferences.
  - Risks on returning must be clearly messaged to the impacted population.
- Product Safety/Economic Messaging
  - Industries and businesses will have to convey the safety of their products.
  - FDA recommends referring to products as "generally regarded as suitable" versus labeling products as "safe".
  - The South Carolina Tourism Bureau will have to further market the safety of the State using current methods in place for reaching identified markets. These identified markets are typically larger cities with higher costs for advertising; supplemental funding will be needed to support this effort.
  - A separate messaging effort for truckers/transporters that would be traveling through South Carolina may be needed.
    - The State could partner with CSX/trucking companies to message the safety of products being transported through the State.
  - South Carolina must convey how no products in the contaminated area are being harvested and the State has verified that all other crops are safe for export and consumption.
  - The public should be informed on the process South Carolina is using to ensure affected crops are kept out of the market.

Sampling/Map Development

- **Observations:**
  - Mapping products will allow for informed decisions by South Carolina leadership. Maps should be more people-based, depicting the population and impacts on the population. Additionally, these maps should include information on progress and sampling, weathering, hot spots, etc.
  - EPA is expected to assume lead of the FRMAC from DOE around 6-months post-incident. The FRMAC operations are expected to eventually transition to South Carolina ESF-10 – HAZMAT for long-term monitoring as the EPA does not have the authority to conduct long-term monitoring.

- There is a significant shortage of laboratories to process the samples collected. Participants identified possible solutions noted in the "Supplemental Player Discussion" sub-section.
- Introduction of poultry feed into the marketplace may add an additional level of concern for public safety.

- **Recommendation:**
  - Discuss available resources for testing of samples to address the laboratory shortage.
    - *During the Agriculture Workshop, it was identified that State labs (other than those identified through the Emergency Management Assistance Compact (EMAC)), contract labs, and the Food Emergency Response Network (FERN) network could be possible resources.*
    - The FERN is an essential laboratory resource for the USDA Food Safety and Inspection Service (FSIS) and the FDA.
  - Evaluate the process for acceptance of poultry feed into the marketplace due to the complexity of sampling the product.
  - Discuss the types of information needed to be develop and displayed on mapping products and how that information will be gathered.
  - Identify the process for SCDHEC assuming control of long-term monitoring efforts and the associated timelines for transitioning.

- **Supplemental Player Discussion:**
  - Sampling would provide the needed information to determine if soil produces safe crops based on contamination levels.
  - Long-term sampling is expected to occur for decades as an effort to monitor radiation levels, ensure public awareness about safety levels, and continue justification of government decisions.
  - The USDA FSIS is responsible for sampling FSIS-regulated plants, the FDA for FDA-regulated, and the State public-private partnership for State-regulated plants.
  - There are a limited number of laboratories for sampling testing; the following alternatives were identified to address possible shortages:
    - Retooling existing labs, including those in the private sector
      - Certification requirements must still be met, even if testing is by a private sector entity
    - The FERN may serve as a supplemental resource to access additional laboratories
  - Field instruments are not an alternative method for testing samples.
  - Sampling efforts will go beyond the initial impact areas to ensure public and product and safety.

Housing Impacts and Resources

- **Observations:**
  - While it is expected that some of the impacted/displaced population will be able to relocate on their own and not require additional support from the government, it is expected that there will be a portion of the impacted population that will be dependent on government support.
  - The HUD would look to initially align the impacted community with non-disaster-related programs; without a Stafford Act Major Declaration, HUD would continue to operate under normal budgets, schedules, etc. and would not have overtime or travel budgets.
  - The Hazard Mitigation Grant Program (HMGP) for buyouts would not be eligible for use for this incident.
  - South Carolina and FEMA have housing portals to identify available housing units.
  - There is concern about ensuring public/owner safety of contaminated homes/properties that may be purchased.
- **Recommendation:**
  - Evaluate the programs and recovery support that could be provided by Federal agencies that did not participate in the SE15 Recovery TTX (i.e. U.S. Department of Veterans Affairs (VA) programs for veterans).
  - Identify and address liabilities associated with purchasing contaminated homes and any requirements for remediation.
- **Supplemental Player Discussion:**

Many housing programs were discussed throughout exercise play. Supplemental programs may have to be addressed by Congress for funding outside of a Stafford Act declaration or to override clauses preventing the use of those programs should the nature of the event be nuclear, radiological, or occur at a NPP.

- South Carolina believes the housing stock is available to meet the needs for those temporarily relocated but is not sure how the process of matching needs to availability would take place.
- South Carolina's Housing Task Force would play a key role in the identification of housing resources, including hotel occupancy.
  - The South Carolina Housing Task Force and Federal Housing Task Force must coordination.
- Florence County has identified approximately 5,000 available housing units. When determining how to use the units, decision-makers must address how the units will be incorporated into a long-term housing solution.

- In the event that a Stafford Act Emergency Declaration is not provided, some FEMA programs will not be available (i.e., congregate care) initially, but FEMA would likely support with technical assistance.
    - FEMA would be engaged in long-term recovery and assistance. Involvement of different agencies could vary based on the incident type and delegation of responsibilities.
    - The State would need to request IA as part of the request for a Stafford Act Emergency Declaration. In providing IA, Section 408 *Individuals and Household Temporary Housing Assistance* would be opened. This program cannot duplicate any housing assistance impacted families may receive under the PAA from ANI.
- HUD identified the following programs that may be available:
    - Housing Counseling Program – HUD program that can assist individuals with financing a new home, locating a contractor, placement into low-income housing, or direct the individuals to additional housing assistance available at the local-level.
    - Basic Home Mortgage Loan 203(b) – HUD program that could be available for those individuals that do not want to return; this program may be able to finance up to 100% of a home.
    - 203(k) Rehab Mortgage Insurance – This insurance allows homeowners to finance the purchase or refinance a home and the cost of rehabilitation. This program could help those that are planning to return.
    - Mortgage Insurance for Disaster Victims Section 203(h) – Federal Housing Administration (FHA) program to insure mortgages for victims of a major disaster that have lost their homes and are in the process of rebuilding or purchasing a new home.
- Housing Portals:
    - FEMA's housing portal includes all available rental resources provided by Federal agencies, private organizations, and the public, and is accessible by the public.
    - Social Services is an online tool for locating affordable housing for rent or purchase. There is a South Carolina-specific portion of the tool (www.SCHousingSearch.com).
- Engagement with local real estate agencies, including the development of a housing committee, would assist in identifying housing resources available.
- The option of a base shelter/camp for volunteers and/or responders should be considered as it may open up hotel rooms. The number of responders may exceed the displaced population.
- While homes may not be contaminated, there is a perception of the homes/property in certain areas being unsafe, which may lower the value.

