AFTER ACTION REPORT

FOR THE 2010 SEQUOYAH NUCLEAR POWER PLANT RADIOLOGICAL EMERGENCY PREPAREDNESS, FULL PLUME PHASE EMERGENCY PLANNING ZONE EXERCISE

November 17, 2010
Radiological Emergency Preparedness (REP) Program

FEMA

Published March 2011

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Administrative Handling Instructions

1. This After Action Report (AAR) for the 2010 Sequoyah Nuclear Power Plant (SQN) Radiological Emergency Preparedness, Full Plume Phase Emergency Planning Zone (EPZ) Exercise is considered a public document.

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Executive Summary

On November 17, 2010, the Department of Homeland Security/Federal Emergency Management Agency (FEMA) Region IV Radiological Emergency Preparedness (REP) Program staff evaluated a full plume exposure pathway exercise in the Emergency Planning Zone for the Sequoyah Nuclear Power Plant (SQN). The evaluation of out of sequence (OOS) activities conducted October 21-22 and November 3-4, 2010 are included in this report. The OOS activities included: protective actions for schools; reception and congregate care centers; emergency worker and equipment monitoring and decontamination. SQN is operated by Tennessee Valley Authority (TVA) and is located in Hamilton County, Tennessee near the City of Soddy Daisy. The 10-mile EPZ is divided into four quadrants and affects both risk Counties of Bradley and Hamilton.

FEMA's overall objective of the exercise was to assess the level of State and local preparedness in responding to a radiological emergency at SQN. The purpose of this report is to analyze exercise results based on the assessment of target capabilities. This exercise was held in accordance with FEMA's policies and guidance concerning the exercise of State and local radiological emergency response plans (RERP) and procedures. The evaluation team conducted this exercise using Homeland Security Exercise and Evaluation Program (HSEEP) methodology. The previous Federal evaluated exercise was conducted on November 15-16, 2008. The qualifying emergency preparedness exercise was conducted in June 1980.

Officials and representatives from the State of Tennessee, Bradley, and Hamilton Counties, the Nuclear Regulatory Commission (NRC) Region II, and TVA, as well as numerous volunteers participated in this exercise. The cooperation and teamwork of the participants was evident throughout all the phases of the exercise. FEMA wishes to acknowledge the efforts and hard work of the many individuals who participated in the success of this exercise. FEMA would also like to acknowledge the enthusiasm and contributions of the exercise planning team during the design of the exercise. The introduction of new products and concepts into the design phase of the exercise was embraced by the team, and they exhibited an eagerness to improve emergency management and response at all levels.

During this exercise, FEMA did not identify any Deficiencies; however, one Area Requiring Corrective Action (ARCA) was identified. The ARCA involved Hamilton County's inability to properly monitor and decontaminate emergency worker's vehicles. This ARCA was re-demonstrated on January 26, 2011 and was corrected. Overall, State and local organizations demonstrated knowledge of their emergency response plans and procedures and successfully implemented them. Communications were identified as a general strength throughout the exercise. Not only was the communications equipment interoperable and functional, but the personnel utilizing it kept everyone well informed and helped to maintain situational awareness across the board. The evaluation team noted great progress in the coordination of activities between the State, counties, and all other response entities.

The objectives for the 2010 SQN REP Exercise were as follows:

- **Objective 1:** Successfully demonstrate the ability to manage emergency operations through the mobilization of personnel, direction and control of the incident, and appropriate equipment, supplies and communications.

- **Objective 2:** Provide appropriate protective action decisions to protect the health and safety of emergency workers and the public.

- **Objective 3:** Demonstrate activities associated with the implementation of protective action decisions such as schools and special needs relocation, establishment of traffic and access control points, and Potassium Iodide distribution and ingestion.

- **Objective 4:** Demonstrate the equipment, procedures, and management associated with plume phase field measurement and analysis.

- **Objective 5:** Promptly notify the public of the emergency through Prompt Notification System, and continue to provide timely and accurate information utilizing the Emergency Alert System and the media. Demonstrate a backup notification method.

- **Objective 6:** Conduct a demonstration of operations at support facilities including monitoring and decontamination stations, shelters, and hospitals.

These objectives encompass the REP Exercise Evaluation Criteria as negotiated in the Extent of Play Agreement.

FEMA will provide an Improvement Plan (IP) to the State of Tennessee that detail Strengths and Areas for Improvement observed during the exercise. The IP will be published under a separate cover and classified For Official Use Only (FOUO) in compliance with HSEEP standards.

Section 1: Exercise Overview

1.1 Exercise Details

Exercise Name
2010 Sequoyah Nuclear Power (SQN) Plant Radiological Emergency Preparedness (REP) Evaluated Exercise

Type of Exercise
Full-Scale Exercise

Exercise Out of Sequence/Off Scenario Dates
October 21-22, November 3-4, and November 16, 2010

Exercise Date
November 17, 2010

Locations
See Appendix D for a complete listing of locations that supported exercise activities.

Sponsors

Tennessee Emergency Management Agency
3041 Sidco Drive
Nashville, Tennessee 37204-1502

Tennessee Valley Authority
1101 Market Street
Chattanooga, Tennessee 37402-2801

Program
FEMA REP Program

Mission
Response

Capabilities
- Emergency Operations Center Management
- Emergency Public Information and Warning
- Citizen Evacuation and Shelter in Place
- Emergency Public Safety and Security Response
- Hazardous Materials Response and Decontamination
- Mass Care

Scenario Type
REP, Full Plume Phase EPZ

1.2 Exercise Planning Team Leadership

Role	Name	Agency
Exercise Director	Gary Lima	TEMA
Lead Controller	David Green	TEMA
Lead Evaluator	Matthew Bradley	DHS/FEMA Region IV
Exercise Logistics	David Nash	TEMA
Evaluation Supervisor	Kevin Keyes	DHS/FEMA Region IV
Scenario Development Lead	Kenneth King	TVA
Agency Representative	Walt Lee	TVA
Agency Representative	Bill Tittle	Hamilton County
Agency Representative	Wayne Stuntz	Hamilton County
Agency Representative	Jeff Gunter	Bradley County
Agency Representative	Betty Hamby	McMinn County
Agency Representative	Tom Trotter	McMinn County
Agency Representative	Tony Finnell	Meigs County
Agency Representative	Billy Cranfield	Rhea County
Agency Representative	Liz Flanagan	TN DHEC
Agency Representative	Bruce House	TN DHEC

1.3 Participating Organizations

The following agencies, organizations, and units of government participated in the 2010 SQN REP Exercise.

State of Tennessee

• Military Department
  ▪ Tennessee Emergency Management Agency
• Tennessee Department of Environment and Conservation
  ▪ Division of Radiological Health
  ▪ Division of State Parks
• Tennessee Department of Health
  ▪ Division of Food and General Sanitation
• Tennessee Department of Agriculture
  ▪ Division of Forestry
• Tennessee Department of Safety
  ▪ Tennessee Highway Patrol
• Tennessee Department of Human Services
• Tennessee Department of Transportation
• Tennessee Wildlife Resources Agency
• Tennessee Department of Tourism Development

Bradley County, Tennessee

• Bradley County Mayor • Cleveland Mayor • Cleveland City Manager • Cleveland/Bradley County Emergency Management Agency • Bradley County Fire and Rescue Service • Bradley County Sherriff's Office • Bradley County Department of Education • Bradley County Road Department • Bradley County 911 • Bradley County Health Department • Bradley County Emergency Medical Services • Cleveland Police Department • Cleveland Public Works • Cleveland Utilities Department • Cleveland/Bradley County Auxiliary Communications Service
Hamilton County, Tennessee
• Hamilton County Office of Emergency Services • Hamilton County Sherriff's Office • Hamilton County Health Department • Hamilton County Highway Department • Hamilton County Emergency Medical Service • Hamilton County Property Assessor's Office • Hamilton County Department of Education • Hamilton County 911 • Hamilton County Geographic Information System • Hamilton County Auxiliary Communications Service • Chattanooga Police Department • Chattanooga Fire Department • Chattanooga/Hamilton County Rescue Squad • Tri-Com Volunteer Fire Department
Federal
• Tennessee Valley Authority • Nuclear Regulatory Commission
Non-Governmental Organizations
• Salvation Army • American Red Cross, Hamilton County Chapter • American Red Cross, Bradley County Chapter • Volunteer State Rescue Service • AT&T • Verizon • Voluntary Organizations Active in Disaster (VOAD) • Sky Ridge Medical Center • Olin Corporation

Section 2: Exercise Design Summary

2.1 Exercise Purpose and Design

The Department of Homeland Security (DHS)/Federal Emergency Management Agency (FEMA) administers the Radiological Emergency Preparedness (REP) Program pursuant to the regulations found in Title 44 Code of Federal Regulation (CFR) parts 350, 351 and 352. 44 CFR 350 codifies 16 planning standards that form the basis for radiological emergency response planning for licensee, State, tribal and local governments impacted by the Emergency Planning Zones (EPZ) established for each nuclear power plant site in the United States. 44 CFR 350 sets forth the mechanisms for the formal review and approval of State, Tribal and local government Radiological Emergency Response Plans (RERPs) and procedures by DHS/FEMA. One of the REP program cornerstones established by these regulations is the biennial exercise of offsite response capabilities. During these exercises State, Tribal and local governments demonstrate their abilities to implement their plans and procedures to protect the health and safety of the public in the event of a radiological emergency at the nuclear plant.

The 2010 Sequoyah Nuclear Power Plant (SQN) REP exercise was designed utilizing the Homeland Security Exercise and Evaluation Program (HSEEP). HSEEP is a capabilities and performance-based exercise program which provides a standardized policy, methodology, and terminology for exercises. The use of HSEEP is intended to ensure that the REP program conforms to established best practices and helps provide unity and consistency of effort for exercises at all levels of government. Prior to the exercise, the design team conducted planning meetings on a regular basis which focused on identifying objectives, designing the scenario, creating documentation, coordinating logistics, planning exercise conduct, and selecting an evaluation and improvement methodology.

The results of this exercise together with the review of the RERPs and procedures and verification of the periodic requirements set forth in NUREG-0654/FEMA-REP-1 through the Annual Letter of Certification and staff assistance visits enable FEMA to provide a statement with the transmission of this final AAR to the NRC that State, Tribal and local plans and preparedness are: (1) adequate to protect the health and safety of the public living in the vicinity of the nuclear power plant by providing reasonable assurance that appropriate protective measures can be taken offsite in the event of a radiological emergency; and (2) capable of being implemented.

June 20, 1980 the State of Tennessee formally submitted the Multi-Jurisdictional Radiological Emergency Response Plan for the SQN to FEMA Region IV. Formal approval of this plan was granted by FEMA on August 7, 1980 in accordance with 44 CFR 350.

