After Action Report

Sequoyah Nuclear Plant
Radiological Emergency Preparedness Exercise
Exercise Date: October 14, 2020

December 18, 2020

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Executive Summary

On October 14, 2020, the offsite response organizations of the Sequoyah Nuclear Plant 10-mile emergency planning zone participated in a plume exposure pathway exercise. FEMA Region IV Radiological Emergency Preparedness Program staff evaluated that exercise, which also included out of sequence activities conducted on June 16, 2020, and September 17, 2020. This report outlines that exercise and out of sequence activities.

The purpose of the exercise was to assess the level of state and local preparedness in responding to an incident at the Sequoyah Nuclear Plant. It was conducted in accordance with FEMA policies and guidance concerning the exercise of state and local radiological emergency response plans and procedures.

Officials and representatives from participating agencies and organizations demonstrated knowledge of their emergency response plans and procedures, and successfully implemented them during the exercise and out of sequence activities. All jurisdictions met their exercise objectives and successfully demonstrated the corresponding core capabilities identified in Section 2.2 of this report. FEMA staff did not identify any level 1 or level 2 findings during this exercise or the out of sequence activities.

It was apparent that a great deal of training and practice was conducted by the offsite response organizations to successfully demonstrate the ability to protect the health and safety of the public. They provided the necessary support and resources to respond to an incident at the Sequoyah Nuclear Plant.

FEMA wishes to acknowledge the efforts of the many individuals who participated in the exercise and made it a success. The State of Tennessee and Sequoyah Nuclear Plant offsite response organizations were the first in the nation to complete an exercise during the SARS-CoV-2/COVID-19 pandemic. As if response to the current pandemic was not enough, the state emergency operations center had managed three other declarations (two tornados and severe weather) in 2020. In fact, one of the tornado declarations directly impacted both Hamilton and Bradley Counties. Despite ongoing real-world response efforts, the professionalism and teamwork of the participants was evident throughout all phases of the exercise.

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Section 1: Exercise Overview

1.1 Exercise Details

Exercise Name
2020 Sequoyah Nuclear Plant Radiological Emergency Preparedness Exercise

Type of Exercise
Full Scale Exercise

Exercise Date
October 14, 2020

Out of Sequence Dates
June 16, 2020
September 17, 2020

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

Program
Radiological Emergency Preparedness Program

Mission
Response

Scenario Type
Full Participation Plume Phase Radiological Emergency Preparedness Exercise

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1.3 Participating Organizations

The following agencies and organizations participated in the 2020 Sequoyah Nuclear Plant Radiological Emergency Preparedness Exercise:

State of Tennessee

Tennessee Department of Environment and Conservation
- Division of Radiological Health

Tennessee Department of Health
- Division of Laboratory Services

Tennessee Department of Human Services

Tennessee Department of Military
- Tennessee Emergency Management Agency

Tennessee Department of Safety & Homeland Security
- Tennessee Highway Patrol

Tennessee Department of Transportation

Tennessee National Guard
- 45th Civil Support Team

Tennessee Wildlife Resource Agency

Hamilton County

Chattanooga Fire Department
Chattanooga MedComm
Chattanooga Police Department
Collegedale Police Department
Hamilton County Department of Education
Hamilton County Emergency 9-1-1 Communications District
Hamilton County Emergency Medical Services
Hamilton County Geographic Information System
Hamilton County Health Department
Hamilton County Highway Department
Hamilton County Information Technology
Hamilton County Office of Emergency Management & Homeland Security
Hamilton County Parks and Recreation
Hamilton County Schools
Hamilton County Sheriff's Office
Hamilton County Telecommunications
Red Bank Police Department
Soddy-Daisy Police Department
Southeast/Hamilton Regional Healthcare Coalition

Bradley County

Bradley County Emergency Medical Services
Bradley County Schools
Bradley County Sheriff’s Office
Cleveland Fire Department
Cleveland Police Department
Cleveland-Bradley County Emergency Management Agency

Private Sector

American Red Cross of Southeast Tennessee
Amateur Radio Emergency Services/Auxiliary Communications

Federal

Tennessee Valley Authority
United States Department of Homeland Security
Federal Emergency Management Agency
United States Nuclear Regulatory Commission

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Section 2: Exercise Design Summary

2.1 Exercise Purpose and Design

FEMA administers the Radiological Emergency Preparedness Program pursuant to the regulations found in Title 44 CFR parts 350, 351, 352, 353 and 354. CFR 350 codifies 16 planning standards that form the basis for radiological emergency response planning for the licensee, state, tribal, and local governments impacted by the emergency planning zones established for each nuclear power plant site in the United States. United States Nuclear Regulatory Commission regulations also codify the 16 planning standards for the licensee. 44 CFR 350 sets forth the mechanisms for the formal review and approval of state, tribal, and local government radiological emergency response plans and procedures by FEMA. One of the Radiological Emergency Preparedness Program cornerstones established by these regulations is the biennial exercise of offsite response capabilities. During these exercises, affected state, tribal, and local governments demonstrate their abilities to implement their plans and procedures to protect the health and safety of the public in the event of a radiological incident at a nuclear plant.

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

The federal approval of the formal submission of the radiological emergency response procedures for the Sequoyah Nuclear Plant by the State of Tennessee was granted on June 20, 1980, and the qualifying emergency preparedness exercise was conducted on August 7, 1980.

2.2 Exercise Core Capabilities and Objectives

Core Capabilities-based planning allows for exercise planning teams to develop exercise objectives and observe exercise outcomes through a framework of specific action items. Using the Homeland Security Exercise and Evaluation Program methodology, the exercise objectives meet the Radiological Emergency Preparedness Program requirements and encompass the emergency preparedness evaluation areas. The critical tasks to be demonstrated were negotiated with the State of Tennessee and risk counties. The Core Capabilities scheduled for demonstration during this exercise were:

- **Operational Coordination:** Establish and maintain a unified and coordinated operational structure and process that appropriately integrates all critical stakeholders and supports the execution of core capabilities.
- **Situational Assessment:** Provide all decision makers with decision-relevant information regarding the nature and extent of the hazard, any cascading effects, and the status of the response.
- **Public Information and Warning:** Deliver coordinated, prompt, reliable, and actionable information to the whole community through the use of clear, consistent, accessible, and culturally and linguistically appropriate methods to effectively relay information regarding any threat or hazard, as well as the actions being taken and the assistance being made available, as appropriate.
- **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.

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

- **Objective 1:** Demonstrate the ability to alert, notify, and mobilize response personnel and facilities; provide direction and control, make precautionary and protective action decisions and implement those decisions.
- **Objective 2:** Demonstrate the ability to manage radiological field monitoring teams and perform plume-phase field measurements and analysis, and perform radiological analyses at the radiochemistry laboratory.
- **Objective 3:** Demonstrate the ability to activate the prompt alert and notification system and provide accurate emergency information and instructions to the public and news media in a timely manner.
- **Objective 4:** Demonstrate the ability to monitor and decontaminate emergency workers and their equipment and vehicles.

2.3 Exercise Scenario

The following is a summary of the scenario developed by the Tennessee Valley Authority to drive exercise play.

Winds will be from the south-southwest throughout the exercise. The expected initial protective action recommendation from the utility at the emergency classification level of General Emergency will be to evacuate sectors A-1, B-1, C-1, and D-1; shelter sectors A-2 and B-2; monitor and prepare in all other sectors; and consider the use of potassium iodide in accordance with the state plan. (Utility procedures call for a phased evacuation.) Later, a slight wind shift will result in an updated protective action recommendation to add sheltering sector B-5. The evacuation and shelter sectors are all in Hamilton County; Bradley County is not affected. The exercise is scheduled to

terminate for the utility before they issue an upgraded protective action recommendation to evacuate the sheltered sectors. A small but significant radiological release will occur. However, protective action guides will not be exceeded offsite during the exercise. All protective action recommendations and protective action decisions will be made based on plant conditions.