    - Owners would not fully understand the loss in value of their homes until purchased as the market would show the depreciation.
- As was discussed in purchasing contaminated farmland, there is potential for government or private sector entities to purchase contaminated homes/properties for alternative uses.
- Consideration for providing compensation for the loss of a home's value is identified in the "PAA/ANI" section.

Exercise Design Lessons Learned

Planning

- Ensure adequate engagement of key stakeholders and expertise, including State agencies (e.g., housing and commerce) and Federal groups/agencies (e.g., A-Team and DOC), during both exercise development and conduct.
  - Implementation of a working group with representatives from all levels of government and the private sector allowed for the development of a well-rounded exercise with necessary scenario data and discussion topics.
- Create separate functional groups for discussing the various economic issues such as agriculture, business and industry, and tourism. The use of these sub-groups will be dependent on the economic structure for the impacted State.
- Allow more time for discussing map development with technical experts to ensure mapping products are usable for player discussion and decision making.
- Players were unable to make decisions regarding return and reentry during the Day 14 TTX. Had players made the needed decisions during earlier exercise play, more realistic and exhaustive scenario data would have been developed.
- Pre-exercise workshops prepared participants for exercise discussion and provided a better understanding of issues at hand.

Conduct

- Pairing Federal and State government representatives to facilitate functional group breakouts allowed for quality discussion and understanding of issues presented.
- Displaying exercise discussion notes on Adobe Connect allowed virtual participants to more effectively follow exercise conversation.
- Inclusion of exercise objectives and South Carolina leadership priorities on the table tents helped keep players focused on the issues presented.
- Continual reminders of players to complete the Participant Feedback Forms ensured a substantive amount of input submitted.
- Facilitator briefings should explain scenario artificialities as well as intended player discussion.

Participant Feedback

The following feedback was provided through both the Hot Wash conducted following the SE15 Recovery TTX and the Participant Feedback Forms provided to all participants.

Exercise Strengths

- Exercise Design/Planning
  - The exercise did an excellent job including the needs of the counties and did not focus solely on State/Federal operations.
  - The inclusion of agriculture issues generated discussion on the impact to the State's economy. This inclusion allowed for the integration of additional State agencies into exercise play.
  - Detailed level of planning with balance on efforts to keep conversation high-level.
  - The level of detail and discussion, as well as participation from local/county, State, Federal, NGO, and private sector, was admirable.
  - Balance of information in handouts and presentations allowed for presentation of a substantial amount of information that was easily digestible by participants.
- Exercise Structure
  - Functional groups were able to look beyond the funding that may be available under the PAA to identify possible sources of supplemental financial and resource support.
    - This includes the identification of funding sources/programs that have exclusions for radiological or non-Stafford Act incidents and may be possible avenues or Congressional actions to open additional funding/resources.
  - These discussions allowed for the identification of gaps in funding and necessary policy/program changes.
  - Allowing the UCG to float between functional groups allowed for a better understanding of player discussion to better inform brief-backs and UCG-functional groups discussions.
- Exercise Conduct
  - Players and participants developed an improved understanding and awareness of the role of the A-Team, ANI, and the PAA.
  - Exercise discussion allowed for the development of a clearer understanding of the various entities and responsibilities involved in radiological response and recovery operations. The structure of exercise play allowed participants to develop relationships and create a common understanding of the significance in preparation for an incident at a NPP.

- The size and scope of the exercise allowed for additional participating entities that are not typically engaged in radiological incident exercises, though they have response and recovery responsibilities in a real world event.
- False, pre-conceived notions about the capabilities of other agencies and entities were diminished.
- South Carolina agencies demonstrated strong working relationships and an understanding of the roles/responsibilities of State and local counterparts.
- SCEMD demonstrated a strong understanding of potential housing issues and has developed necessary plans and task forces to address those issues.
- The availability of SMEs to float between functional groups provided the needed level of advising and clarification on various issues.
- The group's diverse representation allowed for evaluating issues from different angles.
- Local agencies developed a better understanding of which Federal counterparts would be engaged for a response/recovery to an incident at a NPP versus a natural disaster.
- Participating agencies developed a better understanding of the roles, capabilities, strengths, and areas for improvement of the other agencies involved in response and recovery activities for an incident at a NPP.

- Exercise Documentation
  - Discussion questions and issues presented to players allowed for candid discussion and generated unique ideas and solutions to complex issues.
  - Exercise documentation provided necessary information to drive participant discussion.
  - Posting of information presented during initial briefing in functional group breakout rooms was beneficial for reference; information included mapping products and expected actions leading up to 6 months and 18 months.
  - Use of the NRC's draft Plan of Distribution of Funds allowed participants to understand the framework that would be recommended to the Federal District Court for the distribution of funds by ANI, in accordance with the PAA.