A REP exercise was evaluated on November 17, 2010, and included evaluations of the following out of sequence activities:
October 21, 2010

- Emergency Worker and Equipment Monitoring and Decontamination, conducted at Red Bank High School in Hamilton County
- Reception and Congregate Care Center, conducted at Brainerd High School in Hamilton County

October 22, 2010

- Reception and Congregate Care Center, conducted at Chattanooga High School in Hamilton County
- Reception and Congregate Care Center, conducted at Dalewood Middle School in Hamilton County

November 3, 2010

- Protective Actions for Schools, conducted by interview at the following schools in Hamilton County: Hixson Middle School, Sequoyah High School, Soddy-Daisy Middle School, and McConnell Elementary School

November 4, 2010

- Protective Actions for Schools, conducted by interview at the following schools in Hamilton County: Ooltewah High School, Browns Middle School, and Harrison Elementary School

November 16, 2010

- Protective Actions for Schools, conducted by interview at Prospect Elementary School in Bradley County

2.2 FEMA Exercise Objectives and Capabilities

Capabilities-based planning allows for exercise planning teams to develop exercise objectives and observe exercise outcomes through a framework of specific action items that were derived from the Target Capabilities List (TCL). The capabilities listed below form the foundation for the organization of all FEMA Region IV REP Program objectives and observations in this exercise.

- **Emergency Operations Center (EOC) Management:** Is the capability to provide multi-agency coordination (MAC) for incident management by activating and operating an EOC for a pre-planned or no-notice event. EOC Management includes EOC activation, notification, staffing, and deactivation; management, direction, control, and coordination of response and recovery activities; coordination of efforts among neighboring governments at each level and among local, regional, State, and Federal EOCs; coordination public information and warning; and maintenance of the information and communication necessary for coordinating response and recovery activities.

- **Emergency Public Information and Warning**: Is the capability that includes public information, alert/warning and notification. It involves developing, coordinating, and disseminating information to the public, coordinating officials, and incident management and responders across all jurisdictions and disciplines effectively under all hazard conditions.

- **Citizen Evacuation and Shelter in Place:** Is the capability to prepare for, ensure communication of, and immediately execute the safe and effective sheltering-in-place of an at-risk population (and companion animals), and/or the organized and managed evacuation of the at-risk population (and companion animals) to areas of safe refuge in response to a potentially or actually dangerous environment. In addition, this capability involves the safe reentry of the population where feasible.

- **Emergency Public Safety and Security Response:** Is the capability to reduce the impact and consequences of an incident or major event by securing the affected area, including crime/incident scene preservation issues as appropriate, safely diverting the public from hazards, providing security support to other response operations and properties, and sustaining operations from response through recovery. Public Safety and Security Response requires coordination among officials from law enforcement, fire, and Emergency Medical Services.

- **Hazardous Materials Response and Decontamination:** Is the capability to assess and manage the consequences of a hazardous materials release, either accidental or as part of a terrorist attack. It includes testing and identifying all likely hazardous substances onsite; ensuring that responders have protective clothing and equipment; conducting rescue operations to remove affected victims from the hazardous environment; conducting geographical survey searches of suspected sources or contamination spreads and establishing isolation perimeters; mitigating the effects of hazardous materials, decontaminating on-site victims, responders, and equipment; coordinating off-site decontamination with relevant agencies, and notifying environmental, health, and law enforcement agencies having jurisdiction for the incident to begin implementation of their standard evidence collection and investigation procedures.

- **Mass Care:** Is the capability to provide immediate shelter, feeding centers, basic first aid, bulk distribution of needed items, and related services to persons affected by a large-scale incident, including special needs populations. Special needs populations include individuals with physical or mental disabilities who require medical attention or personal care beyond basic first aid. Other special-needs populations include non-English speaking populations that may need to have information presented in other languages. The mass care capability also provides for pet care/handling through local government and appropriate animal-related organizations. Mass care is usually performed by nongovernmental organizations (NGO), such as the American Red Cross, or by local government-sponsored volunteer efforts, such as Citizen Corps. Special-needs populations are generally the responsibility of local government, with medical needs addressed by the medical community and/or its alternate care facilities. State and Federal entities also play a role in public and environmental health by ensuring safe conditions, safe food, potable water, sanitation, clean air, etc.

Additionally, each capability is linked to several corresponding activities and tasks to provide additional detail. Based upon the identified exercise objectives, the following capabilities and associated activities were evaluated.

- **Objective 1:** Successfully demonstrate the ability to manage emergency operations through the mobilization of personnel, direction and control of the incident, and appropriate equipment, supplies, and communications.
    - **Capability: EOC Management -** Activate EOC/MACC/IOF; Direct EOC/MACC/IOF Tactical Operations; Provide EOC/MACC/IOF Connectivity;
- **Objective 2:** Provide appropriate protective action decisions to protect the health and safety of emergency workers and the public.
    - **Capability: EOC Management -** Gather and Provide Information; Identify and Address Issues; and Support and Coordinate Response
    - **Capability: Emergency Public Information and Warning -** Manage Emergency Public Information and Warnings; Activate Emergency Public Information, Alert/Warning, and Notification Plans; Issue Emergency Warnings
- **Objective 3:** Demonstrate activities associated with the implementation of protective action decisions such as schools and special needs relocation, establishment of traffic and access control points, and Potassium Iodide (KI) distribution and ingestion.
    - **Capability: EOC Management -** Direct EOC Tactical Operations; Gather and Provide Information; and Identify and Address Issues
    - **Capability: Emergency Public Safety and Security Response -** Activate Public Safety and Security Response; Control Traffic, Crowd, and Scene; Command and Control Public Safety and Security Response Operations
    - **Capability: Citizen Evacuation and Shelter-in-Place -** Direct Evacuation and/or In-Place Protection Operations; Activate Evacuation and/or In-Place Protection
- **Objective 4:** Demonstrate the equipment, procedures, and management associated with plume phase field measurement and analysis.
    - **Capability: Hazardous Materials Response and Decontamination –** Site Management and Control; Assess Hazard and Evaluate Risk
- **Objective 5:** Promptly notify the public of the emergency through the Prompt Notification System, and continue to provide timely and accurate information

utilizing the Emergency Alert System and the media. Demonstrate a backup notification method.

- **Capability: Emergency Public Information and Warning –** Manage Emergency Public Information and Warnings; Activate Emergency Public Information, Alert/Warning, and Notification Plans; Establish JIS; Issue Emergency Warnings; Conduct Media Relations; Conduct Media Relations; and Provide Public Rumor Control.

- **Objective 6:** Conduct a demonstration of operations at support facilities including monitoring and decontamination stations, shelters, and hospitals.

  - **Capability: Hazardous Materials Response and Decontamination –** Provide Equipment and Supplies to Support Operations; Implement Exposure Control; Conduct Monitoring and Decontamination
  - **Capability: Mass Care (Sheltering, Feeding, Related Services) -** Establish Shelter Operations

2.3 Scenario Summary

This Exercise was conducted with the Sequoyah Plant Simulator in the interactive mode. Times given were for planning purposes only. Actual times did vary due to dynamic response of the Simulator.

INITIAL CONDITIONS:
UNIT-I:
• 100% power for the last 3.5 days. The core is at BOL. The Boron concentration is 1112 ppm. Core burn up is 1000 MWD/MTU.
• Work results in release of explosive gas.

UNIT-2:
• As is.

METEROLOGICAL DATA

	WD (deg)			WS (m/s)			Stability Class			
Time	**U**	**I**	**L**	**U**	**I**	**L**	**U-L**	**U-I**	**I-L**	**Precip (mm/h)**
0800-0900	337	339	335	6.2	4.8	3.1	D	D	D	0.0
1000-1100	320	322	317	7.3	5.9	3.8	B	D	D	0.0
1200-1300	318	321	319	5.1	4.5	3.0	D	D	D	0.0
1400-1500	310	312	311	6.9	5.5	3.4	D	D	D	0.0

COMMON:
At about two minutes (T=08:02 EST) into the exercise, it is reported to Operations that damage has occurred which is releasing flammable gas into an area of the Auxiliary

Building.

At about ten minutes (T=08: I 0 EST) into the exercise, information about an explosive atmosphere in the Auxiliary Building is reported to Operations. An ALERT condition exists due to EAL 4.3 (Unplanned release of Flammable Gas within a facility structure containing safety related equipment or associated with safe operation of the plant.

At about twenty five minutes (T=08:25 EST) into the exercise, an ALERT should be declared based on EAL 4.3.

At about one hour forty minutes (T=09:40 EST) into the exercise, the loop 3 Reactor Coolant Pump (RCP) rotor locks and a large break LOCA occurs. The reactor should trip. When subcooling is lost, conditions exist for EAL 1.2.2L (RCS leak results in subcooling < 40°). Enough fuel clad failures occur over the next few minutes due to thermal and pressure stresses such that the RCS coolant activity Dose Equivalent Iodine 131(DEI) exceeds 300 *µC/gm.* When containment accident monitors exceed 29 R/hr then conditions exist for EAL 1.1.5. Conditions then exist for a SAE based on the loss of two fission product barriers, the fuel clad barrier and the RCS barrier.

At about one hour fifty five minutes (T=09:55 EST) into the exercise, a SAE should be declared based on EAL 1.1.5L and EAL 1.2.2L.

At about three hours and ten minutes (T=11:10 EST) into the exercise, a break occurs on the "A" RHR injection line outside containment and begins leaking into the pipe chase in the Auxiliary building. Once area radiation monitors or ventilation monitors adjacent to containment begin to respond then conditions exist for 1.3.4P (Unexpected valid increase in area or ventilation monitors adjacent to containment with LOCA in containment). After these conditions are met, then conditions exist for a GE based on EAL I .1.5L, EAL 1.2.2L, and 1.3.4P.

At about six hours (T=14:00 EST) the exercise will end.

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 November 17, 2010 plume exercise and Out of Sequence (OOS) interviews and demonstrations of October 21-22, November 3-4, and November 16, 2010. Exercise criteria are listed by number and the demonstration status of those criteria are indicated by the use of the following terms:

- Met (No Deficiency or Areas Requiring Corrective Action (ARCAs) assess and no unresolved ARCAs from prior exercise)
- ARCAs assessed or unresolved ARCAs from previous exercises
- Deficiency assessed
- Plan Issues
- Not Demonstrated

3.2 Capability Summaries

3.2.1 State Of Tennessee

3.2.1.1 State Emergency Operations Center

Emergency Operations Center Management Capability Summary:
The Tennessee Emergency Management Agency (TEMA) Director and his staff successfully demonstrated this capability. The Mission Control Center (MCC) is a component of the Tennessee State Emergency Operations Center (SEOC). One of the MCC's primary roles is initial notification. Upon notification of an Alert ECL, the MCC Director recommended a Level 3 activation which is a partial activation of the SEOC and declared the MCC operational. Upon arrival, the Direction and Control Officer (DACO) was notified of the Alert and Level 3 activation, and the MCC Director successfully handed off direction and control. The DACO then notified the Tennessee Adjutant General and the Governor of the situation.

The MCC Director established and organized the MCC in a timely manner. Fixed Nuclear Facility Checklists per Emergency Classification Level (ECL) were implemented by the operations staff as directed. Plans and procedures were available for staff and were utilized to clarify uncertainties in protocol and procedures. The State used a dialogic pager system to notify staff to report to the EOC; however exercise participants were prepositioned in accordance with the extent of play. The Lead Operations Officer received all notifications and informed the MCC Director without delay. Briefings were conducted every hour or as new information became available.

The DACO provided direction and control of the overall response effort and ensured the staffing of Emergency Support Functions (ESFs). Protective Action Recommendations

(PAR) were gathered and coordinated with risk counties and other support functions in a timely manner to support emergency operations. Issues were thoroughly discussed between ESFs and key personnel using current plans, procedures, recommendations and meteorological data.