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Section 3: Analysis of Capabilities

3.1 Exercise Evaluation and Results

This section contains the results and findings of the evaluation of all jurisdictions and functional entities that participated in the October 14, 2020, plume exposure pathway exercise and out of sequence activities on June 16, 2020, and September 17, 2020.

Each jurisdiction and functional entity was evaluated based on the demonstration of Core Capabilities, capability targets, critical tasks, and the underlying Radiological Emergency Preparedness Program criteria as delineated in the FEMA REP Program Manual dated January 2016. Exercise criteria are listed by number and demonstration status.

3.2 Summary Results of Exercise Evaluation

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

- **Operational Coordination:** The state direction and control officer and county emergency management directors established and maintained a unified and coordinated operational structure. The overall decision-making process integrated critical stakeholders and enabled protective action decisions to be made without undue delay. Due to the SARS-CoV-2/COVID-19 pandemic, operational coordination could have been a real challenge (e.g., social distancing guidelines, virtual workforces, etc.); however, the state and counties innovatively and successfully integrated the use of technology to ensure sufficient support and response, while also protecting their workforces. The integration of virtual tele- and video conference platforms not only facilitated a coordinated operational structure and integrated critical stakeholders into the decision-making process, but it demonstrated an enhanced capability within the state and risk counties.
- **Situational Assessment:** State dose assessment personnel provided decision makers relevant information regarding radiological and plant conditions. Personnel gathered information from changing plant and meteorological conditions to assess the radiological release. They performed dose projections and compared their results with utility dose projections and field team readings. This information allowed decision makers to understand the extent of the hazards, their cascading effects, and to make the appropriate protective action decisions.

- **Public Information and Warning:** Alert and notification of the public occurred via the outdoor warning system (simulated), Emergency Alert System messages (simulated), press releases, and press conferences. State and county public information officers and spokespersons developed and distributed timely and coordinated emergency information to the public and media.
- **Environmental Response/Health and Safety:** The field teams effectively used a computer application to transmit field team assignments and to report their readings and sample results. They also traversed the plume, took centerline measurements, and provided this information to dose assessment personnel to use in validating and updating dose projection calculations. Unfortunately, the appropriate low range direct reading dosimeters (0-200 mR) were not within the calibration dates and therefore not issued to field team members. The turnback exposure limit of 80 mR could not reasonably be read on the high range (0-20 R) dosimeters. This was an oversight and has been identified as an area for improvement below.

3.3 Jurisdictional Summary Results of Exercise Evaluation

3.3.1 State of Tennessee

3.3.1.1 State Emergency Operations Center

Operational Coordination Capability Summary:

The Tennessee Emergency Management Agency Direction and Control Officer, assistant direction and control officer, and state emergency services coordinators successfully established and maintained a unified and coordinated operational structure in response to a simulated radiological incident at the Sequoyah Nuclear Plant.

The state watch point and state emergency operations center were located in the Tennessee Army National Guard facility in Nashville. The facility was secure, had sufficient space to support response operations, and was equipped with backup power, supplies and equipment, and redundant communications systems. The primary means of communications between the Sequoyah Nuclear Plant and state watch point officers was the Digital National Warning System. Other means of communications were available and used, including commercial telephone, electronic mail, and a web-based alert and notification application. Displays, maps, wall mounted televisions, and an electronic incident management system were used to share information and/or obtain situational awareness.

Tennessee Emergency Management Agency staff and state emergency services coordinators were alerted and notified in a timely manner, and in accordance with the extent of play agreement. Following alert and notification, the state emergency operations center was staffed and direction and control was established and maintained by the direction and control officer. The direction and control officer was deliberate and decisive, and immediately at the onset of the incident, set an operational tempo for the operational period.

The operational tempo consisted of an initial exercise briefing with continued situational briefings; branch manager meetings; meet me line conference calls with utility and county partners; and around-the-room briefings.

The meet me line conference call was used to discuss utility protective action recommendations and coordinate state and county protective action decisions. The direction and control officer facilitated the call and sought input from Tennessee Division of Radiological Health personnel and county officials prior to each protective action decision. The use of this coordinated decision-making process ensured relevant factors were considered, decisions were well-informed, and concurrence was received from all partners before actions were taken. For example, when discussing exposure control for emergency workers, division of radiological health personnel explained how dose assessment data would be used when considering the issuance and ingest of potassium iodide. Later, when the decision was actually made for emergency workers to ingest potassium iodide, state and county partners alike were well-informed and concurred with the decision. As a result, Hamilton County was able to implement the order more quickly; Bradley County emergency workers nor the public were asked to ingest potassium iodide due to the lack of a radiological threat.

Although several state emergency services coordinators participated virtually, they were interviewed on issuance of appropriate dosimetry and potassium iodide and their procedures to manage radiological exposure of emergency workers performing field operations (ex., access and traffic control, waterway warning or clearance, etc.). The Tennessee Highway Patrol and Tennessee Department of Transportation Emergency Services Coordinators further explained the type and kind of assistance they would provide to Hamilton County and Bradley County, if requested. In addition, the Tennessee Health Department Emergency Services Coordinator discussed their ability to support protective action decisions, specifically for those persons with access/functional needs.

For this capability the following radiological emergency preparedness criteria were met: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.2, 2.c.1, 3.a.1, 3.b.1, 3.d.1, 3.d.2

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings – Unresolved: None

Public Information and Warning Capability Summary:

The state emergency information director and public information staff at the state emergency operations center demonstrated the ability to alert the public and subsequently deliver coordinated, consistent, and actionable information in a timely manner. During the first meet me line conference call, the direction and control officer and county directors concurred with the decision to activate the sirens and broadcast a message via the Emergency Alert System. The state emergency information director prepared the appropriate pre-scripted message with all required elements. The assistant direction and control officer reviewed and approved the Emergency Alert System message and hand-delivered it to the state watch point for dissemination. While the sirens were not activated, nor the message broadcast, the state watch point officers, when interviewed, were knowledgeable of both systems.

The state emergency information director and public information staff coordinated and notionally disseminated four additional Emergency Alert System messages in English and Spanish, including the second to last message which directed the evacuation of four sectors (A-1, B-1, C-1, and D-1) and shelter in place of two sectors (A-2 and B-2). Sector B-5 was added to the latter group after a significant wind shift required decision makers to adjust the protective action decision. With each protective action decision, the state emergency information director and public information staff swiftly modified the appropriate pre-scripted Emergency Alert System messages to effectively articulate what actions citizens in the affected sectors were to take.

The state emergency information director resolved public and media inquiries at the onset of the incident. Once the joint information center was activated, public and media inquiries were handled by public information officers at joint information center. The joint information system was used throughout the entire operational period; the state emergency information director and public information staff at the state emergency operations center were in constant communication with those at the joint information center. The joint information system included the use of new tele- and video-conference platforms to facilitate and integrate virtual players. These platforms worked seamlessly and allowed the state emergency information director and public information staff located in Nashville, to watch the press conferences in Chattanooga, live and provide guidance as necessary.

For this capability the following radiological emergency preparedness criteria were met: 5.a.1, 5.b.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings – Unresolved: None

3.3.1.2 Dose Assessment

Situational Assessment Capability Summary:

Tennessee Department of Environment and Conservation, Division of Radiological Health personnel successfully demonstrated the ability to conduct dose assessment activities at the state emergency operations center. The dose assessment personnel comprehensively and effectively assessed plant, radiological, and meteorological conditions in order to provide timely and appropriate protective action recommendations to state and county decision makers.

Dose assessment personnel were pre-positioned at the state emergency operations center and able to promptly mobilize and staff the dose assessment function following the Alert declaration. The room in which dose assessment personnel worked had adequate equipment, supplies, plans, procedures, and communications capabilities to support the dose assessment function.