Areas for Improvement

- Exercise Design/Planning
  - Ensure all stakeholders are represented (i.e., SBA, private housing groups, housing/rural development, etc.) during the planning process and exercise conduct.
  - Provide facilitators with more assistance regarding health physics issues; support may be provided in pre-exercise meetings or SME representation during exercise play.

  - Include supplemental expertise (i.e., the A-Team) when developing and presenting technical information regarding level of impact.
  - Further explanations prior to exercise conduct regarding the expected areas for discussion could better assist in ensuring property agency representation.
- Exercise Structure
  - Allow for supplemental group discussion between functional groups. The brief back portions should include facilitator questions specifically designed to stimulate discussions between both functional groups, beyond addressing the information briefed to the UCG.
  - Review previous decisions/discussions when conducting time jumps or following pauses in exercise play.
  - Allow for further discussion of issues outside of the agriculture industry, to develop a better understanding of the economic impact (i.e., economic discussion could be split to address agriculture, general economic, and manufacturers as a subsection).
  - Ensure thorough explanation of scenario artificialities and the reasoning behind inclusion.
  - When providing information regarding the use of various functional groups, ensure to set expectations regarding expected areas for discussion.
  - Better to integrate the UCG into the functional group breakouts and encourage functional groups raising issues to the UCG for guidance.
- Exercise Conduct
  - Provide additional background of exercise activities, including prior exercise play and explanation of exercise artificialities.
  - Recommend encouraging use of plain English versus acronyms
  - Provide supplemental microphones for use in breakout sessions.
  - Ensure player conversation and discussions are focused on issues presented.
- Mapping Products

  The following are recommendations for improving mapping products for future exercises.
  - Provide a map primer and discuss how the maps impact/support decisions made.
  - Ensure deposition maps accurately reflect expected impact.
  - Explanations should elaborate on the dosing and the meanings of map shading.
  - Provide hard copies of mapping products if shading is not easily visible when projected.

  - Mapping products should be more usable and include additional detailed information, including cleanup measures and those decisions made by public officials.
  - Business and population footprints should be included.

- SME/Resources
  - The following handouts were identified as useful for future exercises:
    - EPA PAGs
    - RSF definitions/compositions/agency participation
    - Overview of participating agencies
  - The following SMEs were identified as useful for future exercises:
    - Supplemental ANI representatives to split between all functional groups
    - Agriculture, tourism, or government economist(s)
    - State and Federal policy experts who are able to speak about legal authorities, responsibilities, applicable regulations, and congressional acts
  - Consider providing players with supplemental economic impact estimates including county property or census data and a mock or draft RSS.
- Participating Agencies/Entities
  - Ensure agency representatives are properly distributed between functional groups
  - Clearly identify PIOs to address messaging concerns
  - The following audiences were identified for participation in future exercises:
    - City managers
    - County executives
    - Private sector
    - South Carolina DOC
    - South Carolina DNR
    - State agency leads
    - State Deputy Directors
    - VOADs

Interest in Continuation

The following comments and input were provided by SE15 Recovery TTX participants to encourage continuation of exercises of this type.

- There is a need to continue exercises of this size that focus on incidents at NPPs, scheduling on a more regular basis. Future exercises should include additional detail to further drive exercise discussion and create a more realistic scenario.
- The REP community, and agencies involved in all aspects of response/recovery, should not wait another 20 years to have an exercise of this size and magnitude. Discussion should continue, building on current interest, to ensure further issues are identified and addressed.
- The FEMA Region IV Regional Administrator voiced support for continuing exercises of this nature and commented on the large amount of knowledge gained by all.
- FEMA representatives expressed interest in conducting another similar exercise very soon and relayed that they believe they are at or near the point of approaching a licensee and the National Exercise Program.
- Consider the benefit of conducting this type/level of exercise during an off year or not in conjunction with a REP graded exercise.
- The SE15 Recovery TTX created a strong foundation for additional exercises at the local, State, and Federal level.
- The energy and momentum of SE15 have created a foundation to build upon for future TTX planning and supplemental exercises.

Recommended Considerations

The following recommendations were provided when planning future exercises with a similar scenario:

- Future State/radiological/local exercise should include recovery components. Concluding exercise play at evacuation and shelter-in-place/mass casualty does not allow for recovery discussions; at a minimum, recovery at 2-6 months should be discussed.
- Recommend increasing the frequency of exercise to maintain a state of readiness.
- When planning future recovery-focused exercises, consider including other areas for discussion/issues such as:
  - Communications
  - Impacts on health care, including the impacts on hospitals and first responder facilities
  - Consumption of and industry use of water and the impacts felt by a radiological incident
  - Wildlife impacts such as sampling, hunting, impact, depopulation, contamination

  - The process for sampling and quarantine of pets and the impacts on public safety
  - How to build/establish relationships and a knowledge base prior to an incident
- The time jumps to six and 18 months created some confusion with the artificialities. If this exercise concept is transferred to other States/NPPs, consideration should be given to "staying" on 14 days post-incident and looking ahead to six and 18 months.

Recovery TTX Participating Agencies

The following public and private sector entities participated in the SE15 Recovery TTX:

- ANI
- American Red Cross
- BCBS of South Carolina
- CDC
- Chesterfield County EMD
- Clemson Extension Service
- Clemson Livestock-Poultry Health
- Darlington County Emergency Management
- DHEC
- DOE
- DOE FRMAC
- DOL - OSHA
- Duke Energy
- EPA
- EPA – Region V
- FDA
- FEMA
- FEMA NED
- FEMA REP Program
- FEMA THD
- FEMA Region III
- FEMA Region IV
- FEMA Region IX
- FEMA Region VII
- Florence County EMD
- Hampton County EMD
- HUD
- Lee County EMD
- McLeod RMC