The evaluation of current evacuation plans and associated activities was favorable. Needed corrections were detected in some Emergency Alert System (EAS) messages and were adjusted prior to transmission. The use of appropriate evacuation routes was carefully examined. All evacuees were directed away from the plume on routes identified in plans. Tennessee Highway Patrol quickly established Traffic control points (TCP) to support the evacuation in both counties during the event and communications were maintained with state resources assigned to support this activity. All traffic flow information was provided through local channels to county emergency operation centers (EOC).

The SEOC is a well-equipped facility capable of supporting emergency response operations for an incident involving the Sequoyah Nuclear Plant (SQN). Communications were redundant and provided reliable interface with all affected jurisdictions and agencies. Communications were clear, acknowledged and understood by receivers and no communications failures were observed throughout the exercise. Document Control personnel effectively managed the duplication, distribution, and control of emergency notification forms, news releases, and EAS messages.

The DACO used the SEOC Emergency Support Function (ESF) staff collectively as a decision base by moving progressively around the room gathering information to provide to risk counties during “meet-me” conference calls. This decision-making process incorporated ESF and risk counties input into the protective action decisions (PAD) process.

The demonstrations met the requirements of this capability and REP criteria: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, and 2.b.2, 3.b.1, 3.c.1, 3.d.1

Public Information and Warning Capability Summary:
The SEOC staff successfully demonstrated the capability to notify and warn the public of a simulated emergency at SQN by coordinating the sounding of sirens and release of EAS messages. Coordination was accomplished via conference call, WebEOC and telephone with the risk counties of Hamilton and Bradley, Tennessee Valley Authority (TVA), and the Joint Information Center (JIC). Prior to the activation of the JIC, management and coordination of public information through the media is the responsibility of the State Emergency Information Director (SEID). Activation of the SEID and associated Public Information Officer (PIO) support was completed as part of the SEOC activation process.

Before the JIC was activated, the SEOC issued one news release and answered one public inquiry call. After JIC activation, the SEOC PIO staff maintained close contact and coordination with the JIC.

TEMA activated the sirens three times during the exercise and issued seven EAS messages. Each siren activation and EAS message broadcast was completed in a timely manner and without any undue delay. The EAS messages contained the minimum elements as required by current FEMA REP guidance.

The demonstrations met the requirements of this capability and REP criteria: 5.a.1, 5.b.1

3.2.1.2 Dose Assessment

HazMat Response and Decontamination Capability Summary:
This capability was successfully demonstrated by the Tennessee Department of Environment and Conservation (TDEC), Division of Radiological Health (DRH) Dose Assessment Group. Staff was prepositioned at the SEOC in accordance with the extent of play agreement. The Dose Assessment Group occupied sufficient space, possessed equipment, maps, displays, and other supplies to support emergency operations, and successfully established, maintained, and managed communications capabilities. The DRH Radiation Control Officer (RCO) demonstrated effective direction and control over dose assessment and protective action recommendation (PAR) development for the general public, and used a decision-making process, considering relevant factors and appropriate coordination to ensure that an exposure control system, including the use of potassium iodide (KI), was in place for emergency workers.

The demonstrations met the requirements of this capability and REP criteria: 1.a.1, 1.b.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.2, 4.a.2

3.2.1.3 Radiological Monitoring Control Center

HazMat Response and Decontamination Capability Summary:
In accordance with the extent-of-play agreement, Radiological Monitoring Coordination Center (RMCC) staff were prepositioned at the Tennessee Air National Guard facility at Lovell Field in Chattanooga. The Radiological Monitoring Coordinator (RMC) and DRH Coordinator described the notification and mobilization process for RMCC staff. Upon arriving at the facility, RMCC staff signed in with TEMA personnel and received an emergency worker kit containing a permanent record dosimeter (PRD), a 0-20 R direct-reading dosimeter (DRD), and four 65 mg potassium iodide (KI) tablets. Field Monitoring Teams (FMT) and the sample coordination personnel received a similar kit which also included a 0-500 mR DRD.

The RMCC had adequate maps, displays, equipment and supplies to support its operation. Communication capabilities included two fax machines, several commercial telephones, a dedicated “ring down” telephone with a direct connection to the RMC Contact at the SEOC, and a radio linked to the Radiological Monitoring Team Radio Net. Staff also set up a laptop computer running WebEOC to monitor incident status. A TVA radio was available for use by a liaison from TVA to contact the Central Emergency

Control Center (CECC). Field teams used mobile vehicle-mounted radios, handheld radios, and cell phones to communicate with the RMCC. All communications systems worked properly throughout the exercise.

The RMC provided leadership for the RMCC and worked closely with the DRH Coordinator and other RMCC staff to develop FMT strategies. Initial FMT assignments were determined and the RMC also decided that FMT members were to ingest KI. The RMCC is located outside the 10-mile EPZ, so RMCC staff did not ingest KI. The DRH Coordinator briefed all FMTs in the parking lot prior to departure. The briefing included a discussion of plant conditions, current meteorological data, and assigned FMT positions. FMTs were also instructed to ingest their KI and to complete radio checks with the RMCC.

The RMCC staff frequently discussed the movement of FMTs to best identify the location of the radiological plume and FMTs were given instructions by radio or telephone following decisions by the RMC. FMTs reported monitoring data to the RMCC by radio or telephone and data was recorded by RMCC staff on an Environs Radiological Monitoring Record form. Each time a FMT reported monitoring data, they also reported dosimeter readings. FMTs were required to report monitoring data at least every 30 minutes, so the RMCC was also able to track dosimeter levels at that frequency. When interviewed, the RMC and DRH Coordinator were knowledgeable of DRH turn back limits and the process for authorizing exposures in excess of those limits.

The RMC maintained frequent communications with the RMC Contact to share information and to determine sampling priorities. The RMC also kept the DRH PIO at the JIC updated on FMT data. DRH assigned a Field Health Physicist to the Field Coordination Center (FCC) located in the room adjacent to RMCC. The Field Health Physicist frequently came to the RMCC throughout the exercise for updates. The TVA liaison in the RMCC provided frequent updates on plant conditions as well as TVA field team data.

The RMCC staff was generally focused on determining the edges of the plume and directed FMTs accordingly. However, at one point, FMT 4 traversed the plume and provided plume centerline readings as well as edge locations. The RMC directed FMT 4 to return to the centerline location to take an air sample. When FMT 4 arrived at the centerline location, they reported that radiation levels had increased at that location. Those levels were still well below the team's turn back limits. The RMC, however, directed the team to return to the edge of the plume and take an air sample there rather than at the centerline location.

Sample coordination personnel set up the sample receipt area and performed instrument operational checks in accordance with their procedure. As each FMT returned from the field, the Sample Coordinator directed the FMT member through the sample receipt process. Samples were logged in, monitored for contamination and radiation levels, and designated for transport to the appropriate laboratory for analysis.

The demonstrations met the requirements of this capability and REP criteria: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.1, 3.a.1, 3.b.1, 4.a.2

3.2.1.4 Radiological Field Monitoring Teams

HazMat Response and Decontamination Capability Summary:
This capability was successfully demonstrated by the DRH FMTs during the SQN REP Exercise. Four FMTs were pre-positioned at the Air National Guard Armory in Chattanooga. The FMT equipment, supplies and vehicles were adequate to support radiological monitoring and emergency worker functions. Two communications systems were available, tested, and verified operational before deployment. The FMTs were provided an operational briefing by the DRH Coordinator at the RMCC. Field team instruments were within calibration dates and properly checked for operation. Instrumentation was sufficient to perform airborne particulate and radioiodine sampling. Ambient direct radiation field measurements were also performed. The FMTs performed hazard assessment by traversing downwind locations in a strategic manner, as directed by the RMCC staff, to identify and quantify the magnitude of the simulated release. The teams demonstrated appropriate surveying, sampling, and counting techniques in order to properly track the plume. Ambient readings and personnel exposures were routinely communicated to the RMCC. Airborne radioactivity was assessed using an air sampler fitted with a particulate filter and a silver zeolite cartridge. FMT members were aware of the purpose of KI and the correct dosages to take. KI supplies, instructions, and documentation were all satisfactorily demonstrated. Emergency worker exposure control was satisfactorily demonstrated with appropriate dosimetry use and proper documentation.

The demonstrations met the requirements of this capability and REP criteria: 1a1, 1d1, 1.e.1, 3.a.1, 3.b.1, 4.a.1 and 4.a.3.

3.2.1.5 Field Coordination Center

Emergency Operations Center Management Capability Summary:
This capability was successfully demonstrated at the Air National Guard facility at Lovell Field, East TEMA FCC for resource support and logistics between TEMA and risk counties. The FCC Director dispatched Area Coordinators to both counties after the Alert ECL. The Area Coordinators were responsible for briefing the director on resources needed for the counties. The FCC Director and Deputy Director provided frequent briefings to FCC staff on plant conditions, ECL changes, and response activities. During the briefings they used checklists to ensure appropriate procedures were followed. They demonstrated strong leadership and thorough knowledge of the State Emergency Response Plans and procedures. Each work station was equipped with a telephone, laptop computer, and copies of plans. Information Technology support was available on site and communications were sufficient to support operations. The FCC staff clearly understood their responsibilities, followed their procedures, and performed their

functions in a coordinated and timely manner.

The demonstrations met the requirements of this capability and REP criteria: 1.a.1, 1.c.1, 1.d.1, 1.e.1

3.2.1.6 Local Primary 1 (LP-1) EAS Station

Emergency Public Information and Warning Capability Summary:
The Director of Engineering for WUSY FM 100.7 was interviewed concerning the designated Local Primary 1(LP-1) Radio Station's role in broadcasting EAS messages to the public. While the station operates 24/7, there are times when the station is not manned. During the times when the station is not manned, calls for WUSY are automatically forwarded to a Cincinnati, Ohio radio station which is the EOC for WUSY. TEMA calls WUSY from the SEOC to ensure that the EAS message is received by WUSY and the public is notified. TEMA contacts WUSY daily to ensure that the direct ring down phone is functioning properly. There is a phone tree list which has all WUSY personnel listed to ensure someone is available at all times. Upon notification, whoever is contacted first must report to the radio station to receive the EAS message. Messages are recorded by SEOC staff in the MCC and provided to the radio station via "ring down" phone, voice mail, or other electronic means. The message is repeated as often as necessary per the instructions of TEMA. The station can broadcast an EAS message for any type of emergency. If there is a power loss, the station can remain operational utilizing its large generator.

The demonstrations met the requirements of this capability and REP criteria: 1.d.1, 1.e.1, 5.a.1

3.2.2 Joint Operations

3.2.2.1 Central Emergency Control Center

Emergency Operations Center Management Capability Summary:
The Sequoyah CECC is located in the utility operator's Corporate Office and serves as the interface between the utility operator and the responding State and local government organizations.

The TEMA and DRH deployed senior staff members to the CECC to serve in a liaison capacity between the SEOC and the utility operator.

DRH successfully demonstrated its capability to effectively conduct independent accident analyses, develop protective actions, and implement these protective actions in a manner consistent with the preservation of public health and safety. All of the State officials deployed to the CECC were well trained, followed plans and procedures, and fulfilled their responsibilities in a professional manner. Tennessee State officials developed and maintained an outstanding, professional relationship with the utility operator.