The radiation control officer directed dose assessment personnel to gather plant information and field team data to assess the radiological release. Dose projections were performed using analysis software, including "what if" dose projections, comparisons to utility dose projections, comparisons to actual field team data, and back calculation from field measurements for source term estimates. The radiation control officer and technical advisor worked closely with the utility liaison regarding plant conditions and coordinated with utility counterparts at the central emergency control center to gather and validate information. The radiation control officer provided technical consultation regarding the level of radiological health hazards and associated protective action recommendations to the state direction and control officer.

Following the General Emergency declaration, dose assessment personnel confirmed and agreed with utility recommendations to evacuate the two-mile sectors around the plant, and shelter two sectors downwind out to five miles. They also determined that public ingestion of potassium iodide was not warranted since projected child thyroid dose levels were only a fraction of guidance levels. The radiation control officer coordinated with the chief medical officer and both agreed that potassium iodide for the public was not warranted, but that potassium iodide should be administered to Hamilton County emergency workers.

A wind shift later in the operational period resulted in a utility recommendation to shelter an additional downwind sector out to five miles. Dose assessment personnel confirmed and agreed with the utility recommendation, and the radiation control officer recommendation to the state direction and control officer resulted in a protective action decision to shelter the additional sector.

For this capability the following radiological emergency preparedness criteria were met: 2.b.1, 2.b.2.

a. **Level 1 Finding:** None

b. **Level 2 Finding:** None

c. **Not Demonstrated:** None

d. **Prior Level 2 Findings – Resolved:** None

e. **Prior Level 2 Findings – Unresolved:** None

3.3.1.3 Radiological Monitoring Control Center

Environmental Response/Health and Safety Capability Summary:

Tennessee Department of Environment and Conservation, Division of Radiological Health personnel successfully demonstrated the ability to manage field teams in an effort to collect the radiological information necessary to characterize the plume for use by dose assessment personnel for protective action decision-making.

Division of radiological health personnel were pre-positioned at the radiological monitoring control center and able to promptly mobilize when notified to respond by division leadership following a call-down procedure. Personnel communicated with field teams using a base-station radio on the state radio network, commercial telephones, cellular telephones, and a computer application. Staff members brought laptop computers, maps, and other equipment and supplies necessary to support their response. Additional equipment and supplies were available at the facility, which was collocated with the field coordination center.

The radiological monitoring coordinator maintained awareness of plant, meteorological and road conditions, and utility field team activities to develop appropriate assignments for the state field teams. The radiological monitoring coordinator worked with dose assessment personnel to ensure the field team data collected was available to them and met their needs. Following the start of the radiological release, once the edges of the plume had been identified and an air sample obtained, the radiological monitoring coordinator obtained permission from the radiation control officer to have one team traverse the plume and obtain centerline data important for validating dose projections.

Field team measurements and air sample data were transmitted to the radiological monitoring control center using a computer application rather than relaying the data over the radio or telephone. This greatly reduced radio traffic, eliminated the possibility of transcription errors, and allowed for data to be immediately available to dose assessment personnel. Division of radiological health personnel also used the application to display the field data in various formats.

For this capability the following radiological emergency preparedness criteria were met: 1.a.1, 1.d.1, 1.e.1, 2.a.1, 4.a.2.

a. **Level 1 Finding**: None

b. **Level 2 Finding**: None

c. **Not Demonstrated:** None

d. **Prior Level 2 Findings – Resolved:** None

e. **Prior Level 2 Findings – Unresolved:** None

3.3.1.4 Field Coordination Center

Operational Coordination Capability Summary:

The field coordination center director and staff successfully established and maintained a unified and coordinated operational structure in response to a simulated radiological incident at the Sequoyah Nuclear Plant.

The field coordination center staff were pre-positioned at the field coordination center in accordance with the extent of play agreement; therefore, notification and mobilization were simulated. The field coordination center director coordinated incident support activities at the county, regional, and state levels, and frequently communicated with the direction and control officer in the state emergency operations center as well as staff in the field coordination center. The ability to provide staffing to support 24-hour operations was demonstrated with a request to the mission coordination center for second shift staffing. Additional resources beyond the request for second shift staffing were not requested, but federal, state, and mutual aid resources were listed in the state plan.

Multiple communications systems were available and used to support operations including commercial telephone (primary), cellular telephone (backup), facsimile machines, an electronic incident management system, and an 800-megahertz radio system; there were no communication failures. A portable wireless local area network was established, which provided many connections within the field coordination center as well as digitizing and encrypting communications from the center. Meet me line conference calls were routinely and successfully used by county and state officials to discuss protective actions for the public. Priority cellular telephone calls could be made by field coordination center staff using Government Emergency Telecommunications Service cards, if necessary.

The field coordination center was located in the Tennessee Air National Guard facility in Chattanooga. Space, equipment, and supplies were sufficient and consistent for the emergency role assigned to the field coordination center. No shortages or malfunctions occurred. Various static displays, along with projection screens, attributed to increased situational awareness. There was ample space at the site to stage additional state and federal resources if needed.

The field coordination center was located within the 10-mile emergency planning zone; therefore, all staff were issued dosimetry packets upon entering the facility. There were sufficient supplies of dosimetry and potassium iodide to manage radiological exposure of field coordination center staff. Additional quantities of dosimetry and potassium iodide could be obtained from the state emergency management east regional headquarters in Knoxville, or the state emergency operations center in Nashville. No monitoring equipment or protective clothing was available or needed at the field coordination center. If a radiological release threatened the field coordination center, it would be relocated to another facility in the Chattanooga area.

The capability to control emergency workers' exposures was successfully demonstrated by the radiological data records keeper. Field coordination center staffs' direct reading dosimeters were read every 30 minutes and recorded. The authorization for additional exposure was demonstrated through interview with the field coordination center director. The field coordination center director would initially attempt to replace the emergency workers requiring additional exposure to keep their doses as low as reasonably achievable. If they could not be replaced due to circumstances, the field coordination center director would request personal exposure increases from the state direction and control officer. The simulated distribution of potassium iodide to field coordination center staff was timely. Field coordination center staff simulated the ingestion of potassium iodide when instructed to do so during the exercise.

For this capability the following radiological emergency preparedness criteria were met: 1.a.1, 1.d.1, 1.e.1, 2.a.1.

a. **Level 1 Finding:** None

b. **Level 2 Finding:** None

c. **Not Demonstrated:** None

d. **Prior Level 2 Findings – Resolved:** None

e. **Prior Level 2 Findings – Unresolved:** None

3.3.1.5 Field Teams

Environmental Response/Health and Safety Capability Summary:

Two State of Tennessee field teams successfully demonstrated the ability to take radiation measurements; collect and count radioiodine and particulate samples; and transmit data to the radiological monitoring control center. Each team was staffed with two individuals from the Tennessee Department of Environment and Conservation, Division of Radiological Health. The teams were staged at the radiological monitoring control center, which was collocated with the field coordination center. Team members outlined the notification and mobilization process that would be used in an actual incident.

In accordance with the extent of play agreement, travel to monitoring locations was simulated and all activities were demonstrated in the parking lot of the Tennessee Air National Guard facility. The teams were supplied with appropriate communications equipment including a handheld radio and a vehicle-mounted radio on the state radio network. Measurements and sampling data were transmitted via a computer application. The field teams had appropriate equipment and supplies for plume and ingestion sampling. Both teams inventoried and checked equipment prior to dispatch. The division of radiological health coordinator briefed team members on dose limits, ingestion of potassium iodide, plant and meteorological conditions, and deployment assignments. Permanent record dosimeters were issued to replace occupational dosimetry. Potassium iodide was simulated but available at the radiological monitoring control center. In addition to the permanent record dosimeter, each team member carried a high-range direct reading dosimeter. Low-range direct reading dosimeters were available but not issued because calibrations were several months past due.

Once deployed, the field teams demonstrated monitoring and air sampling techniques to locate plume edges. One team was assigned to monitor the edge of the plume on one side of the river and only received background readings, as there were no nearby bridges to traverse to the other side of the river. The second team monitored the other edge and centerline of the plume. They performed an air sample as instructed at the plume edge then counted the particulate filter and radioiodine cartridge in a low background area.