- North Carolina Department of Agriculture and Consumer Services
- North Carolina Emergency Management
- NRC
- Salvation Army
- SBA
- South Carolina Baptist
- South Carolina Department of Employment and Workforce
- South Carolina Department of Insurance
- South Carolina DOC
- SCMED
- South Carolina Office of Regulatory Staff
- Sumter County EMD
- USDA
- USDA APHIS
- USDA Natural Resources Conservation Service

SECTION 6: CONCLUSION

Participation in future exercises of the magnitude and scope of SE15 can be considered worthwhile due not only to the success experienced during conduct, but the learning curve throughout the process. Preparing and organizing an event of this degree was not devoid of challenges; most notably, the ESG was faced with the monumental task of planning SE15 in real-time, addressing unforeseen issues as they arose. While obstacles are inevitable, the ESG's capacity to mitigate complications aided in a successful exercise, and also provided an invaluable learning environment in planning for this type of event. Utilizing best practices and lessons learned, everyone involved from planning through after action activities have further developed an understanding of radiological emergency preparedness to continue progress in preparation for a real-world, large-scale incident.

Involving such a diverse and experienced pool of both experts and beginners from the public and private sector ensured that SE15 would address issues from many corners of the industry, even those outside of radiological emergency preparedness. Everyone involved should be satisfied with the efforts that were displayed while working together to solve the issues presented, both planned and unplanned. In the future, casting an even larger net for wider involvement will only broaden participation and ensure more people have the opportunity to collaborate. An extensive audience allows those divisions and agencies who do not normally work in partnership learn each other's strengths and provide assistance in closing informational gaps.

The outcomes of SE15 will influence not only planning and preparedness levels of response and recovery, but will have a significant impact on policy-level changes as well. Despite the many iterations of initial design and numerous lessons learned on behalf of both the exercise planners and the exercise participants, SE15 emphasized the need to continue this type of exercise to ensure consistent whole community training and response in preparation for real-world events.

APPENDIX A: STATE AND FEDERAL GOVERNMENT ENGAGEMENT: BUILDING COMMON RESILIENCY AROUND NUCLEAR POWER PLANTS

Historical Background

The comprehensive five-day SE15 Exercise was designed to test and analyze the whole community's ability to respond to, and recover from, a NPP incident; it examined the core capabilities across the response and recovery mission areas. The exercise provided an opportunity to integrate the FEMA THD into the National Exercise Program (NEP), consequently aligning it with the National Preparedness System (NPS), which supports the achievement of the National Preparedness Goal (NPG).

In 2012, the 2013 – 2014 NEP Cycle Principals' Objectives were issued from the White House via a memo from John Brennan, Former Assistant to the President for Homeland Security and Counterterrorism; the memo specifically recommended an exercise scenario involving a NPP incident resulting in widespread contamination. To achieve this, during the 2013 – 2014 NEP Cycle, a NPP full-Federal participation exercise was nominated to be a component of the inaugural cycle. While the Federal Exercise Implementation Committee (EIC) recognized the significance of examining a NPP incident, a different exercise was chosen to be the cycle's Capstone event. However, given that it had been over twenty years since the last NPP incident-focused exercise of this magnitude and scope had been conducted, the FRPCC acknowledged the necessity of this endeavor and chose to move forward with initial development, design, and scheduling of planning efforts. From the beginning, the SE15 Exercise was essentially unfunded and was supported on a volunteer basis, depending on individual division or agency financial capabilities.

A key step early in the planning process was to determine a location for the proposed exercise. Considerations included choosing a location that impacted a population with additional economic consequences and leveraging an already scheduled ingestion exposure pathway exercise in a State able to accommodate a much larger exercise footprint; internal research reviewed what sort of ingestion exposure pathway exercise would provide the best opportunity for enhancement. Given this, throughout 2013, FEMA, the NRC, and DOE met with the State of South Carolina, the would-be impacted counties, and Duke Energy to garner support for a Federal integration exercise. All parties were in agreement that it was important to test Federal integration; early-stage planning for SE15 began in Spring 2014 with the establishment of the ESG[4], which included a representative from each of the following agencies: SCEMD, Duke Energy, FEMA THD, NRC Office of Nuclear Security and Incident Response/Division of Preparedness and Response (NSIR/DPR), DOE/NNSA; later in the process, a representative from FEMA NED was appointed to chair the ESG. Considered a panel of five Exercise Directors with similar equities, the ESG was responsible for oversight of the entire planning process from development, through execution, and all after-action activities. The ESG met on a weekly basis to monitor tasks that were being completed by the SE15 Working Groups.

[4] Formerly the Exercise Planning Team (EPT), the name was changed to the ESG in the middle of the planning process to utilize formal NEP terminology.

Specifically on the Federal side, in an effort to ensure total stakeholder representation, the ESG invited FEMA NED to facilitate the involvement of the Federal Interagency. To achieve this, an ESWG was assembled, and included representatives from multiple agencies throughout the Federal government. The ESWG was chaired by a member of the USDA, who was nominated to this position by the Director of FEMA NED. On behalf of FEMA NED, the ESWG was responsible for addressing issues, objectives, and recommendations associated with the Federal Interagency and reporting these back to the ESG for inclusion in planning. Due to the large preparation role the ESWG played in ensuring Federal Interagency involvement, their primary duties were carried out during the planning process prior to July conduct. Formal ESWG obligations were considered complete once the FSE had concluded and the ESWG was formally adjourned.

SE15 was divided into seven sub-component Working Groups that were responsible for their associated exercise planning activities and included the following: Scenario and Simulation; Control and Evaluation; Incident Management; Logistics; Public Health and Environment; External Affairs; and Recovery. Each Working Group was led by a Chair and Coordinator, and staffed with SMEs from the State and Federal Interagency, and included representation from the local communities. The Working Groups were responsible for scheduling periodic meetings leading up to the FSE to complete planning activities assigned by the ESG. Most SE15 Working Groups ceased meeting post-FSE conduct; while not required, maintaining Working Group functions through after-action activities would ensure any post-conduct tasks were finalized with appropriate Group input. During SE15, the only Working Group that maintained active involvement in planning post-FSE was the Recovery Working Group, who was responsible for the design and development of the Recovery TTX on Wednesday, September 9 and Thursday, September 10, 2015.