Communications, coordination, and team work between and among all stakeholders was outstanding.

The demonstrations met the requirements of this capability and REP criteria: 2.b.1.

3.2.2.2 Joint Information Center

Emergency Public Information and Warning Capability Summary:
The SQN JIC is located in the TVA Missionary Ridge Building, 1101 Market Street, Chattanooga, Tennessee, about 15 miles southwest of the plant. TVA provides the preponderance of support materials to facilitate JIC and media operations in the JIC operations room, the Citizen Information Center/Rumor Control, media monitoring, the media update desk, media work area, and media briefing room. All areas are well equipped and have redundancy in communications with landlines, cell phones, facsimiles, internet connectivity and state and utility radio systems, all of which were operational.

The SQN JIC is truly a joint organization lead by co-directors provided by the State and TVA. It is considered to be one of the best in the region due to the extensive coordination. Written guidance provided in Annex D (Public Information and Education), The Tennessee Multi-Jurisdictional Radiological Emergency Response Plan (MJRERP) for the SQN, and the Standard Operating Procedure (SOP) for the Sequoyah/Watts Bar Nuclear Plants JIC clearly lay out the operations and roles of government and utility personnel assigned to the JIC. The procedures identified in the aforementioned were successfully demonstrated during the November 17, 2010 plume phase exercise.

In accordance with the extent of play agreement the JIC personnel were pre-positioned. None-the-less, to replicate provisions of the MJRERP, the JIC did not activate until after site area emergency (SAE) had been declared. At 0943, in light of deteriorating plant conditions the TVA JIC Director (TVA-JICD) discussed the pending activation of the JIC with the State-JICD (S-JICD). Subsequent to the utility's declaration of SAE (0947) TVA personnel began arriving in the facility and the JIC was declared operational by the co-directors at 1015. In view of the pre-positioning, the Assistant S-JICD was interviewed on the process by which State personnel are alerted, assembled and deployed to Chattanooga from the SEOC in Nashville. His description of activities was in consonance with what is described in Annex D (Public Information and Education) to the MJRERP.

Upon activation, the JIC is the central location for the coordination and dissemination of emergency information while the SEOC maintains the responsibility for emergency instructions (e.g., protective action decision coordination/EAS message dissemination). Effective implementation of the joint information system (JIS) requires close coordination between the State and local PIOs in the JIC and the respective SEOC/local EOCs. The degree of coordination observed was exceptional both internal to the JIC and

with external agencies and offices. Protocols for the reviewing and approval of messages by both co-directors was adhered to and accomplished without adversely affecting timely message release. There was some question as to the efficacy of TVA/SEOC emergency information message coordination prior to the JIC activation.

Although the JIC's role in the exercise entailed a relatively short period of time (less than four hours), twelve messages were prepared and two media briefings were conducted. The coordination prior to the media briefings prepared the TVA and government spokespersons to address pertinent topics regarding the protection of the public. This was facilitated by the efforts of the Citizen Information Center/Rumor Control staff who maintained an operational awareness that allowed them to respond to public queries and identify topics that needed to be addressed.

The demonstration met the requirements of this capability and criteria: 1.a.1, 1.c.1, 1.d.1, 1.e.1 and 5.b.1.

3.2.3 Risk Jurisdictions

3.2.3.1 Bradley County, Tennessee

3.2.3.1.1 Emergency Operations Center

Emergency Operations Center Management Capability Summary:
The Cleveland/Bradley County Emergency Management Agency Director and his staff successfully demonstrated the capability to provide multi-agency coordination and incident management for the SQN exercise. Key staff and Agency Leads were pre-positioned for this exercise as agreed in the extent of play. Representatives from various county agencies, volunteers, and elected local officials supported the response from the EOC.

The equipment in the EOC was sufficient to accomplish the duties required of it. Each workstation included a laptop computer running WebEOC, a 24 line telephone and a microphone connected to a public address system. The Fixed Nuclear Facility (FNF) Planner serves a dual role which includes the position of County Radiation Officer (RO). The RO issued emergency worker dosimetry kits and provided a radiological briefing to Sheriff's deputies involved in traffic control points and back-up route alerting activities. The briefing covered the use of dosimetry and exposure control measures. Sufficient amounts of emergency worker dosimetry kits each consisting of self-reading and permanent record dosimeters, potassium iodide tablets and radiation record cards were on hand in the EOC. Additional administrative and other supplies were available to support emergency operations.

Primary and alternative communications with State and county agencies were tested throughout the exercise. Coordination with the SEOC, FCC, JIC, and Hamilton County was done over the Meet Me Line, a commercial telephone conference system. The

Director broadcast these calls over the EOC's public address system allowing all agencies/staff to listen and follow the decisions in real time. Following the conference calls, the Director held a staff update where each ESF was allowed to speak and update the EOC staff on their actions in support of the exercise. The Hot Ring Down telephone was used once by the Emergency Management Director to establish communications with the SEOC before moving to pre-scheduled Meet Me Line calls for the remainder of the exercise. The agencies performed their coordination role primarily using commercial telephones; however most if not all had cellular phones for backup. Cleveland/Bradley County Radio Amateur Civil Service (RACES) volunteers utilized a series of UHF/VHF/HF radios to maintain an alternate communication network with other Amateur Radio operators at Skyridge Hospital, Hamilton County EOC, and the State EOC in Nashville.

Both the State and Bradley County used WebEOC software to help in the management of the EOC's. WebEOC was utilized to manage, share, exchange, and track resource requests among each of the different Agencies. The County WebEOC administrator followed these requests and ensured key events are captured in the significant events log. The County uses its own version of this software and must navigate between the two separate systems. The TEMA liaison helped the Director by capturing key events from the States WebEOC significant events log and relaying these events to his attention. This was done periodically throughout the exercise and helped the Director maintain situational awareness. During the exercise, the Bradley County WebEOC experienced network problems, and was off-line from 0947 until 1040. The EOC staff successfully transitioned smoothly back to the old, hand-written message system, and then back to WebEOC without operational disruption. After the outage, all notes and messages were transcribed back into WebEOC.

The flow of information through the EOC was seamless with the Director conducting frequent staff updates as conditions changed at the plant. All personnel in the EOC performed professionally and displayed excellent teamwork. The Mayors of the City of Cleveland and Bradley County along with the City Manager and Assistant Mayor actively participated in the exercise. Their participation improves their understanding of emergency operations and provides them with an understanding of the responsibilities of their employees during a radiological incident. The Director's proactive leadership contributed to the success of the Bradley County EOC.

The demonstrations met the requirements of this capability and REP criteria: 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, 5.a.3

Emergency Public Information and Warning Capability Summary:
The primary method of notifying the public of an emergency at SQN is a fixed siren system. A total of 108 sirens are located throughout the 10 mile EPZ in Bradley and Hamilton Counties. The decision to activate the siren system is the responsibility of the SEOC or the Hamilton County EOC if the situation dictates. PARs and PADs were made by the SEOC with input from the risk counties. Following the simulated activation of the sirens, a pre-scripted EAS message was broadcast through the LP-1 radio station WUSY

in Chattanooga and the NOAA weather radios (simulated). The sirens were activated a total of three times during the exercise.

The Bradley County PIO was dispatched to the JIC early in the exercise. An assistant PIO worked in the EOC to coordinate the press releases with the PIO. This was done using WebEOC. The assistant PIO provided the press releases to the Director for approval. Both the Mayor's and City Manager provided input on the press releases prior to their final approval. Prior to the activation of the JIC, Bradley County was responsible for releasing information to the public through the media.

The demonstrations met the requirements of this capability and REP criteria: 5.a.1, 5.b.1

3.2.3.1.2 Traffic and Access Control Points

Public Safety and Security Response Capability Summary:
The Bradley County Sheriff's Department, through interview, successfully demonstrated this capability. In response to a notification for security assets, the Sheriff's Deputy assessed, coordinated and managed the establishment of a TCP to direct/redirect traffic and residents out of the affected area. The Sheriff's Deputy was well equipped with redundant communications, the appropriate equipment to effectively manage traffic, and accurate instructions for the public. The Deputy was well trained and knowledgeable of his roles and responsibilities, including location of County TCPs, evacuation routes, shelters, emergency worker monitoring and decontamination centers and removal of impediments. His knowledge of radiological exposure control was good, and was further enhanced by a detailed radiological safety briefing by the County RO.

The demonstrations met the requirements of this capability and REP criteria: 1.a.1, 1.d.1, 1.e.1, 3.a.1, 3.b.1, 3.d.1 and 3.d.2

3.2.3.1.3 Backup Route Alerting

Emergency Public Information and Warning Capability Summary:
A Deputy from the Bradley County Sheriff's Department successfully demonstrated back up route alerting and notification during the SQN exercise. In accordance with established plans, and after notification of a failed siren (#60), the Deputy was dispatched to the EOC for a mission brief. He was provided a map with the route to run and detailed instructions for warning the public. The County RO issued the Deputy dosimetry and briefed him on exposure control measures. He was knowledgeable of the county plans, procedures and necessary equipment. His experience and familiarity of the county coupled with the use of area maps and instructions provided in the briefing enabled him to complete the route within a timely manner. The Bradley County Sheriff's Department successfully demonstrated their ability to provide adequate warning and notification to the public in the event of a radiological incident at SQN.

The demonstrations met the requirements of this capability and REP criteria: 1.a.1, 1.d.1, 1.e.1, 3.a.1, 3.b.1, 5.a.3

3.2.3.1.4 Protective Actions for Schools

Citizen Evacuation and Shelter in Place Capability Summary:
An interview was conducted with the Prospect Elementary School Principal and Safety Resource Officer on November 16, 2010. Prospect Elementary School has plans and procedures detailing actions to be taken in the event of a radiological emergency at the SQN. The Principal and Safety Resource Officer were knowledge and understood the plans and what actions they would perform during an emergency at SQN. The Principal stated that students would relocate to Ocoee Middle School. The Principal and Resource Officer were professional and well prepared.

The demonstrations met the requirements of this capability and REP criteria: 3.c.2

3.2.3.2 Hamilton County, Tennessee

3.2.3.2.1 Emergency Operations Center

Emergency Operations Center Management Capability Summary:
Hamilton County successfully demonstrated the capability EOC Management by activating and staffing the EOC, providing direction, and control of response elements, and coordinating response efforts with the SEOC and neighboring counties.

The EOC was activated at the Alert ECL. The EOC Manager alerted county government officials via land line of the EOC activation, however the other EOC staff were pre-positioned in accordance with the extent of play agreement. The EOC was briefed by the EOC Manager on current response and plant conditions after each Meet Me Line conference call with the State and the Risk County. The EOC Manager maintained direction and control of the EOC and regularly consulted with EOC staff present during the exercise.

Redundant communication systems were available and tested during the exercise. Routine conference calls were conducted via the Meet Me Line to discuss PARs, PADs, siren activations, and messages to the public. The EOC Director actively participated in all discussions and demonstrated sound decision making capabilities that incorporated the health, safety and well being of the county residence. A great deal of time was allocated to discuss PADs for school children such as the relocation of endangered schools and the early dismissal of host schools. This was a precautionary measure based on degrading plant conditions taken at the Alert ECL.