Both teams demonstrated appropriate contamination controls during sample handling and packaging. The teams transported samples to the sample collection point also located at the radiological monitoring control center. The sample coordination team demonstrated appropriate contamination controls and took custody of the samples for transfer to the state laboratory.

For this capability the following radiological emergency preparedness criteria were met: 1.a.1, 1.d.1, 1.e.1, 3.a.1, 4.a.3.

a. **Level 1 Finding:** None

b. **Level 2 Finding:** None

c. **Not Demonstrated:** None

d. **Prior Level 2 Findings – Resolved:** None

e. **Prior Level 2 Findings – Unresolved:** None

3.3.1.6 Radiochemistry Laboratory

Environmental Response/Health and Safety Capability Summary:

Tennessee Department of Health, Division of Laboratory Services personnel successfully demonstrated the ability to perform radiological analysis of various environmental samples collected in response to a simulated radiological incident at the Sequoyah Nuclear Plant. The demonstration was performed out of sequence.

The laboratory contained all the necessary equipment and supplies to support emergency operations, and personnel were proficient in carrying out their procedures. Analytical equipment in the laboratory included a gamma spectroscopy system with three high-purity germanium detectors. The analysis software used with the system was capable of identifying the radionuclides associated with a nuclear power plant release. A liquid scintillation counter used during the analysis of water samples for strontium-90 was also available.

Laboratory personnel described the quality assurance procedures used to prepare the gamma spectroscopy system for use, including counting a background sample and a known source. They received and prepared environmental samples for analysis carefully following their plan. During the demonstration, laboratory personnel collaborated with Tennessee Department of Environment and Conservation, Division of Radiological Health personnel to identify several potential changes to their respective procedures to enhance the efficiency of the laboratory analysis process.

The laboratory was well laid out, enabling personnel to accomplish their tasks with a minimal likelihood of cross contamination. Personnel wore appropriate protective clothing and dosimeters while preparing and analyzing samples. Radiation survey instruments were available and used to check samples and laboratory areas for contamination.

Laboratory staff explained that they would be notified of an incident directly by division of radiological health personnel or through their own division's emergency messaging system following notification from the Tennessee Emergency Management Agency. Laboratory personnel explained that sample analysis results would be transmitted to dose assessment personnel via email.

For this capability the following radiological emergency preparedness criteria were met: 1.a.1, 1.d.1, 1.e.1, 3.a.1, 4.c.1.

a. **Level 1 Finding:** None
b. **Level 2 Finding:** None
c. **Not Demonstrated:** None
d. **Prior Level 2 Findings – Resolved:** None
e. **Prior Level 2 Findings – Unresolved:** None

3.3.2 Joint Operations

3.3.2.1 Joint Information System/Center

Public Information and Warning Capability Summary:

Tennessee Emergency Management Agency, Hamilton County, and Bradley County Public Information Officers and staff successfully used the joint information system and center to coordinate and disseminate prompt, reliable, and actionable information to the public and media.

The joint information center was located within in the Tennessee Valley Authority's Missionary Ridge Building in Chattanooga. Entry into the building was controlled by utility security using a valid picture identification check against a pre-approved roster; visitors were required to process through security screening and were provided a temporary badge for access within the building. Contract security guards protected the building, including the key-card entry point and the joint information center.

State and county public information officers and staff were notified and mobilized in an efficient manner through a state web-based alert and notification application. Pre-positioning within the facility was allowed in accordance with the extent of play; however, upon receipt of the notification to mobilize, public information officers and staff were required to exit to the joint information center, process through security, and obtain a badge. Once badged, joint information center staff returned to their designated workstations, and jointly, the utility and state activated the joint information center. The state direction and control officer was notified of the official facility activation time.

Redundant communications systems were available and used by public information officers and staff. Available systems included commercial telephones, cellular telephones, facsimile machines, electronic mail, an electronic incident management system, and tele- and video-conference platforms; all systems were operational, and no failures were observed. Sufficient equipment, displays, and supplies were available to support operations. The joint information center was located outside of the 10-mile emergency planning zone, as such, public information officers and staff were not issued dosimetry or potassium iodide.

Due to the SARS-CoV-2/COVID-19 pandemic, and the need to social distance, modifications to the joint information center layout and staffing were made. The reduction in physical space and in-person public information officers and staff was offset by an increased use of tele- and video-conference platforms to facilitate virtual communication and coordination. The result was a more efficient use of physical space, and a quiet, more productive work environment. Despite much virtual participation, there was excellent coordination among the counties, state, and utility. All news releases were reviewed, edited, and approved by both the state and utility joint information center directors prior to dissemination to avoid conflicting and/or premature information. Protective action decisions were discussed and concurred upon via the meet me line conference call. Any new information was quickly shared using one or more of the platforms readily available. Information provided to the public and media was accurate and consistent with the protective action decisions.

State and county public information officers and staff used tele- and video-conference platforms to virtually coordinate information with their counterparts at their respective emergency operations centers. In addition, the media briefings were broadcast via these platforms, providing situational awareness for all joint information system public information officers and staff. While an American Sign Language interpreter was not physically present in the joint information center, interpretation capabilities were available virtually to ensure the media briefings were accessible to the whole community. A total of three media briefings occurred. A pre-briefing caucus preceded each to ensure information shared was prioritized, current, accurate, and timely.

For this capability the following radiological emergency preparedness criteria were met: 1.a.1, 1.d.1, 1.e.1, 3.d.2, 5.b.1.

a. **Level 1 Finding**: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings – Unresolved: None

3.3.3 Risk Jurisdictions

3.3.3.1 Hamilton County, Tennessee

3.3.3.1.1 Emergency Operations Center

Operational Coordination Capability Summary:

The Hamilton County Office of Emergency Management staff successfully demonstrated the ability to alert and notify staff, and make and implement protective action decisions in response to a simulated radiological incident at the Sequoyah Nuclear Plant. Due to the SARS-CoV-2/COVID-19 pandemic, and in accordance with the extent of play agreement, all staff were pre-positioned within the emergency operations center. The process and system used to alert and notify staff was discussed through interview. It was noted that the process and system have been effectively used multiple times this calendar year to mobilize emergency operations center staff in support of real-world response efforts.

Redundant communications systems were available and used by emergency operations center staff. All systems operated properly and dependably throughout the operational period. The primary means of communication with the state was through the Digital National Alert Warning System. Secondary and tertiary means were commercial telephone, cellular telephone, and the 800-megahertz radio system. Within the emergency operations center maps, plans and procedures, equipment, and supplies were also available, including sufficient quantities of dosimetry and potassium iodide for emergency workers.

The deputy director provided direction and control within the emergency operations center. Pertinent emergency information was gathered, analyzed, and used to inform protective action decisions. This information enabled the deputy director to be proactive in deciding whether or not to shelter in place or evacuate the public in the affected sectors. Periodic briefings kept staff informed of plant conditions and the potential impact to persons within Hamilton County; staff periodically briefed the deputy director to maintain internal communication and coordination. The deputy director relied on the experience of the agency representatives in the emergency operations center when making and implementing protective action decisions.

A discussion with the Hamilton County Health Department representative regarding the ability to shelter individuals during the current pandemic environment showed a clear understanding of the need to provide shelter, while also limiting the spread of SARS-CoV-2/COVID-19. In addition, there were no institutionalized persons identified within the emergency planning zone to be considered if an evacuation decision was made.

Hamilton County maintained a digital file of individuals with access/functional needs within the emergency planning zone. These individuals were of concern throughout the operational period and thoughtfully considered when making protective action decisions. The locations and specific needs of each person were recorded and displayed on a map for use by emergency medical services staff and those with a demonstrated need-to-know. This information was used to safely and quickly simulate evacuation of all individuals with access/functional needs from the affected sectors.