Information Management

The SE15 planners utilized an online platform called the Preparedness Toolkit (PrepToolkit) found at www.preptoolkit.org that was developed by FEMA NED. The PrepToolkit is an online portal that provides the whole community with tools to aide in implementing all six areas of the NPS. For SE15, the PrepToolkit was used as an information sharing system and collaboration space in which all exercise-related documents, including exercise planning activities, meeting minutes, exercise briefings, exercise conduct documents, etc., were housed for review, revision, and finalization.

There were 340 total vetted users that had access to the SE15 collaboration space within the PrepToolkit. Users were vetted based on their role in SE15 (general user, planner, trusted agent, exercise controller, etc.). The document and media libraries were utilized for information sharing and document management. The online Master Scenario Events List (MSEL) tool was used by planners during the design and development phase; moreover, it was used during conduct by the Master Control Cell (MCC) to create, track, and release all pertinent injects. The MSEL tool provided full conduct capabilities to include MSEL creation, inject release, player/controller phonebooks, and simulated emails. Additionally, the PrepToolkit was utilized to host and create various custom registrations and other forms; links to these forms were distributed by the planners to the stakeholders throughout the planning process and were used for participant tracking purposes.

Due to NRC regulations, the scenario is the responsibility of the licensee and could not be shared with any potential players prior to exercise conduct. Due to this requirement, the PrepToolkit was

divided into two separate sections: Trusted Agents (TAs) and Non-TAs. Those planners with a TA status were privy to scenario-sensitive information; those who were designated as Non-TAs had limited access. The TA or Non-TA standings were selected by Duke Energy based on player status; access to the Toolkit was managed by FEMA NED staff. Due to the unusually large number of planners involved who were not familiar with typical ingestion exposure pathway exercise restrictions and sensitivities, TA status held more weight for this exercise than for most ingestion exposure pathway events.

Exercise Planning Meetings

The formal planning efforts for SE15 followed typical Homeland Security Exercise and Evaluation Program (HSEEP) protocols and included the following planning meetings: Concept and Objectives (C&O) Meeting on Wednesday, March 26, 2014; Initial Planning Meeting (IPM) on Wednesday, July 30, 2014; FRPCC Senior Executive Service (SES) Meeting on Tuesday, August 19, 2014; In-Progress Review (IPR) on Tuesday, September 30, 2014; MSEL Synchronization (Sync) Meeting on Monday, April 13 – Wednesday, April 15, 2015; IPR on Monday, June 8, 2015; Final Planning Meeting (FPM) on Thursday, June 18, 2015; C/E Training on Monday, July 20, 2015; and After Action Meeting (AAM) on Tuesday, September 29, 2015.

When possible, all planning meetings that required participation from the State and counties were held in South Carolina since there was no additional funding available from the local level to support SE15 planning meeting travel. Some meetings were conducted in the NCR; most assemblies had a virtual connectivity option for those who were unable to travel but still wished to participate.

Preparatory Workshops, Tabletop Exercises, & Trainings

There were a number of preparatory events that led up to the FSE execution of SE15 in July 2015, and the subsequent Recovery TTX in September 2015, including workshops, TTXs, and trainings. These events were necessary due to the gap in large-scale exercising; the events were designed to address topics associated with the SE15 scenario, and to provide planners and participants with supplementary information.

The *Radiological Release and Response Seminar* was conducted on Tuesday, July 29, 2014 at the SEOC in Columbia; it was developed and facilitated by staff from DOE and included participation from the local, State, and Federal level. This Seminar served as a platform for radiological SMEs to work with the South Carolina counties and State officials to provide an understanding of the cascading effects of a NPP incident. This event helped identify the various roles and responsibilities in a consequence management response from all levels of government, and included comprehensive discussions about the roles and responsibilities of each agency involved.

To address the incident management aspects of SE15, the Incident Management Working Group developed and facilitated the *Incident Management Workshop*; it was held at the SEOC on Thursday, November 20, 2014. The Workshop discussed incident management in relation to the scenario and explored the integration of Federal response resources into field-level incident command; potential incident management limitations, challenges, and gaps associated with multiagency response were also identified. Topics included an overview of key response entities, initial response actions, establishment of a Unified Command (UC), transition to an IMT, development of an IAP, IMT/Multiagency Coordination (MAC) Team interface, and SEOC roles

and responsibilities. All players who planned on participating in the exercise were invited to this workshop. A Summary Report was developed that outlined the findings of the workshop.

Duke Energy developed and hosted a TTX on Tuesday, February 10, 2015 at the Southeastern Institute of Manufacturing and Technology (SiMT) in Florence, SC. This TTX focused on initial response and mobilization on the first day of a NPP incident. During the TTX, represented organizations internally discussed their initial response roles and responsibilities and provided a summary to the group at-large; this brief-out included each agency's role and location during the incident. This TTX provided a better understanding of agency roles and responsibilities, specifically during the early phase of incident response.

In an effort to maintain realism during conduct in July, the State of South Carolina hosted six Out-of-Sequence events strictly for the local counties. The following events were held in April 2015 in Darlington County: Traffic Control Point (TCP) Evaluation; Emergency Worker Decontamination (EWD); Medical Services Drill; and Schools Evaluation. Chesterfield County held a EWD, Reception Center, and Schools event on Tuesday, May 5, 2015; Lee County hosted a EWD and Reception Center training on Wednesday, May 6, 2015. These events helped ensure the at-risk counties were prepared to participate in real-time during the FSE.