The EOC is well equipped to support operations. WebEOC provides event status boards and task assignments to all the agencies at the EOC. The status board from the county and the state were projected to a ceiling mounted projection board for the EOC personnel to view at all times. This aided EOC staff in maintaining situational awareness of resources needed to support implementation of PADs. The County Radiological Officer assigned Radiological Kits and briefed emergency workers before all missions. All

personnel within the EOC were knowledgeable of plans and procedures and successfully demonstrated their implementation.

The demonstrations met the requirements of this capability and REP criteria: 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, 5.a.3

Prior ARCA - Resolved: Issue No.: 058-08-1.C.1-A-03

Condition: In 2008, an ARCA was issued to Hamilton County for issuing protective actions to residence within the EPZ without confirming resources were in place to support those actions or coordinating the decision with the State or adjacent risk county. Hamilton County decided to evacuate Quadrants B & C within Hamilton County and notified the residents using their Reverse 911 system. However, their press release indicated that all of Quadrants B & C were being evacuated which included areas in Bradley County. Hamilton County activated their relocation centers, but did not confirm that resources were in place to support the evacuation prior to implementing the PAD. Hamilton County did not notify the State or Bradley County of this PAD until the next Meet Me Line conference call.

Corrective action demonstrated: Hamilton County demonstrated the ability to coordinate PADs with the State and the other Risk County. Coordinated decisions included the relocation and early dismissal of endangered schools, the evacuation of discussed quadrants, and the issuance and ingestion of KI. All the protective actions were discussed during conference calls via the Meet Me Line.

Emergency Public Information and Warning Capability Summary:
Hamilton County Emergency Services had trained personnel to successfully activate plans, procedures, and policies for coordinating, managing, and disseminating public information and warnings, to include the primary warning system (the fixed siren notification system) and to initiate backup route alerting as necessary. All Press Releases and EAS messages were internally coordinated and approved by the EOC Manager. No press releases were issued prior to the activation of the JIC. Once the JIC was activated, four news releases were issued by the Hamilton County PIO located at the JIC. The Hamilton County PIOs located in the EOC and the JIC maintained close communication throughout the exercise and coordinated all public information activities. Each news release contained accurate information and instructions including evacuation instructions, reception center locations, and pet and livestock information.

The demonstrations met the requirements of this capability and REP criteria: 5.a.1, 5.b.1

3.2.3.2.2 Traffic and Access Control Points

Public Safety and Security Response Capability Summary:

A Hamilton County Sheriff's Department deputy initiated select TCPs immediately at Site Area Emergency. The Hamilton County Highway Department and the Tennessee Department of Transportation were placed on standby to provide barricades, signage, and heavy equipment in support of the TCP mission when requested.

Before being dispatched to the TCP by the Sheriff's Department, a county representative in the EOC and a deputy were provided a mission briefing by their supervisor and a safety briefing by the RO. The safety briefing covered radiological exposure controls, dosimetry, administrative and turn back values. KI authorization and precautions were also discussed. The responding Deputy Sheriff was able to maintain uninterrupted communications with the county EOC through use of a mobile 800 MHz radio in his car, a portable 800 MHz radio which he carried and a county Verizon cell phone.

The responding deputy demonstrated knowledge of his role and responsibilities as it relates to TCP operations. The deputy was extremely knowledgeable of the pre-designated emergency evacuation routes, locations of reception and congregate care facilities, medical service facilities, and emergency worker decontamination stations. Traffic control operations in Hamilton County effectively secured the impacted area, diverted the public from the hazards, and directed them to areas where they would be safe and could receive additional assistance.

The demonstrations met the requirements of this capability and REP criteria: 1.a.1, 1.d.1, 1.e.1, 3.a.1, 3.b.1, 3.d.1, 3.d.2

3.2.3.2.3 Waterway Clearance

Public Safety and Security Response Capability Summary:
The Volunteer State Rescue Services (VSRS) personnel successfully demonstrated the capability to safely divert the public from hazards while coordinating with other agencies.

All VSRS officers had 800 MHz portable radios, pagers, marine radios on their boats, and personal cell phones for communicating with other agencies. VSRS had five boats available and 20 volunteers to staff the boats as necessary.

The VSRS Chief was very knowledgeable of the river and all the boat launches. With 20 volunteers, the Chief stated that she had ample staff to handle an extended response on the river if it was necessary. She stated that she would divert her personnel to put their boats in at different points to insure a timely response. The Chief and her officer notified Hamilton County dispatch when they entered the water, they checked in with dispatch while on the river and they notified dispatch when they left the river.

The Chief and the officer were knowledgeable of their dosimetry, exposure limits, and actions to take, at what levels, as well as when to take KI. The five Rescue One Connector boats powered by a 35 horse power motor are sufficient to conduct river clearing in a pre-designated area but would not be sufficient to clear the entire 10-mile

area. VSRS stated that other agencies such as Tennessee Wildlife and Resource Agency would also have boats on the river to assist in clearing the river. The VSRS personal knew how to approach other boats and what instructions to give the boaters to leave the area. However, if a boater refused to obey VSRS personnel they have no legal authority to order any boater to leave the area. VSRS would have to contact the Tennessee Wildlife and Resource Agency or a law enforcement agency to come to the area and assist in getting the boaters to leave.

The demonstrations met the requirements of this capability and REP criteria: 1.a.1, 1.d.1, 1.e.1, 3.a.1, 3.b.1, 5.a.3

3.2.3.2.4 Hamilton County Backup Route Alerting

Emergency Public Information and Warning Capability Summary:
Hamilton County Sheriff's Department Deputies successfully demonstrated the capability to warn the public of an incident at SQN following a failure of the primary notification system. The deputy had an 800 MHz radio and a personal cell phone for communications. A pre-scripted message was supplied by the Hamilton County EOC for repeating while driving the route. Additional vehicles and personnel were available at the staging area.

Sheriff's Department personnel were knowledgeable of how to conduct route alerting. The deputies would be deployed from a staging area and additional officers could be obtained from school resource officers or from the reserves. The deputy knew whom to contact when his assignment was completed and where to go if his vehicle was contaminated. He was knowledgeable of his dosimetry, exposure limits, and KI. He knew the locations of all emergency worker decontamination areas and who to contact for additional information. The deputy had maps of the siren areas to insure he completed the correct routes.

The demonstrations met the requirements of this capability and REP criteria: 1.a.1, 1.d.1, 1.e.1, 3.a.1, 3.b.1, 5.a.3

3.2.3.2.5 Reception and Congregate Care Center

HazMat Response and Decontamination Capability Summary:
Reception and congregate care of evacuees was demonstrated at the following locations: Brainerd High School, Chattanooga High School, and Dalewood Middle School. The Hamilton County Health Department (HCHD) made excellent use of each facility to monitor and decontaminate evacuees while minimizing the spread of contamination. A briefing was provided to all monitoring and decontamination personnel prior to operations. All equipment was operationally checked and personal protective equipment (PPE) was displayed for demonstration purposes. Adequate personnel were available to provide instructions to those going through decontamination and signs were utilized to assist with protocol. Each station was provided a "position book" that provided guidance

and instructions about procedures for that station. Evacuees were decontaminated in an effective and efficient manner. All HCHD personnel were well trained and it was evident through their demonstrations.

The demonstrations met the requirements of this capability and REP criteria: 1.e.1, 3.a.1, 6.a.1

Mass Care (Sheltering, Feeding and Related Services) Capability Summary:
The Chattanooga Chapter of the American Red Cross (ARC) demonstrated their ability to establish and maintain shelter operations. Registration was set up in two locations to ensure all evacuees entering the facility were properly monitored, and if necessary, decontaminated. Everyone entering the facility was registered using standard ARC forms. Information was gathered about medical conditions and a nurse was on hand to provide care if needed. A station was provided to input evacuee's information into the ARC database to check on or provide information to loved ones. Four cots, blankets, and pillows were displayed in the gymnasium to show what would be provided to evacuees. The Southern Baptist Men's group would be depended upon for much of the food needs, and agreements with local restaurants are utilized as a backup. An ARC mobile food truck was also displayed for the demonstration. A representative from the Hamilton County Auxiliary Communications System was on hand to provide communications between the shelter and the Hamilton County EOC.

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

3.2.3.2.6 Protective Actions for Schools

Citizen Evacuation and Shelter in Place Capability Summary:
The school district successfully demonstrated its ability to protect the student and staff populations in the EPZ, through interviews with the school Principals, Assistant Principals and Safety Officer, conducted out of sequence on November 3 and 4, 2010.

Upon notification of an Alert ECL by the school Superintendent or designee, busses would be pre-staged at the schools. At SAE the students would be loaded onto their busses and transported to assigned relocation schools outside the 10 mile EPZ. The school Principals and Assistant Principals interviewed had a well thought out relocation plan and were knowledgeable about district procedures including reunification policies. Procedures included actions to ensure the safe relocation of special needs, medication for children and the safe return of children to their parents or care takers. The school district utilized a robust communications system ensuring organized and redundant communications capability. The plan was well understood and organized. The Principals and Assistant Principals interviewed were enthusiastic, professional and had planned well for the well being of their students, staff and faculty in the event of an emergency situation.

The demonstrations met the requirements of this capability and REP criteria: 3.c.2

3.2.3.2.7 Emergency Worker and Vehicle Monitoring and Decontamination

HazMat Response and Decontamination Capability Summary:
Monitoring and decontamination of emergency workers and equipment (EWD) was demonstrated in two areas of the school. The Tennessee Division of Forestry (DOF) demonstrated monitoring and decontamination of vehicles in the parking lot and the HCHD demonstrated monitoring and decontamination of emergency workers at the school entrance and locker room. All personnel conducting operations were equipped with appropriate monitoring equipment and contamination control equipment. Each person had a 0-20R or 0-200 mR DRD, one PRD, four doses of 65mg KI, a record card for dosimetry readings, and instructions on their uses.

The HCHD made excellent use of the facility to monitor and decontaminate emergency workers while minimizing the spread of contamination. A briefing was provided to all personnel prior to operations. All equipment was operationally checked and PPE was displayed for demonstration purposes. Adequate personnel were available to provide instructions to those going through decontamination and signs were utilized to assist with protocol. Each station was provided a "position book" that provided guidance and instructions about procedures for that station. Emergency workers were decontaminated in an effective and efficient manner. All HCHD personnel were well trained and it was evident through their demonstration.

Upon entering the facility, emergency workers were not provided adequate instructions about where their vehicle should go or what they should do. There were also no signs to advise them. The vehicle monitoring personnel were not familiar with the Ludlum 3s and required retraining in order to perform operability checks on the instrumentation and acquire a background reading. Monitoring of the vehicle was conducted at a faster pace and further distance with the survey instrument than the plan's specifications. The layout of the vehicle monitoring station was adequate for minimizing the spread of contamination and the exterior of vehicles were decontaminated in a thorough fashion; however, there was the potential for cross contamination due to confusion of protocol. No PPE or supplies were available to decontaminate the interior of the vehicles.