At the Alert emergency classification level, simulated protective actions for Hamilton County Schools students were initiated. Principals and paired schools were notified, buses were staged, and students were prepared to move. In addition, the state direction and control officer was notified of the impending relocation, and Hamilton County Schools parents were informed of the arrangements to relocate students Following the declaration of Site Area Emergency, Hamilton County Schools students were relocated to their respective paired schools. Paired schools were predetermined and outlined the preparedness calendar published annually by the utility. The same information was also available on the utility's website, and identified during subsequent media briefings.

When the emergency classification level escalated to General Emergency, the protective action recommendation and decision included the evacuation of four sectors. The Hamilton County Sheriff's Office simulated dispatch of a total of eight deputies to the affected sectors to establish and maintain access and traffic control points. A simulated radiological briefing, dosimetry, and potassium iodide were provided to the deputies. Through interview, it was evident the deputies knew their mission and with which county agencies and private sector partners they were to coordinate to detour traffic and clear impediments if required.

For this capability the following radiological emergency preparedness criteria were met: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.2, 2.c.1, 3.a.1, 3.b.1, 3.c.1, 3.c.2, 3.d.1, 3.d.2.

a. **Level 1 Finding:** None

b. **Level 2 Finding:** None

c. **Not Demonstrated:** None

d. **Prior Level 2 Findings – Resolved:** None

e. **Prior Level 2 Findings – Unresolved:** None

Public Information and Warning Capability Summary:

The Hamilton County Office of Emergency Management Public Information Officer successfully demonstrated the ability to provide prompt, accurate, and reliable information to the public and media. Due to the SARS-CoV-2/COVID-19 pandemic, the public information officer demonstrated this capability in a virtual environment.

Emergency information was developed and disseminated to the public and media through the joint information system. The public information officer participated in all meet me line conference calls and ensured news releases were reviewed, edited, and approved by Hamilton County officials prior to dissemination. One Hamilton County-specific news release was created before the joint information center was activated. The news release informed the public and media of an Alert declaration at the Sequoyah Nuclear Plant; the closing of Igou Ferry Road and Sequoyah Access Road; and the simulated staging of buses in preparation for school relocations.

Once the joint information center was activated, the Hamilton County Public Information Officer continued to work through the joint information system to develop and disseminate three additional news releases. All news releases contained pertinent information such as emergency classification levels, paired school locations, shelter in place and evacuation details, pet guidance, etc. The public information officer shared approved news release content during media briefings held at the joint information center. Public and media inquiries were handled by public information officers at joint information center; therefore, they were not observed within the Hamilton County Emergency Operations Center.

Following each decision to activate the sirens and broadcast a message via the Emergency Alert System, the state emergency information director at the state emergency operations center prepared the appropriate and concurred upon pre-scripted message. The Hamilton County Public Information Officer participated in the meet me line conference calls and helped inform the selection of the appropriate messages. Actual modification and dissemination of the messages took place at the state emergency operations center, and similar to public and media inquiries, were not observed within the Hamilton County Emergency Operations Center.

For this capability the following radiological emergency preparedness criteria were met: 5.a.1, 5.b.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings – Unresolved: None

3.3.3.2 Bradley County, Tennessee

3.3.3.2.1 Emergency Operations Center

Operational Coordination Capability Summary:

The Cleveland-Bradley County Emergency Management Agency staff successfully demonstrated the ability to support essential emergency management functions in response to a simulated radiological incident at the Sequoyah Nuclear Plant. The director, radiological officer, and emergency operations center staff made and implemented appropriate protective action decisions, and prioritized and utilized available resources to support response efforts.

The emergency operations center was co-located with the 9-1-1 Communications Center. The initial notification of a Notice of Unusual Event declaration from the state was received via the Digital National Alert Warning System in the 9-1-1 Communications Center. The communications officer relayed the declaration information to the director in the emergency operations center. Subsequent declaration notifications were received through a web-based alert and notification application, an electronic incident management system, and/or cellular telephone. A web-based alert and notification application was also used to alert and mobilize emergency operations center staff following the Alert declaration. Staff were formally notified despite being pre-positioned in the emergency operations center in accordance with the extent of play agreement.

Primary and secondary communications were comprised of commercial telephones, cellular telephones, an electronic incident management system, and an 800-megahertz radio system. In addition, an amateur radio network was setup by the Cleveland Bradley County Auxiliary Communications Services Club. A total of 51 amateur radio operators supported emergency operations center communications and helped establish alternative means of communication as needed. Additionally, various social media platforms were used to share information with the public. All communications systems were operational; no communications failures were observed.

Position-specific books, equipment, and supplies were readily available. Wall mounted televisions and projection screens were used to display information including plant conditions, current emergency classification level, emergency planning zone and sector maps, etc. In addition, changes in plant conditions and the emergency classification level were provided to personnel within the emergency operations center through frequent in-person briefings. These briefings allowed the director to provide county-wide situational awareness and solicit recommendations or concerns from experienced agency representatives. An electronic incident management system was also used to share information and obtain situational awareness.

The director provided direction and control within the emergency operations center and participated in meet me line conference call discussions related to protective action recommendations and decisions. Following the calls, the director worked with agency representatives to implement the protective actions. Although not necessary during the operational period, the director discussed emergency worker radiological exposure control and the issuance of dosimetry and potassium iodide. Additional protective actions were discussed but not taken due to the lack of a radiological threat, including relocating schools, establishing shelters, and evacuating individuals with access/functional needs.

Implementation of traffic and access control, as well as clearance of impediments to evacuation routes, would be handled by Bradley County Sheriff's Office deputies and Cleveland Police Department officers. It was evident through interview that the deputies and officers understood their role in the management of access and traffic control points, as well as with whom they would coordinate to clear impediments from evacuation routes.

For this capability the following radiological emergency preparedness criteria were met: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.2, 2.c.1, 3.a.1, 3.b.1, 3.c.1, 3.c.2, 3.d.1, 3.d.2.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings – Unresolved: None

Public Information and Warning Capability Summary:

The Bradley County Sheriff's Office Public Information Officer, located in the emergency operations center, in conjunction with the Bradley County Public Information Officer in the joint information center, successfully worked together to ensure accurate information was developed and disseminated to the public and media.

Following the Alert declaration, the emergency management director asked the public information officer at the emergency operations center to draft a message about the change in emergency classification levels and share it on the county's social media accounts. This action was accomplished before the joint information center was declared operational. The proactive decision-making of the director to provide immediate information to the public helped build credibility and trust with the county emergency management agency as a reliable source of information.

The Bradley County Public Information Officer at the joint information center was responsible for drafting the county's news releases. Draft county news releases were sent electronically to the public information officer at the emergency operations center for review and approval by the director. Once approved, and when instructed by the director, the Bradley County Sheriff's Office Public Information Officer at the emergency operations center drafted messages for posting on the Bradley County social media platforms. A new mass messaging system was successfully used to prevent potential misinformation on social media.

Following each decision to activate the sirens and broadcast a message via the Emergency Alert System, the state emergency information director at the state emergency operations center prepared the appropriate and concurred upon pre-scripted message. The Bradley County Public Information Officer participated in the meet me line conference calls and helped inform the selection of the appropriate messages. Actual modification and dissemination of the messages took place at the state emergency operations center, and similar to public and media inquiries, were not observed within the Bradley County Emergency Operations Center.

For this capability the following radiological emergency preparedness criteria were met: 5.a.1, 5.b.1.

a. **Level 1 Finding:** None

b. **Level 2 Finding:** None

c. **Not Demonstrated:** None

d. **Prior Level 2 Findings – Resolved:** None

e. **Prior Level 2 Findings – Unresolved:** None

3.3.3.2.2 Emergency Worker Decontamination

Environmental Response/Health and Safety Capability Summary:

Cleveland Fire Department firefighters, Bradley County Health Department nurses, and Tennessee Department of Health personnel successfully demonstrated the ability to perform radiological monitoring and decontamination of emergency workers themselves, and their equipment and vehicles in response to a simulated radiological incident at the Sequoyah Nuclear Plant. The demonstration was performed out of sequence.