The *NDRF Workshop* was held at the SEOC and was facilitated by the SE15 Recovery Working Group on Wednesday, May 27, 2015. This workshop addressed the NDRF relative to a NPP incident. It included the identification of roles and responsibilities of those agencies involved in recovery operations and identification of key tasks that will be integrated into South Carolina plans, policies, and procedures. Federal agencies involved in NPP incident response gained a better understanding of their responsibilities; the State agencies involved in recovery operations were provided clarification on what type of Federal support is provided. The objective of this workshop was to identify direct Federal assistance required to support recovery operations from a NPP incident and to describe the organizational structure and expectations to support the plant.

For the first time ever, a workshop was conducted to explore the role of the PAA and other funding mechanisms in recovery support operations. The organization of the *PAA and Other Funding Mechanisms Workshop* was led by the SE15 Recovery Working Group and held on Thursday, May 28, 2015 at the SEOC. This workshop discussed financial responsibilities of specific agencies or organizations associated with financial recovery from a NPP incident, and included dialogue about funding allocation. Many of the discussions that took place during this workshop were used in subsequent planning efforts and drove many of the actionable decisions made by leadership during both FSE conduct in July and the Recovery TTX in September. The workshop also highlighted the need for policy revisions and acknowledged previously unidentified policy gaps.

As an integral commodity of South Carolina, agriculture would be heavily impacted by a radiological incident in the State. To address this, Clemson University Livestock-Poultry Health, in collaboration with USDA, planned and facilitated a workshop on Friday, May 29, 2015 called *Response and Recovery Issues and Impacts to South Carolina Agriculture in a Radiation Accident.* This workshop focused on the impacts to food and agriculture operations in the event of a large-scale release of radiation into the environment. Discussion included actions that would be taken to protect the food supply; impacts on soil, water, crops, and livestock; decontamination; and strategies to reduce economic impacts on agriculture and trade. This event was State-focused and held at the South Carolina Phillips Market Center in Columbia.

While not a formal SE15-associated event, the FEMA Response Directorate hosted the *SE15 Interagency Resource Coordination Workshop* on Thursday, June 18, 2015 at the NRCC in Washington, DC. This workshop examined Federal actions, authorities, and resources used during a response to a NPP emergency through the NRF, utilizing the FIOP – NRIA (draft 2015), and related NRITF SOP (draft, 2015). The scenario for this workshop was based on pre-General Emergency power plant conditions (i.e., before a release) and without a Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) determination. Workshop attendees included Federal officials who are operational decision-makers with authority to speak on their agency role, response actions, and legal authorities during a NPP emergency. The outcomes from this workshop were used to support aspects of SE15.

To expand upon discussions originating during the abovementioned Federal Interagency Resource Coordination Workshop, FEMA NED hosted a Seminar/Game to examine the coordination of interagency partners, map out U.S. Government response, and identify key critical coordination points.

In addition to the aforementioned overarching trainings offered to the SE15-wide audience, one-off trainings were provided to select groups of participants to ensure knowledge of appropriate preparation prior to conduct. These trainings were developed and hosted by members of different SE15 Working Groups and included the following: Environmental Monitoring and Sampling Training on Tuesday, May 19, 2015; Dose Assessment Training on Tuesday, June 6, 2015; JIC Training on Tuesday, June 23, 2015; FRMAC Liaison 100 Training on Tuesday, June 23, 2015; and FRMAC Liaison 200 Training on Wednesday, June 24 and Thursday, June 15, 2015. All of these trainings were held at the SCDHEC facility in Columbia, SC, with the exception of the JIC Training, which was held at the JIC in Florence, SC. Additionally, the Center for Radiological Nuclear Training at the Nevada National Security Site (CTOS) provided population monitoring training; and DOE hosted REAC/TS training.

Exercise Conduct

While it was initially agreed that SE15 would be a full participation FSE, and include a recovery-focused TTX concentrating on 6 and 18 months post-incident, it was decided that Day 3 of exercise play would be discussion-based, with a time-jump to 14 days post-incident for participating leadership and key decision-makers to support FEMA-evaluated activities associated with re-entry and return decisions; field monitoring activities would continue in real-time for the remaining players who did not participate in the time-jump. The Day 14 TTX was designed, developed, and facilitated by FEMA NED and focused on response and initial recovery operations 14 days post-incident.

Utilization of SE15 Exercise Findings at the Federal-Level

The SE15 Exercise was acknowledged by both the White House and the Federal Secretary-level; initial findings that were compiled post-FSE conduct were submitted to the Disaster Resilience Group (DRG) to be used during the successive SOE on Monday, August 3, 2015 in Washington, DC. The purpose of the SOE was to enhance Assistant Secretary-level coordination through the DRG, exercise policy and plans, examine the Federal government's preparedness to mount an effective response to a nuclear/radiological incident, and identify potential preparedness and response policy issues that can be addressed through the Presidential Policy Directive-1 (PPD-1) process. The SOE discussion was based on the initial observations from the July 2015 FSE and Summaries of Conclusion from SOE 3-10.