On January 26, 2011, a re-demonstration of the vehicle monitoring and decontamination was performed. All of the above mentioned issues were corrected and demonstrated in an effective manner. Excellent use of barrels, cones, and signs helped direct vehicles in the appropriate direction and eliminated much of the confusion noted during the previous demonstration. All personnel were familiar with their instrumentation and used it to thoroughly monitor incoming vehicles for radiological contamination. The facility was well equipped with PPE and decontamination supplies and it was utilized throughout the drill to safely decontaminate vehicles. The DOF confidently executed their mission. Their training and understanding of their duties were evident during this successful demonstration.

The demonstrations met the requirements of this capability and REP criteria: 1.e.1, 3.a.1, 6.a.1, 6.b.1

Areas Requiring Corrective Action: 6.b.1

Issue No.: 058-10-6.b.1-A-01

Condition: Vital equipment such as PPE, decontamination equipment, cones, markers, signs, and contaminated item receptacles were not used or available by the DOF staff performing vehicle decontamination. Also there is the potential for cross contamination after vehicles are decontaminated and the emergency worker returns to the vehicle to move it to the designated parking area. Once the outside of the vehicle is decontaminated the passenger was asked to exit the vehicle so the interior could be monitored. If this area is found to be contaminated, the interior of the vehicle is then decontaminated. The emergency worker is then asked to return to the vehicle in order to move it to the designated parking area. This procedure raised concerns about re-contaminating the vehicle after it was deemed "clean" by placing an unmonitored emergency worker back into the vehicle. The plan states that upon exiting the vehicle the occupant should report directly to the monitoring station. The point was made that if the vehicle's interior could not be decontaminated, they would want the original occupant to move the vehicle to avoid contaminating staff. While this point is valid, it should only be conducted if the interior of the vehicle cannot be decontaminated.

Possible Cause: DOF was unable to participate in either the annual training or the walkthrough prior to the exercise due to forest fires. They were familiar with their responsibilities at the EWD site, however due to the inability to participate in the refresher training, they were not familiar with procedures and protocols that served to provide smooth execution and transition of activities. Proper execution of these activities could have mitigated confusion and potential cross contamination.

Reference:

1. TNMJRERP Hamilton County Implementing Procedures, Section XXVII, Attachment 1
2. TNMJRERP, Addendum, Section 20

Effect: Not only would the above mentioned vital equipment serve to make the EWD process much clearer for staff and evacuees, but they are also necessary for the health and safety of the personnel conducting decontamination. Cones, signs, and barricades are necessary to provide guidance to emergency workers entering the facility. This is especially

important at this facility since clear guidance was not provided to Emergency workers and there was confusion amongst staff about where cars should go.

Proper PPE is required to avoid the potential of contaminating the decontamination staff. Also, without appropriate equipment for decontaminating vehicle's interiors, vehicles would have to be impounded and would not be available during the response. Furthermore, transportation arrangements would have to be made for the occupant of that vehicle.

The procedures used by DOF to transport vehicles from decon to the "clean" parking lot allow for cross contamination of both the vehicle and the occupant. This procedure defeats the purpose of the EWD site, and allows potentially contaminated vehicles and individuals to leave the premises. Although the cross contamination amounts would be minimal, the goal is to eliminate contamination leaving the facility.

Recommendations:

1. Insure the availability of the Decontamination Kit for the DOF to insure the appropriate resources are available for the operation.
2. Update the Addendum, Section 20 to include equipment for decontaminating the interior of vehicles. Although the plan states that a vacuum with appropriate filter will be utilized, this may be an expensive option. Simple and inexpensive alternatives can be used to decontaminate the cloth interior of vehicles such as lint rollers.
3. Once the vehicle is decontaminated it should be moved to the clean lot by decon personnel and the original vehicle occupant can immediately proceed to the monitoring station as specified in the plan.
4. Update plans to include how vehicles which cannot be contaminated will be relocated.

Corrective Actions Demonstrated: A re-demonstration of monitoring and decontamination of emergency worker's vehicles was conducted January 26, 2011 at 1530 in the parking lot of Red Bank High School. All of the above mentioned issues were corrected and demonstrated in an effective manner. Excellent use of barrels, cones, and signs helped direct vehicles in the appropriate direction and eliminated much of the confusion noted during the previous demonstration. All personnel were familiar with their instrumentation and used it to thoroughly monitor incoming vehicles for radiological contamination. The facility was well equipped with PPE and decontamination supplies and it was utilized throughout the drill to safely decontaminate vehicles. The DOF confidently executed their mission.

Their training and understanding of their duties were evident during this successful demonstration.

Section 4: Conclusion

Officials and representatives from the State of Tennessee, Bradley and Hamilton Counties, the Nuclear Regulatory Commission (NRC) Region II, and TVA, as well as numerous volunteers participated in this exercise. The cooperation and teamwork of the participants was evident throughout all the phases of the exercise. The Federal Emergency Management Agency (FEMA) wishes to acknowledge the efforts and hard work of the many individuals who participated in the success of this exercise. FEMA would also like to acknowledge the enthusiasm and contributions of the exercise planning team during the design of the exercise. The introduction of new products and concepts into the design phase of the exercise was embraced by the team, and they exhibited an eagerness to improve emergency management and response at all levels.

Overall, State and local organizations demonstrated knowledge of their emergency response plans and procedures and successfully implemented them. Communications were identified as a general strength throughout the exercise. Not only was the equipment interoperable and functional, but the personnel utilizing it kept everyone well informed and helped to maintain situational awareness across the board. The evaluation team noted great progress in the coordination of activities between the State, counties, and all other response entities. During this exercise, FEMA did not identify any Deficiencies; however, one Area Requiring Corrective Action (ARCA) was identified. The ARCA involved Hamilton County's inability to properly monitor and decontaminate emergency worker's vehicles. This ARCA was re-demonstrated on January 26, 2011 and was corrected.

Appendix B contains two tables. Both tables provide a summary of exercise results for all participating jurisdictions and functional entities. Table 2 presents the status of REP exercise criteria that were demonstrated during this exercise. Exercise criteria are listed by number. Table 3 presents the status of target capabilities and activities that were demonstrated during this exercise. The demonstration status of the criteria and capabilities is indicated by the use of the following letters:

M - Met (No Deficiency or ARCAs assessed and no unresolved Deficiency or ARCAs remain from prior exercises)

D - Deficiency assessed

A - ARCA(s) assessed or unresolved ARCA(s) from prior exercise(s)

N - Not Demonstrated (Reason explained in Subsection B)

Appendix A: Exercise Timeline

Table 1: Exercise Timeline

Emergency Classification Level or Event	Time Utility Declared	Time That Notification Was Received or Action Was Taken						
		SEOC	DOSE ASSESSMENT	RMCC	FCC	JIC	HAMILTON COUNTY	BRADLEY COUNTY
Unusual Event	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Alert	0817	0829	0836	0834	0830	N/A	0830	0831
Site Area Emergency	0947	1002	0954	0958	0948	0958	1000	1001
General Emergency	1121	1131	1128	1129	1125	1127	1130	1128
Simulated Radiological. Release Started	1110	1115	1115	1119	1119	1137	1128	1128
Simulated Radiological. Release Terminated	Ongoing	Ongoing	N/A	N/A	Ongoing	Ongoing	Ongoing	Ongoing
Facility Declared Operational	0859	0910	0859	N/A	0927	1015	0831	0945
Declaration of State of Emergency State	0837	0910	0951	N/A	0835	1158	0835	N/A
Local	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1210
Exercise Terminated	1400	1406	1403	1404	1402	1400	1400	1400
Early Precautionary Actions: Recall Busses		N/A	N/A	N/A	N/A	N/A	0831	0831
22 Schools in Hamilton County and 1 in Bradley County evacuated; River Clearance		0935	0935	N/A	0957	1008	0935	0935
1st Protective Action Decision: Evacuate A1, B1, C1 and D1		1004	1011	1015	1025	1004	1004	1004
1st Siren Activation		1025	1025	N/A	1025	1025	1025	1025
1st EAS Message: 7, 22, 103, 104		1025	N/A	N/A	1025	1025	1025	1025
2nd Protective Action Decision: Evacuate B, C; Shelter A, D; Ingest KI		1145	1201	1212	1149	1158	1145	1146
2nd Siren Activation		1210	1210	N/A	1210	1210	1210	1210
2nd EAS Messages: 10, 58, 105B		1210	N/A	N/A	1210	1210	1210	1210
3rd Protective Action Decision: Clarification on KI and Ingestion		1237	1211	N/A	1245	N/A	1237	1237
3rd Siren Activation		1245	1245	N/A	1245	N/A	1245	1245
3rd EAS Message: 102 (modified)		1245	N/A	N/A	1245	N/A	1245	1245
KI Decision Emergency Workers and General Public		1145	1201 – EW 1245 – GP	0945	1149	1158	1145	1146

Appendix B: Results Summary of Exercise Evaluation

Table 2: REP Criteria Evaluation Result Summary

ELEMENT/Sub-Element	SEOC	Dose Assessment	RMCC	FMTs	FCC	JIC	LP-1	CECC	Bradley County	Hamilton County
1. EMERGENCY OPERATIONS MANAGEMENT										
1.a.1. Mobilization	M	M	M	M	M	M			M	M
1.b.1. Facilities		M								
1.c.1. Direction and Control	M	M	M		M	M			M	M
1.d.1. Communications Equipment	M	M	M	M	M	M	M		M	M
1.e.1. Equipment & Supplies to Support Operations	M	M	M	M	M	M	M		M	M
2. PROTECTIVE ACTION DECISION MAKING										
2.a.1. Emergency Worker Exposure Control	M	M	M						M	M
2.b.1. Rad Assessment & PARs Based on Available Information		M	M					M		
2.b.2. Rad Assessment and PADs for the General Public	M	M							M	M
2.c.1. Protective Action Decisions for Special Populations									M	M
2.d.1. Rad Assessment & Decision Making for Ingestion Exposure										
2.e.1. Rad Assessment & Decision Making for Relocation, Re-entry & Return										
3. PROTECTIVE ACTION IMPLEMENTATION										
3.a.1. Implementation of Emergency Worker Control			M	M					M	M
3.b.1. Implementation of KI Decisions	M		M	M					M	M
3.c.1. Implementation of PADs for Special Populations	M								M	M
3.c.2. Implementation of PADs for Schools									M	M
3.d.1. Implementation of Traffic and Access Control	M								M	M
3.d.2. Impediments to Evacuation and Traffic and Access Control	M								M	M
3.e.1. Implementation of Ingestion Decisions Using Adequate Information										
3.e.2. Implementation of IP Decisions Showing Strategies & Instructional Materials										
3.f.1. Implementation of Relocation, Re-entry and Return Decisions										
4. FIELD MEASUREMENT and ANALYSIS										
4.a.1. Plume Phase Field Measurement & Analysis Equipment				M						
4.a.2. Plume Phase Field Measurement & Analysis Management		M	M							
4.a.3. Plume Phase Field Measurements & Analysis Procedures				M						
4.b.1. Post Plume Field Measurement & Analysis										
4.c.1. Laboratory Operations										
5 EMERGENCY NOTIFICATION & PUBLIC INFO										
5.a.1. Activation of Prompt Alert and Notification	M						M		M	M
5.a.2. Activation of Prompt Alert & Notification within 15 minutes (Fast Breaker)										
5.a.3. Activation of Prompt Alert and Notification Backup Alert and Notification									M	M
5.b.1. Emergency Info and Instructions for the Public and the Media	M					M			M	M
6. SUPPORT OPERATIONS/FACILITIES										
6.a.1. Monitoring and Decon of Evacuees and EWs & Registration of Evacuees										M
6.b.1. Monitoring and Decon of Emergency Worker Equipment										M
6.c.1. Temporary Care of Evacuees										M
6.d.1. Transport and Treatment of Contaminated Injured Individuals										M