Prior to the demonstration, a safety briefing was provided to players by the Bradley County Radiological Officer. Upon completion of the safety briefing, four firefighters with the Cleveland Fire Department, four nurses with the Bradley County Health Department, and two personnel with the Tennessee Department of Health completed survey meter operability checks. Following the operability checks, two nurses demonstrated donning and doffing of personal protective equipment. In accordance with

the extent of play agreement, and due to SARS-CoV-2/COVID-19 pandemic and statewide personal protective equipment shortage, only one nurse was asked to don and doff equipment. All other firefighters, nurses, and personnel wore personal protective equipment designated for training use only. Sufficient equipment, supplies, dosimetry, and potassium iodide were available to support emergency operations.

A Bradley County Sheriff's Office vehicle entered the vehicle monitoring point; here, the deputy was directed to stop and greeted by two firefighters. A firefighter monitored the vehicle, slowly and methodically, concentrating on the contact points. Once vehicle monitoring was complete, the deputy was instructed to follow the signage and cones to the personnel monitoring point.

At the personnel monitoring point, the deputy's hands and feet were monitored prior to exiting the vehicle. Following initial monitoring, the deputy was instructed to exit the vehicle; the deputy's whole body was monitored, starting at the top of the head and moving down each side from the neck down to the hands, and then down the torso and the legs. While the deputy's head was surveyed, little attention was given to the mouth and nose area. Concurrent to the deputy's whole-body monitoring, the interior of the patrol vehicle was monitored. The firefighters performing the interior vehicle monitoring were informed of the contamination areas on the deputy to expedite vehicle monitoring and subsequent decontamination, if required.

The contaminated deputy was then directed to the personnel decontamination point. The deputy was asked to remove all personal effects and clothing (simulated) and escorted to the shower area. According to procedures, only the contaminated clothing, not all clothing, should have been removed and discarded. Following a simulated shower, the deputy was re-monitored and found to be "clean" (not contaminated).

The firefighters and nurses at the vehicle and personnel monitoring points, as well as the personnel decontamination point, demonstrated proficient use of survey meters and proper monitoring techniques. In addition, all personnel were issued and wore 0-200 mR direct reading dosimeters and permanent record dosimeters (simulated). When interviewed, they were aware of their administrative exposure limits; how and when to read the direct reading dosimeter; and to whom the readings were to be reported.

For this capability the following radiological emergency preparedness criteria were met: 1.e.1, 3.a.1, 6.b.1.

a. Level 1 Finding: None

b. Level 2 Finding: None

c. Not Demonstrated: None

d. Prior Level 2 Findings – Resolved: None

e. Prior Level 2 Findings – Unresolved: None

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Section 4: Conclusion

Overall, the exercise was a success. Officials and representatives from Hamilton and Bradley Counties; the State of Tennessee; the Tennessee Valley Authority; and numerous other organizations participated in the exercise.

All offsite response organizations demonstrated knowledge of their emergency response plans and procedures, and successfully demonstrated the ability to protect the health and safety of the public in the event of an incident involving the Sequoyah Nuclear Plant.

FEMA wishes to acknowledge the efforts of the many individuals who participated and made this exercise a success. The State of Tennessee and Sequoyah Nuclear Plant offsite response organizations were the first in the nation to complete an exercise during the SARS-CoV-2/COVID-19 pandemic. The state and counties innovatively and successfully integrated the use of technology to ensure sufficient support and response, while also protecting their workforces. Despite ongoing real-world response efforts, the professionalism and teamwork of the participants was evident throughout all phases of the exercise.

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Appendix A: Exercise Timeline

Emergency Classification Level or Event	Time Utility Declared	Time That Notification Was Received or Action Was Taken						
		SEOC	Dose Assessment	FCC	RMCC	Hamilton County	Bradley County	JIC
Unusual Event	0813	0825	0840	0829	-	0835	0834	-
Alert	0851	0855	0905	0859	0905	0905	0902	-
Site Area Emergency	0955	1007	1010	1007	1007	1007	1007	-
General Emergency	1055	1110	1117	1113	1121	1114	1114	1124
Simulated Rad. Release Started	1055	1125	1117	1113	1124	1127	1126	1132
Simulated Rad. Release Ended	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing
Facility Declared Operational	-	0943	1009	0925	1006	0817	0919	1035
End Exercise	1325	1328	1334	1331	1340	1325	1331	1327
1st Protective Action Decision: Stay Tuned		0925	-	0925	-	0925	0927	-
1st Siren Activation		0935	-	-	-	0935	0935	-
1st EAS Message: #4		0935	-	-	-	0935	0935	-
2nd Protective Action Decision: Relocated Schools		1020	-	1020	-	1020	1020	1055*
2nd Siren Activation		1030	-	-	-	1030	1030	-
2nd EAS Message: #7 & #5		1030	-	-	-	1030	1030	-
3rd Protective Action Decision: Evacuate Zones: A-1, B-1, C-1, D-1 Shelter in Place Zones: A-2, B-2		1138	1141	1140	1227	1140	1140	1235*
3rd Siren Activation		1150	-	-	-	1150	1150	1150
3rd EAS Message: #22		1150	-	-	-	1150	1150	1150
4th Protective Action Decision: Evacuate Zones: A-1, B-1, C-1, D-1 Shelter in Place Zones: A-2, B-2, B-5		1223	1223	1223	1227	1223	1224	1320*
4th Siren Activation		1230	-	-	-	1230	1230	1230
4th EAS Message: #41		1230	-	-	-	1230	1230	1230
KI Ingestion Decision: Emergency Workers: Hamilton County (Only) Ingest General Public: No		1137	1137	1137	1137	1137	1137	-

**Denotes the time the information was messaged from the joint information center.*

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Appendix B: Evaluator Assignments

Branch Chief: John "JT" Ackermann; **Site Specialist:** Erica Houghton
Exercise Management: Elisabeth Adkins; **Exercise Support:** Erin McCarty
Evaluator Assignments, Exercise Week, October 13-16, 2020

Location/Venue	Evaluation Team	Core Capability(ies)
State of Tennessee		
SEOC *(Nashville, TN | Central Time Zone)*	Gerald McLemore* (FEMA) Nathan Nienhius (FEMA) Roy Smith (ICF) Virtual - Glenda Bryson (FEMA)	Operational Coordination Public Information and Warning
Dose Assessment *(Nashville, TN | Central Time Zone)*	Brad McRee (ICF)	Situational Assessment
RMCC	John Fill* (FEMA)	Environmental Response/Health and Safety
FCC	John Wiecjorek (ICF) Virtual - Lorenzo Lewis (FEMA)	Operational Coordination
Field Teams	Jill Leatherman (ICF)	Environmental Response/Health and Safety
Joint Information System/Center	Elisabeth Adkins* (FEMA) Paul "PJ" Nied (ICF)	Public Information and Warning
Hamilton County		
EOC	Michael Dolder* (FEMA) Gene Taylor (FEMA) Mark Dalton (ICF) Virtual - Quintin Ivy (FEMA)	Operational Coordination Public Information and Warning
Bradley County		
EOC	Russell Bergmann* (FEMA) Tom Hegele (ICF) Virtual - Robert Nash (FEMA) Virtual - David Ortman (FEMA)	Operational Coordination Public Information and Warning

**Denotes Team Lead*

Evaluator Assignments, Out of Sequence, June 16, 2020

Location/Venue	Evaluation Team	Core Capability(ies)
Bradley County		
EWD	Erica Houghton* (FEMA) John "JT" Ackermann (FEMA) Elisabeth Adkins (FEMA)	Environmental Response/Health and Safety

**Denotes Team Lead*

Evaluator Assignments, Out of Sequence, September 17, 2020

Location/Venue	Evaluation Team	Core Capability(ies)
State of Tennessee		
Radiological Laboratory	John Fill* (FEMA) Erica Houghton (FEMA)	Environmental Response/Health and Safety