The outcomes that were identified during the SOE were assigned to be adjudicated by the appropriate agency. Per the DRG Summary of Conclusions for the SOE, the following points were agreed to:

- Departments and agencies did not reach consensus regarding the designation of a single lead Federal department or agency for this type of incident. The DRG will develop a policy for identifying lead Federal agencies for domestic incident response, including NPP incidents. [Action: All agencies through the DRG by Friday, August 21, 2015]
- Following a NPP incident, the Federal government needs to establish a JIC to coordinate and integrate Federal, State, local, and private sector public statements, and link to broader national-level messaging. A NPP incident requires appropriate spokespersons to address health and medical risk communication. Existing policy needs to be examined to identify any necessary updates related to the establishment of a JIC, the capability for health and medical risk communication, and national-level strategic communication. [Action: DHS/FEMA (Leads); DOE, NRC, EPA, HHS by Tuesday, September 15, 2015]
- The Federal government should coordinate and examine policy issues identified by the SE15 FSE UC, as informed by the Summaries of Conclusion from SOE 3-10 and PLE 3-10 for incorporation into the NRIA draft. FEMA will transmit the revised draft NRIA to departments and agencies for review and comment. Departments and agencies will ensure that issues identified and lessons learned during the SE15 Exercise are appropriately reflected in the NRIA. [Action: FEMA by Tuesday, August 18, 2015; All by Monday, September 7, 2015]
- Federal response agencies need a better understanding of the existing funding mechanisms for response to a NPP incident, and where there are gaps in these mechanisms that create unmet needs during a response. Federal response agencies need a play to close these gaps before an incident. The FRPCC will analyze and capture the capabilities and limitations of, and the interplay between, the Atomic Energy Act; PAA; the CERCLA; the Stafford Act; and other Federal authorities and funding mechanisms used to respond to a nuclear/radiological incident. The FRPCC will conduct a gap analysis of authorities and funding mechanisms to determine any unmet needs during an incident and will provide statutory, policy, and capability recommendations for addressing these unmet needs. [Action: FRPCC by Friday, October 2, 2015]
- Plans are necessary during a NPP emergency to ensure necessary funds are available to address urgent public needs. PAA provisions for ANI's fund indicate that within 90 days of determination by a court that the aggregate public liability from a nuclear incident may exceed the applicable liability limit of an insured facility, the President is required to submit to Congress a compensation plan and a list of additional legislative authorities necessary to implement such a compensation plan. The NRC will develop a template of the plan, including the identification additional legislative authorities that may be required during such a situation. [Action: NRC by Friday, September 4, 2015] Also, insurance payments beyond 15 percent of the facility's total liability limit must follow a court approved plan of distribution. In this circumstance, the NRC is required to submit to the District Court its recommended plan of distribution. NRC will develop a draft of such a plan [Action: NRC by Monday, September 7, 2015] In addition, appropriate plans and government oversight are necessary to address uncertainty over ANI's ability to rapidly establish claim facilities

and payment structures necessary to address urgent public needs during a NPP emergency. [Action: NRC by Monday, September 7, 2015]

- The Department of State (DOS) highlighted that funding (approximately $360 million) may be available through the April 2015 Global Nuclear Accident Compensation Fund. The international convention would allow countries and companies to offset liability in the event of a nuclear accident. The DOS will provide information related to the Global Nuclear Accident compensation Fund to the FRPCC and the National Security Council (NSC) staff. [Action: DOS by Monday, September 7, 2015]

Each action lead was requested to provide their coordinated written responses to the NSC by the identified due date.

Outcomes from this SOE will reinforce and clarify participants' understanding of national coordination structures and associated roles and responsibilities for a major incident as codified in the NRF and NDRF.

Epilogue

Planning and execution of the SE15 Exercise, including the foundational workshops and trainings, was a collective effort by individuals and agencies at the local, State, and Federal levels. The SE15 design concept – an integration of a pre-scheduled FEMA REP Program evaluated exercise with a large-scale NPP incident response exercise – is fairly novel and untested, however yielded scholastic results on the training front. South Carolina and Duke Energy's willingness to allow Federal integration into their biennial evaluated exercise is indicative of multiple agencies' ability to successfully work together towards a common goal.

APPENDIX B: FULL-SCALE EXERCISE PARTICIPANTS

- A-Team
- ARC
- ANI
- APHIS
- BCBS of SC
- Carolinas Hospital
- CDC
- Chesterfield County
- Clemson Cooperative Extension Service
- Clemson Livestock-Poultry Health
- Darlington County
- DHS
- Dillon County
- DoD NORTHCOM
- DOE
- DOE RAP
- DOE-ESF12
- DOE-FRMAC
- DOI
- DOL-OSHA
- DOT
- Duke Energy
- RNP
- EPA
- FDA
- FEMA
- FEMA Region IV
- Florence County
- HHS
- HHS-NIH/NIEHS
- HUD
- INPO
- Lee County
- Marion County
- Marlboro County
- McLeod Regional Medical Center
- N/RI TF
- NEI
- NRC
- SBA
- SC Baptist
- SC Department of Agriculture
- SC Department of Commerce
- SC Department of Employment and Workforce
- SCDHEC
- SC Department of Insurance
- SC DNR
- SC DSS
- SC DoT
- SCEMD
- SC Forestry Commission
- SCLED
- SC National Guard WMD Civil Support Team
- SC Office of Regulatory Staff
- State of Florida
- State of Georgia
- State of North Carolina
- Sumter County
- The Salvation Army
- USDA
- VA-OEM

APPENDIX C: ACRONYMS

Acronym	Term
AAM	After Action Meeting
AAR	After Action Report
ANI	American Nuclear Insurers
APC	Advanced Party Checklist
APHIS	Animal and Plant Health Inspection Service
ARC	American Red Cross
A-Team	Advisory Team for Environment, Food, and Health
ATSDR	Agency for Toxic Substances and Disease Registry
BCBS	Blue Cross Blue Shield
CBA	Cost-Benefit Analysis
C&O	Concept and Objectives
C/Es	Controllers/Evaluators
CDC	Centers for Disease Control and Prevention
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CMAC	Consequence Management Advanced Command
CMRT	Consequence Management Response Team
CMWeb	Consequence Management Web
CONOPS	Concept of Operations
CRCPD	Conference of Radiation Control Program Directors
CTOS	Center for Radiological Nuclear Training
CST	Civil Support Team
DCO	Defense Coordinating Officer
DFA	Direct Federal Assistance
DHHS	Department of Health and Human Services
DILs	Derived Intervention Levels
DHS	Department of Homeland Security
DNDO	Domestic Nuclear Detection Office
DNR	Department of Natural Resources
DoD	Department of Defense
DOE	Department of Energy
DOI	Department of the Interior
DOL	Department of Labor
DOS	Department of State
DOT	Department of Transportation
DPS	Department of Public Service
DRC	Disaster Recovery Center