Table 3: Target Capability Evaluation Result Summary

Capability / Activity	SEOC	Dose	RMCC	FMT	FCC	JIC	LP-1	CECC	Bradley County	Hamilton County
Emergency Operation Center Management	**M**				**M**			**M**	**M**	
Activate EOC	M				M			M	M	M
Direct EOC Tactical Operations	M				M			M	M	M
Gather and Provide Information	M				M			M	M	M
Identify and Address Issues	M				M			M	M	M
Prioritize and Provide Resources	M				M					
Provide EOC Connectivity	M				M			M	M	M
Support and Coordinate Response	M				M			M	M	M
Emergency Public Information and Warning	**M**					**M**	**M**		**M**	**M**
Manage Emergency Public Information and Warning	M					M	M		M	M
Activate Emergency Public Information, Alert/Warning and Notification	M					M			M	M
Establish JIS	M					M				
Issue Emergency Warnings	M					M	M		M	M
Conduct Media Relations	M					M			M	M
Provide Public Rumor Control	M					M			M	M
Citizen Evacuation and Shelter in Place									**M**	**M**
Activate Evacuation and/or Shelter in Place Protection									**M**	**M**
Direct Evacuation and/or Shelter In Place Protection									**M**	**M**
Emergency Public Safety and Security Response									**M**	**M**
Activate Public Safety and Security Response									M	M
Command and Control Public Safety and Security Response									M	M
Control Traffic, Crowd and Scene									M	M
Hazardous Materials Response and Decontamination		**M**	**M**	**M**						**M**
Site Management and Control		M	M	M						
Hazard Assessment and Risk Evaluation		M	M	M						
Mass Care										**M**
Establish Shelter Operations										M

Appendix C: Exercise Evaluator and Assignments

JURISDICTION	CAPABILITIES	CRITERIA	Evaluator
Tennessee Director: General James Bassham			
State Emergency Operations Center	EOC Management; Public Information and Warning;	1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.2, 3.b.1, 3.c.1, 3.d.1, 3.d.2, 5.a.1, 5.b.1	Gerald Mclemore J.T. Ackermann Lisa Rink Bob Gantt-ICF
Dose Assessment, Radiation Protection Section, SEOC	HazMat Response and Decontamination	1.a.1, 1.b.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.1, 2.b.2, 4.a.2	John Wills-ICF
Radiological Monitoring Coordination Center (RMCC)	HazMat Response and Decontamination	1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.1, 3.a.1, 3.b.1, 4.a.2	John Fill
Radiological Field Monitoring Team 1 Radiological Field Monitoring Team 2 Radiological Field Monitoring Team 3 Radiological Field Monitoring Team 4	HazMat Response and Decontamination	1.a.1, 1.d.1, 1.e.1, 3.a.1, 3.b.1, 4.a.1, 4.a.3	Joe Keller-ICF Alan Bevan-ICF Gary Snodgrass-ICF Mario Vigliani-ICF
East TEMA Field Coordination Center (FCC) Regional Director: Mr. Gary Ellis	EOC Management	1.a.1; 1.c.1; 1.d.1; 1.e.1 (2.a.1, 2.b.2, only if needed)	Robert Nash
Joint Information Center (JIC)	Public Information and Warning	1.a.1, 1.c.1, 1.d.1, 1.e.1, 5.b.1	Bill Larrabee Matthew Bradley
LP-1 WUSY FM 100.7 Chattanooga	Public Information and Warning	1.d.1, 1.e.1, 5.a.1	Lorenzo Lewis

JURISDICTION	CAPABILITIES	CRITERIA	Evaluator
Central Emergency Control Center / Emergency Operations Facility	EOC Management	2.b.1	Bob Trojanowski
RISK COUNTIES			
Bradley County- Director: Mr. Troy Spence			
Emergency Operations Center	EOC Management; Public Information and Warning	1.c.1, 2.a.1, 2.b.2, 2.c.1, 5.a.1 1.a.1, 1.d.1, 1.e.1, 3.a.1,3.b.1, 3.c.1, 3.c.2, 3.d.1, 3.d.2, 5.a.3, 5.b.1	Bob Spence Obhie Robinson
Traffic Control Points (interview)	Public Safety and Security Response	1.a.1, 1.d.1, 1.e.1, 3.a.1, 3.b.1, 3.d.1, 3.d.2	Ron Shaw
Backup Route Alerting	Public Information and Warning	1.a.1, 1.d.1, 1.e.1, 3.a.1, 3.b.1, 5.a.3,	Odis Spencer
Endangered School: Prospect Elementary School Nov. 16 2010	Citizen Evacuation and Shelter in Place	3.c.2	Robert Nash
Hamilton County- Chief EM: Mr. Bill Tittle			
Emergency Operations Center	EOC Management; Public Information and Warning	1.c.1, 2.a.1, 2.b.2, 2.c.1, 5.a.1 1.a.1, 1.d.1, 1.e.1, 3.a.1, 3.b.1, 3.c.1, 3.c.2, 3.d.1, 3.d.2, 5.a.3, 5.b.1	Alex Sera Mike Dolder

JURISDICTION	CAPABILITIES	CRITERIA	Evaluator
Traffic Control Points (interview)	Public Safety and Security Response	1.a.1, 1.d.1, 1.e.1, 3.a.1, 3.b.1, 3.d.1, 3.d.2	Walt Cushman
Waterway Warning	Public Information and Warning	1.a.1, 1.d.1, 1.e.1, 3.a.1, 3.b.1, 5.a.3	Joe Harworth
Reception Center: Brainerd High School Oct 21, 2010 Chattanooga High School Dalewood Middle School Oct 22, 2010	HazMat Response and Decontamination; Mass Care (Sheltering, Feeding, and Related Services)	1.e.1, 3.a.1, 6.a.1, 6.c.1	Matthew Bradley
Endangered School: Daisy Elementary School Brown Middle School Harrison Elementary McConnell Elementary Ooltewah High Sequoyah Vocational Falling Water Elementary Hixson Middle Nov 3-4, 2010	Citizen Evacuation and Shelter in Place	3.c.2	Matthew Bradley
Emergency Worker/Vehicle Decon: Red Bank High School Oct 21, 2010	HazMat Response and Decontamination	1.e.1, 3.a.1, 6.a.1 6.b.1	Matthew Bradley
MS-1 Parkridge Hospital Aug 20,2010 Memorial Hospital Aug 27, 2010	Emergency Triage and Pre-Hospital Treatment	1.a.1, 1.c.1, 1.d.1, 1.e.1, 3.a.1, 3.b.1, 6.d.1	Matt Bradley Gerald McLemore Matt Bradley John Fill

Appendix D: Exercise Locations

Exercise Locations	Out of Sequence Locations
Tennessee Emergency Management Agency (TEMA) State EOC (SEOC) 3041 Sidco Drive Nashville, TN 37204-1502 Phone: 615/741-0001	**Hamilton County EWD** Red Bank High School 640 Morrison Springs Road
Field Coordination Center (FCC) Air National Guard Facility 1001 Airport Road Chattanooga TN, 37421 Phone: 423/954-3100	**Hamilton County RCCC** Brainerd High School 1020 North Moore Road
Radiological Monitoring and Coordination Center (RMCC) Air National Guard Facility 1001 Airport Road Chattanooga TN, 37421 Phone: 423/954-3100	**Hamilton County RCCC** Chattanooga High School 1301 Dallas Road
Joint Information Center Missionary Ridge Building 1101 Market Street Chattanooga, TN 37402 Phone: 423/751-8580	**Hamilton County RCCC** Dalewood Middle School 1300 Shallowford Road
Tennessee Valley Authority (TVA) EOF Missionary Ridge Building 1101 Market Street Chattanooga, TN 37402 Phone: 423/751-8580	**Bradley County Endangered School** Prospect Elementary School 2450 Prospect School Road
LP-1 WUSY FM 100.7 7413 Old Lee Highway Chattanooga, TN 37421 Phone: 423.892.3333	**Hamilton County Endangered Schools** List available upon request
Hamilton County Emergency Operation Center (EOC) 3403 Amnicola Highway, Chattanooga, TN Chattanooga, TN 37406 Phone: 423/209-6900	
Bradley County Emergency Operation Center (EOC) 1555 Guthrie Drive NW Cleveland, TN 37311 Phone: 423/728-7289	

Appendix E: Extent of Play Agreement

THE STATE OF TENNESSEE
TENNESSEE EMERGENCY MANAGEMENT AGENCY
EMERGENCY OPERATIONS CENTER
MILITARY DEPARTMENT OF TENNESSEE
3041 SIDCO DRIVE, P.O. BOX 41502
NASHVILLE, TENNESSEE 37204-1502
(615) 741-0001

SEQUOYAH NUCLEAR PLANT 2010

GRADED EVALUATION EXERCISE

(PLUME EXPOSURE PATHWAY)

10-MILE EMERGENCY PLANNING ZONE (EPZ)

GOALS, CRITERIA, AND EXTENT-OF-PLAY

A full participation exercise will be conducted during the week of November 17, 2010 for the purpose of demonstrating an integrated radiological emergency response capability for the Sequoyah Nuclear Plant (SQN). The exercise will be a one-day event, encompassing response capabilities and requirements of the State, local governments, and the Tennessee Valley Authority (TVA) in the Emergency Planning Zone (EPZ).

The State of Tennessee and TVA have prepared goals addressing respective obligations. Both reflect the necessary interactions between the State and local governments as well as the utility as set forth in the Multi-Jurisdictional Radiological Emergency Response Plan (MJRERP) for the Sequoyah Nuclear Plant. The six (6) evaluation areas coupled with specific criteria to accomplish the following goals have been written in accordance with Interim REP Guidance 2002. In addition, the Homeland Security Exercise Evaluation Program (HSEEP) methodology will be used as a non-graded "pilot" for 2010; while maintaining the current FEMA approved evaluation program methodology for grading exercise performance.

NOTE: All exercise times are Eastern for Exercise Scenario. Ensure entry times annotate Eastern.

STATE AND LOCAL GOVERNMENT EXERCISE GOALS:

State and local government goals for this exercise are:

1. Test as well as evaluate the Sequoyah Nuclear Plant MJRERP concurrently with local government implementing procedures.

2. Demonstrate and assess the continued viability of the integrated radiological emergency response effort through State and local government offsite personnel implementing response actions in accordance with established guidance.

3. Ensure the safety of the general public through the issuance of protective action recommendations, as appropriate.

4. Demonstrate operational control of Field Monitoring Teams (FMT) and their sampling capabilities.

Evaluation Area 1 – Emergency Operations Management

1.a. Mobilization

Criterion 1.a.1: Offsite Response Organizations (ORO) should use effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner (NUREG-0654, A.4; D.3, 4; E.1; H.4.)