**Denotes Team Lead*

Appendix C: Extent of Play Agreement

Sequoyah Nuclear Plant Full Participation Plume Phase Exercise
October 14, 2020

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TN Department of Military | TEMA

Patrick C. Sheehan
Director

Major General
Jeffrey H. Holmes
The Adjutant General

August 13, 2020

Mr. Randall Hecht, RAC Chairman
Federal Emergency Management Agency-DHS
Region IV
3003 Chamblee-Tucker Road, Duke Building
Atlanta, GA 30314

RE: Extent of Play Agreement for the October 14, 2020 Sequoyah Nuclear Power Plant 10-Mile Release Exercise

Dear Mr. ~~Hecht,~~ Randall

Enclosed you will find a copy of the final extent of play agreement for the 2020 10-Mile Release Exercise for the Sequoyah Nuclear Power Plant, to be conducted on October 14, 2020. This document is the result of a collaborative effort between your staff, the Tennessee Department of Environment and Conservation-Division of Radiological Health, and the Tennessee Emergency Management Agency (TEMA). This cooperation has resulted in a document that will be the foundation for the upcoming exercise and will allow the State of Tennessee the opportunity to once again demonstrate reasonable assurance that it is able to protect its citizens in the event of a nuclear power plant accident.

Sincerely,

Patrick C. Sheehan
Director

PS:TH:KP:AS

Office of the Director • 3041 Sidco Drive • Nashville, Tennessee 37204
Tel: 615-741-0001 • tn.gov/tema

TN Department of Military | TEMA

Patrick C. Sheehan
TEMA Director

Major General
Jeffrey H. Holmes
The Adjutant General

Sequoyah Nuclear Plant

EVALUATED EXERCISE

(2020 Full Participation Plume Phase Exercise)

EXTENT-OF-PLAY AGREEMENT

2020 SEQUOYAH FULL PARTICIPATION RADIOLOGICAL EMERGENCY PREPAREDNESS EXERCISE

All activities will be demonstrated fully and in accordance with respective plans and procedures as they would during an actual incident. This extent of play agreement is written by exception. If it is not listed as an exception it will be demonstrated as described in the plans and/or procedures. Any issue or discrepancy arising during exercise play may be re-demonstrated if allowed by the Radiological Assistance Committee Chair (RAC) Chair or designee. This allowance may be granted if it is not disruptive to the activity and mutually agreed to by the Tennessee Emergency Management Agency (TEMA) Lead Controller and Federal Emergency Management Agency (FEMA) Lead Evaluator, as designated by the RAC Chair. In addition, the TEMA Lead Controller and FEMA Lead Evaluator may allow participating agencies/organizations to deviate from the extent of play agreement prior to a demonstration, as appropriate.

The State of Tennessee and Tennessee Valley Authority (TVA) have prepared goals addressing respective obligations. Both reflect the necessary interactions between the state and local governments, as well as TVA as set forth in the Multi-Jurisdictional Radiological Emergency Response Plan for the Sequoyah Nuclear Plant.

NOTE: All exercise times are Eastern Daylight Time (EDT).

Exercise Date: October 14, 2020 Exercise Start Time: 0800

Exercise Objectives

- **Objective 1:** Demonstrate the ability to alert, notify, and mobilize response personnel and facilities; provide direction and control, make precautionary and protective action decisions and implement those decisions.
- **Objective 2:** Demonstrate the ability to manage radiological field monitoring teams and perform plume-phase field measurements and analysis, and perform radiological analyses at the radiochemistry laboratory.
- **Objective 3:** Demonstrate the ability to activate the prompt alert and notification system and provide accurate emergency information and instructions to the public and news media in a

timely manner.

SARS-CoV-2/COVID-19 Statement

Due to ongoing response to the SARS-CoV-2/COVID-19 and ever-evolving guidance to flatten the curve, all exercise participants and facilities will operate with the minimum number of staff necessary to accomplish the exercise objectives. Observers will not be permitted at any exercise facility. In addition, the following guidelines will be in place and enforced at each facility; failure to comply with these guidelines will result in denied entry or removal from the facility:

- Screenings, including completion of a questionnaire and temperature checks
- Masks will be worn at all times, except when eating or drinking
- Predetermined seating arrangements and/or use of alternate rooms to comply with social distancing guidelines
- Installation or use of partitions and/or face shields
- Any other measures deemed appropriate in response to SARS-CoV-2/COVID-19

Exercise Evaluation Criteria

Core Capability: 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.

The following critical tasks will be demonstrated at the State EOC, Field Coordination Center, Hamilton County EOC, and Bradley County EOC.

Capability Target: Emergency Operations Management

- **Critical Task:** Offsite response organizations use effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner (Criterion 1.a.1).
    - **Exception:** All notifications to adjacent states, Emergency Alert System Stations, Federal government agencies, and railroads will be simulated and verbalized to evaluators. Agency capabilities and procedures to notify these partners may be further discussed with players and/or evaluators, as appropriate.
    - **Exception:** Due to ongoing response to the SARS-CoV-2/COVID-19, the State EOC, Hamilton County EOC, and Bradley County EOC will be staffed prior to StartEx. Alert and notification of exercise players will not be demonstrated due to their presence in the EOC; the procedures by which alert and notification would occur will be discussed with evaluators. In addition, exercise players will not begin exercise play until notification of StartEx.
    - **Exception:** In order to comply with social distancing guidelines, the Division of Radiological Health will not be staffing the following positions in the State EOC: EOC-C, RMC-C , and Administrative Assistant.
    - **Exception:** Field Coordination Center players will be prepositioned in their assigned exercise locations. Players will not begin their assigned exercise roles until alert and notification is received.
- **Critical Task:** At least two (2) communications systems are available, at least one (1) operates properly, and communication links are established and maintained with appropriate locations.

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Communications capabilities are managed in support of emergency operations (Criterion 1.d.1).

- **Exception:** It is anticipated that all but a few players will participate in the exercise virtually. As such, the use of the primary and backup communications systems identified in plans and procedures may not be demonstrated, but at least two (2) will be available and one (1) will operate properly.

- **Critical Task:** Equipment, maps, displays, monitoring instruments, dosimetry, potassium iodide, and other supplies are sufficient to support emergency operations (Criterion 1.e.1).
  - **Exception:** An exception is not requested.

Capability Target: Protective Action Decision Making

- **Critical Task:** Key personnel with leadership roles for the offsite response organizations provide direction and control to that part of the overall response effort for which they are responsible (Criterion 1.c.1).
  - **Exception:** An exception is not requested.
- **Critical Task:** Offsite response organizations use a decision-making process, considering relevant factors and appropriate coordination, to ensure that an exposure control system, including the use of potassium iodide, is in place for emergency workers including provisions to authorize radiation exposure in excess of administrative limits or protective action guides (Criterion 2.a.1).
  - **Exception:** An exception is not requested.
- **Critical Task:** A decision-making process involving consideration of appropriate factors and necessary coordination is used to make protective action decisions for the general public (including the recommendation for the use of potassium iodide, if offsite response organizations policy) (Criterion 2.b.2).
  - **Exception:** An exception is not requested.
- **Critical Task:** Protective action decisions are made, as appropriate, for groups of persons with disabilities and access/functional needs (Criterion 2.c.1).
  - **Exception:** An exception is not requested.

Capability Target: Protective Action Implementation

- **Critical Task:** The offsite response organizations issue appropriate dosimetry, potassium iodide and procedures, and manage radiological exposure to emergency workers in accordance with the plans and procedures. Emergency workers periodically and at the end of each mission read their dosimeters and record the readings on the appropriate exposure record or chart. Offsite response organizations maintain appropriate record-keeping of the administration of potassium iodide to emergency workers (Criterion 3.a.1).
- **Critical Task:** Potassium iodide and appropriate instructions are available should a decision to recommend use of potassium iodide for the general public and institutionalized individuals be made. Appropriate record keeping of the administration of potassium iodide for institutionalized individuals is maintained (Criterion 3.b.1).
- **Critical Task:** Protective action decisions are implemented for persons with disabilities and access/functional needs other than schools within areas subject to protective actions (Criterion 3c1).
  - **Exception:** Due to ongoing response to the SARS-CoV-2/COVID-19. Use of non-

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congregate verses congregate care sheltering will be discussed with evaluators in the Hamilton County EOC and Bradley County EOC.