Acronym	Term
DRG	Domestic Resilience Group
DSS	Department of Social Services
ED	Emergency Department
EEGs	Exercise Evaluation Guides
EFA	Emergency Financial Assistance
EIC	Exercise Implementation Committee
EMAC	Emergency Management Assistance Compact
EMD	Emergency Management Division
EMS	Emergency Management Services
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
EPZ	Emergency Planning Zone
ERT	Emergency Response Team
ESF	Emergency Support Function
ESG	Executive Steering Group
ESWG	Exercise Specific Working Group
EWD	Emergency Worker Decontamination
FCO	Federal Coordination Officer
FDA	Food and Drug Administration
FDRC	Federal Disaster Recovery Coordinator
FEMA	Federal Emergency Management Agency
FERN	Food Emergency Response Network
FIOP	Federal Interoperability Plan
FNF	Fixed Nuclear Facility
FNS	Food and Nutrition Service
FPM	Final Planning Meeting
FRC	Federal Resource Coordinator
FRERP	Federal Radiological Emergency Response Plan
FRMAC	Federal Radiological Monitoring and Assessment Center
FRPCC	Federal Radiological Preparedness Coordinating Committee
FSE	Full-scale Exercise
FSIS	Food Safety and Inspection Service
GE	General Emergency
GIS	Geospatial Information System
GPS	Global Positioning System
GSA	General Services Administration
HAZMAT	Hazardous Material
HHS	Health and Human Services
HIFLD	Homeland Infrastructure Foundation-Level Data

Acronym	Term
HMGP	Hazard Mitigation Grant Program
HP	Health Physicist
HUD	Housing and Urban Development
HSEEP	Homeland Security Exercise and Evaluation Program
HSIP	Homeland Security Infrastructure Program
IA	Individual Assistance
IAP	Incident Action Plan
ICP	Incident Command Post
ICS	Incident Command System
IRS	Internal Revenue Service
IMAT	Incident Management Assistance Team
IMT	Incident Management Team
INPO	Institute of Nuclear Power Operations
IOF	Initial Operating Facility
IP	Improvement Plan
IPM	Initial Planning Meeting
IPR	In-Progress Review
IPX	Ingestion Pathway Zone
JECG	Joint Exercise Control Group
JIC	Joint Information Center
KI	Potassium Iodide
LNO	Liaison Officer
LLRW	Low-Level Radioactive Waste
MACS	Multi-Agency Coordination System
MCC	Master Control Cell
MSEL	Master Scenario Events List
NARAC	National Atmospheric Release Advisory Center
NCR	National Capital Region
NDRF	National Disaster Recovery Framework
NED	National Exercise Division
NEI	Nuclear Energy Institute
NEP	National Exercise Program
NGO	Nongovernmental Organization
NIEHS	National Institute of Environmental Health Science
NIH	National Institute of Health
N-IMAT	National IMAT
NNSA	National Nuclear Security Administration
NORTHCOM	Northern Command
NPG	National Preparedness Goal

Acronym	Term
NPP	Nuclear Power Plant
NPS	National Preparedness System
NRC	Nuclear Regulatory Commission
NRCC	National Response Coordination Center
NRF	National Response Framework
NRIA	Nuclear/Radiological Incident Annex
NRITF	Nuclear Radiological Incident Task Force
NSC	National Security Council
NSS	National Shelter System
NWC	National Watch Center
OFAC	Office of Foreign Asset Control
OSHA	Occupational Safety and Health Administration
PAA	Price Anderson Act
PADs	Protective Action Decisions
PAGs	Protective Action Guides
PARs	Protective Action Recommendations
PAUSEX	Pause of Exercise
PHE	Public Health and Environment
PII	Personally Identifiable Information
PIO(s)	Public Information Officer(s)
PLE	Principal Level Exercise
POC(s)	Point(s) of Contact
POTUS	President of the United States
PPD-1	Presidential Policy Directive – 1
PPE	Personal Protective Equipment
RAMS	Radiological Assessment and Monitoring System
REAC/TS	Radiation Emergency Assistance Center/Training Site
REP	Radiological Emergency Preparedness
RFI	Request For Information
RMC	Regional Medical Center
RSOI	Reception, Staging, Onward Movement, and Integration
RSS	Recovery Support Strategy
SBA	Small Business Administration
SC	South Carolina
SCDHEC	South Carolina Department of Health and Environmental Control
SCEMD	South Carolina Emergency Management Division
SCLED	South Carolina Law Enforcement Division
SCO	State Coordination Official
SCRTF	South Carolina Recovery Task Force

Acronym	Term
SDN	Specially Designated Nationals
SDRC	State Disaster Recovery Coordinator
SE15	Southern Exposure 2015
SEOC	State Emergency Operations Center
SES	Senior Executive Service
SFO	Senior Federal Official for Energy
SiMT	Southeastern Institute of Manufacturing and Technology
SME	Subject Matter Expert
SNAP	Supplemental Nutrition Assistance Program
SOE	Senior Officials Exercise
SOP	Standard Operating Procedure
SWAT	Special Weapons and Tactics
TA	Trusted Agent
TCP	Traffic Control Point
THD	Technological Hazards Division
TISC	Technical Incident Command Post
TTX	Tabletop Exercise
UC	Unified Command
UCG	Unified Coordination Group
USCG	United States Coast Guard
USDA	United States Department of Agriculture
VA	Veterans Affairs
VA-OEM	Veterans Affairs Office of Emergency Management
WebEOC	Web Emergency Operations Center