- **Critical Task:** Offsite response organizations/school officials implement protective actions for schools (Criterion 3c2).
  - **Exception:** Due to ongoing response to the SARS-CoV-2/COVID-19. Use of non-congregate verses congregate care sheltering will be discussed with evaluators in the Hamilton County EOC and Bradley County EOC.
- **Critical Task:** Appropriate traffic and access control is established. Accurate instructions are provided to traffic and access control personnel (Criterion 3.d.1).
  - **Exception:** Establishment of traffic and access control will be discussed with evaluators in the Hamilton County EOC and Bradley County EOC.
- **Critical Task:** Impediments to evacuation are identified and resolved (Criterion 3.d.2).
  - **Exception:** Impediments to evacuation will be discussed with evaluators in the Hamilton County EOC and Bradley County EOC.

Core Capability: 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.

The following critical tasks will be demonstrated at the State EOC by Dose Assessment and Central Emergency Control Center.

Capability Target: Protective Action Decision Making

- **Critical Task:** Appropriate protective action recommendations are based on available information on plant condition, field monitoring data, and licensee and offsite response organization dose projections, as well as knowledge of onsite and offsite environmental conditions (Criterion 2.b.1).
  - **Exception:** Central Emergency Control Center participation may be simulated through the use of a control cell or if active, then participants players will be prepositioned in their assigned exercise locations. Players will not begin their assigned exercise roles until alert and notification is received.
  - **Exception:** In order to comply with social distancing guidelines, the Division of Radiological Health will not be staffing the following position in the Central Emergency Control Center: DRH Liaison.
- **Critical Task:** A decision-making process involving consideration of appropriate factors and necessary coordination is used to make protective action decisions for the general public (including the recommendation for the use of potassium iodide, if offsite response organizations policy) (Criterion 2.b.2).
  - **Exception:** An exception is not requested.

Core Capability: 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.

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The following critical tasks will be demonstrated at the State EOC, Hamilton County EOC, Bradley County EOC, and Joint Information Center.

Capability Target: Emergency Notification and Public Information

- **Critical Task:** Offsite response organizations use effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner (Criterion 1.a.1).
  - **Exception:** Joint Information Center players will be prepositioned in their assigned exercise locations. Players will not begin their assigned exercise roles until alert and notification is received.
- **Critical Task:** At least two (2) communications systems are available, at least one (1) operates properly, and communication links are established and maintained with appropriate locations. Communications capabilities are managed in support of emergency operations (Criterion 1.d.1).
  - **Exception:** It is anticipated that all but a few players will participate in the exercise virtually. As such, the use of the primary and backup communications systems identified in plans and procedures may not be demonstrated, but at least two (2) will be available and one (1) will operate properly.
- **Critical Task:** Equipment, maps, displays, monitoring instruments, dosimetry, potassium iodide, and other supplies are sufficient to support emergency operations (Criterion 1.e.1).
  - **Exception:** An exception is not requested.
- **Critical Task:** Impediments to evacuation are identified and resolved (Criterion 3.d.2).
  - **Exception:** Impediments to evacuation will be discussed with evaluators in the Hamilton County EOC and Bradley County EOC. How that information regarding impediments to evacuation is shared with the public will be discussed with evaluators in the Joint Information Center.
- **Critical Task:** Activities associated with primary alerting and notification of the public are completed in a timely manner following the initial decision by authorized offsite emergency officials to notify the public of an emergency situation. The initial instructional message to the public must include as a minimum the elements required by FEMA (Criterion 5.a.1).
  - **Exception:** An Emergency Alert System message will be developed but will not be transmitted nor broadcast. The State Emergency Information Director, or designee, will discuss with evaluators in the State EOC the procedures for formulating, approving, releasing, confirming receipt, acknowledging/validating, and broadcasting a message.
  - **Exception:** The outdoor warning system (i.e., sirens) will not be sounded. The State Emergency Information Director, or designee, will discuss with evaluators in the State EOC the procedures for sounding the sirens and a siren failure.
- **Critical Task:** Ensure offsite response organizations provide accurate emergency information and instructions to the public and the news media in a timely manner (Criterion 5.b.1).
  - **Exception:** An exception is not requested.

Capability: 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

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communities.

The following critical tasks will be demonstrated at the Radiological Monitoring Control Center, by Field Teams, and Radiochemistry Laboratory.

- **Critical Task:** Offsite response organizations use effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner (Criterion 1.a.1).
  - **Exception:** Field Teams will be prepositioned in their assigned exercise locations. Upon evaluator arrival team members will inventory equipment and conduct equipment operability checks prior to StartEx. Team members will demonstrate and discuss their actions with evaluators.
  - **Exception:** In order to comply with social distancing guidelines, the Division of Radiological Health will not be staffing the following position in the Radiological Monitoring Control Center: Administrative Assistant and Assistant DRH Coordinator.
- **Critical Task:** At least two (2) communications systems are available, at least one (1) operates properly, and communication links are established and maintained with appropriate locations. Communications capabilities are managed in support of emergency operations (Criterion 1.d.1).
  - **Exception:** It is anticipated that all but a few players will participate in the exercise virtually. As such, the use of the primary and backup communications systems identified in plans and procedures may not be demonstrated, but at least two (2) will be available and one (1) will operate properly.
- **Critical Task:** Equipment, maps, displays, monitoring instruments, dosimetry, potassium iodide, and other supplies are sufficient to support emergency operations (Criterion 1.e.1).
  - **Exception:** An exception is not requested.
- **Critical Task:** Offsite response organizations use a decision-making process, considering relevant factors and appropriate coordination, to ensure that an exposure control system, including the use of potassium iodide, is in place for emergency workers including provisions to authorize radiation exposure in excess of administrative limits or protective action guides (Criterion 2.a.1).
  - **Exception:** An exception is not requested.
- **Critical Task:** The offsite response organizations issue appropriate dosimetry, potassium iodide and procedures, and manage radiological exposure to emergency workers in accordance with the plans and procedures. Emergency workers periodically and at the end of each mission read their dosimeters and record the readings on the appropriate exposure record or chart. Offsite response organizations maintain appropriate record-keeping of the administration of potassium iodide to emergency workers (Criterion 3.a.1).
  - **Exception:** One prop to simulate permanent record dosimetry and one to simulate potassium iodide may be used. Issuance of dosimetry and potassium iodide to emergency workers will be discussed with Field Team evaluators.
- **Critical Task:** Field teams (2 or more) are managed to obtain sufficient information to help characterize the release and to control radiation exposure (Criterion 4.a.2).
  - **Exception:** An exception is not requested.
- **Critical Task:** Ambient radiation measurements are made and recorded at appropriate locations, and radioiodine and particulate samples are collected. Teams will move to an appropriate low

background location to determine whether any significant (as specified in the plan and/or procedures) amount of radioactivity has been collected on the sampling media (Criterion 4.a.3).

- **Exception:** To avoid players, controllers and evaluators traveling in a single vehicle, and to comply with social distancing guidelines, field teams will remain at the Tennessee Air National Guard Complex at Bonny Oaks. Field Teams will make and record ambient radiation measurements on complex property.

- **Critical Task:** The laboratory is capable of performing required radiological analyses to support protective action decisions (Criterion 4.c.1).
  - **Exception:** The Tennessee Department of Health, Radiochemistry Laboratory will be evaluated out of sequence on September 17, 2020 at 0900.
  - **Exception:** The Tennessee Department of Health, Radiochemistry Laboratory will pre-stage samples in order to demonstrate the required radiological analysis.

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