EXTENT-OF-PLAY- TEMA Operations will receive the emergency notification from TVA, verify the notification, contact, alert, and mobilize key personnel in a timely manner. Notification to adjacent states will also be demonstrated at the State Emergency Operations Center (SEOC), through the Operations section in accordance with the appropriate notification checklist as contained in the Sequoyah MJRERP. Facilities will be considered operational at the START OF EXERCISE (STARTEX) with assigned personnel at the SEOC, Field Coordination Center (FCC), Radiological Monitoring Control Center (RMCC) (to include Field Monitoring Teams), Central Emergency Control Center (CECC), Risk County (Hamilton and Bradley) Emergency Operations Centers (EOCs); already pre-positioned and in-place no later than 8:00 AM Eastern/7:00 AM Central.

The Joint Information Center (JIC) personnel, State/local and TVA, will be pre-positioned and in place no later than 9:00 AM Eastern/8:00 AM Central. SEOC, FCC, RMCC, CECC, JIC and Risk County EOC assigned personnel will remain on duty until END OF EXERCISE (ENDEX). Release of personnel will be phased and in accordance with performance measures and training objectives, determined as met per senior leadership, by facility location.

The SEOC DACO, FCC Director, RMC Coordinator, TEMA JIC Co-Director and Risk County EMA Directors will discuss with evaluators agency

capabilities/procedures to alert and mobilize staffs.

1.b. Facilities

Criterion 1.b.1: Facilities are sufficient to support the emergency response (NUREG-0654, H.3.).

EXTENT-OF-PLAY – Evaluators will "baseline" the Suiter Room for facility support of the Dose Assessment and TDEC functions (see definitions, page 12).

1.c. Direction and Control

Criterion 1.c.1: Key personnel with leadership roles for the ORO provide direction and control to that part of the overall response effort for which they are responsible (NUREG-0654, A.1.d; A.2.a, b.).

EXTENT-OF-PLAY – The Direction and Control Officer (DACO) at the SEOC will assume primary responsibility for direction and control working in concert with the FCC, JIC, and Risk County EOC Directors. The state will discuss the DACO's role at the FEMA (REP)/State briefing.

1.d. Communications Equipment

Criterion 1.d.1: At least two communications systems are available, at least one operates properly, and communications links are established and maintained with appropriate locations. Communications capabilities are managed in support of emergency operations (NUREG-0654, F.1, 2.).

EXTENT-OF-PLAY – The SEOC, FCC/RMCC, and Risk County EOCs will demonstrate primary and alternate communications systems. The communications network between the DRH field teams and RMCC and the RMCC and SEOC/CECC will be evaluated at the RMCC.

1.e. Equipment and Supplies to Support Operations

Criterion 1.e.1: Equipment, maps, displays, dosimetry, potassium iodide (KI), and other supplies are sufficient to support emergency operations (NUREG-0654, H.7, 10; J.10a, b, e; J.11; K.3.a.).

EXTENT-OF-PLAY – The SEOC, FCC, RMCC, JIC, and Risk County EOCs (Hamilton and Bradley) will be set up in accordance with established plans and procedures. KI will be simulated.

Evaluation Area 2 – Protective Action Decision Making

2.a. Emergency Worker Exposure Control

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

EXTENT-OF-PLAY – Demonstration will be accomplished by staff in the SEOC and Risk County EOCs.

2.b. Radiological assessment and Protective Action Recommendations and Decisions for the Plume Phase of the Emergency

Criterion 2.b.1: Appropriate protective action recommendations are based on available information and plant conditions, field monitoring data, and licensee and ORO dose projections, as well as knowledge of on-site and off-site environmental conditions (NUREG-0654, I.8, 10 and Supplement 3.).

EXTENT-OF-PLAY – Demonstration will be accomplished by staff in the SEOC, RMCC, CECC and Division of Radiological Health (DRH) personnel at the SEOC. This will be done in concert with TVA in the CECC, will perform dose assessment and independently validate dose projections. Radiological data for the field teams will be inserted by Controller injects and sent to the SEOC via the RMCC. Projections will be based on plant data provided by TVA and field radiation measurements.

Criterion 2.b.2: A decision-making process involving consideration of appropriate factors and necessary coordination is used to make protective action decisions (PAD) for the general public (including the recommendation for the use of KI, in ORO policy (NUREG-0654, J.9, 10.f, m.).

EXTENT-OF-PLAY – Demonstration will be accomplished by staff in the SEOC. The Chief Medical Officer for the Tennessee Department of Health, after consultation with DRH, will make all decisions concerning the administration of KI to emergency workers, institutionalized persons, and the general public. When a decision is made, instructions will be coordinated with the local EOCs.

2.c. Protection Action Decisions Consideration for the Protection of Special Populations

Criterion 2.c.1: Protective action decisions are made, as appropriate, for special population groups (NUREG-0654, J.9, 10.d, e.).

EXTENT-OF-PLAY – Decisions will be coordinated through affected Risk

County EOCs for understanding and implementation. Lists of the special needs as well as the resources necessary and available for evacuation are maintained by local EMA Directors and when requested, will be provided to the evaluator. Organizational procedures for executing protective actions will be discussed with evaluators. Contact with the Public School System will be actual. (See Criterion 3.c.2.)

2.d. Radiological Assessment and Decision-Making for the Ingestion Exposure Pathway

Criterion 2.d.1: Radiological consequences for the Emergency Planning Zone are assessed and appropriate protective action decisions are made based on the ORO planning criteria (NUREG-0654, I.8; J.11.).

EXTENT-OF-PLAY – Not applicable.

2.e. Radiological Assessment and Decision-Making Concerning Relocation, Re-entry, and Return

Criterion 2.e.1: Timely relocation, re-entry, and return decisions are made and coordinated as appropriate, based on assessments of the radiological conditions and criteria in the ORO's plan and/or procedures (NUREG-0654, A.1.b; I.10; M.1.).

EXTENT-OF-PLAY – Not applicable.

Evaluation Area 3 – Protective Action Implementation

3.a. Implementation of Emergency Worker Exposure Control

Criterion 3.a.1: The OROs issue appropriate dosimetry 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 (NUREG-0654, K.3.a, b.).

EXTENT-OF-PLAY – Determination of Emergency Worker (EW) exposure control will be done by interview with the evaluators (as pertains to direction and control.) EWs with assignments in the 10-mile EPZ and those involved in radiological monitoring and/or decontamination are issued EW dosimetry kits. Two (2) EWs in each of the Risk County EOCs (Hamilton and Bradley) will be available to evaluators for interview as to knowledge of recording dosimetry readings and actions to be taken when certain thresholds are reached, especially if the established turn-back value (2.5 R [5 R TEDE]) is met or exceeds exposure limits.

3.b. Implementation of KI Decision

Criterion 3.b.1: KI and appropriate instructions are available should a decision to recommend use of KI be made. Appropriate record keeping of the administration of KI for emergency workers and institutionalized individuals (not the general public) is maintained (NUREG-0654, E.7; J.10.e, f.).

EXTENT-OF-PLAY – Demonstration by staff in the SEOC will be based on projected exposure. The Chief Medical Officer for the Tennessee Department of Health is located at the SEOC. After consultation with DRH, the Chief Medical Officer will make all decisions concerning the administration of KI to emergency workers, institutionalized persons and the general public. EWs receive KI in an EW kit upon issue. When a decision is made, instructions will be relayed through the local EOCs and, if the general population is included, distribution of KI to shelters will be simulated. The Chief Medical Officer and other staff in the SEOC/Local EOCs will be available for procedural discussions with evaluators.

3.c. Implementation of Protective Actions for Special Populations

Criterion 3.c.1: Demonstration of this process by staff, i.e., DRH, EMS, TEMA, etc., in the SEOC will be based on projected exposure. Protective action decisions are implemented for special population groups within areas subject to protective actions (NUREG-0654, J.10.c, d, g.).

EXTENT-OF-PLAY – Demonstration of this process by staff in the SEOC, FCC and local EOCs will be based on projected contamination exposure levels. Decisions will be coordinated through affected local EOCs for understanding and implementation. Implementation of protective actions will be simulated, however procedural discussions between staff in the SEOC/local EOCs will be discussed with the evaluators. Local EOCs will provide the FEMA Evaluator with a list of transportation dependent individuals (special needs cards) and a list of transportation providers.

Criterion 3.c.2: OROs/school officials implement protective actions for schools (NUREG-0654, J.10.c, d, g).

EXTENT-OF-PLAY – Actual calls will be made to school officials for evaluation purposes. A list of endangered schools and telephone numbers will be provided by the Local EOC Director.

3.d. Implementation of Traffic and Access Control

Criterion 3.d.1: Appropriate traffic and access control is established. Accurate instructions are provided to traffic and access control personnel (NUREG-0654,

J.10.g, j).

EXTENT-OF-PLAY – Deployment of traffic and access control personnel will be simulated. However, EWs tasked with performing such duties will be interviewed in the parking lot at each of the Risk County EOCs (Hamilton and Bradley). When a roadblock or access point would be established, the EWs will be dispatched to the EOC rather than the location in the field. Interviews will cover all aspects of TCPs. EWs will be equipped with everything needed to establish and maintain traffic and access control points. Real time communications will be conducted with the EOCs.

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

EXTENT-OF-PLAY – Impediments will be discussed. Staff personnel at the County EOCs will be available to discuss procedures with the evaluators.

3.e. Implementation of EPZ Decisions

Criterion 3.e.1: The ORO demonstrates the availability and appropriate use of information regarding water, food supplies, milk, and agricultural production within the EPZ. (NUREG-0654, J.9, 11.).

EXTENT-OF-PLAY – Not applicable.

Criterion 3.e.2: Appropriate measures, strategies, and pre-printed instructional material are developed for implementing protective action decisions for contaminated water, food products, milk, and agricultural production (NUREG-0654, E.5, 7, J.9, 11.).

EXTENT-OF-PLAY – Not applicable.

3. f. Implementation of Relocation, Re-entry, and Return Decisions

Criterion 3.f.1: Decisions regarding controlled re-entry of EWs and relocation and return of the public are coordinated with appropriate organizations and implemented (NUREG-0654, M.1, 3.).

EXTENT-OF-PLAY – Not applicable.

Evaluation Area 4 – Field Measurement and Analysis

4.a. Plume Phase Field Measurements and Analysis

Criterion 4.a.1: The field teams are equipped to perform field measurements of

direct radiation exposure (cloud and ground shine) and to sample airborne radioiodine and particulates (NUREG-0654, H.10; I.7, 8, 9.).

EXTENT-OF-PLAY – Five (5) Field Teams, four (4) to be evaluated and one (1) in training, will utilize appropriate instrumentation and guidelines as established in DRH Standard Operating Procedures.

Criterion 4.a.2: Field teams are managed to obtain sufficient information to help characterize the release and to control radiation exposure (NUREG-0654, H.12; I.8, 11; J.10.a.).

EXTENT-OF-PLAY – (See Sub-paragraph 4.a.1.) All field teams will be under the direction of the RMCC.

Criterion 4.a.3: Ambient radiation measurements are made and recorded at appropriate locations, and radioiodine and particulate samples are collected. Teams must move to an appropriate low background location to determine whether any significant (as specified in the plan and/or procedures) amount of radioactivity has been collected on the sampling media (NUREG-0654, I.9.).

EXTENT-OF-PLAY – Four (4) field-monitoring teams will be evaluated. Each field team will obtain at least one air sample with a minimum sample volume of 10 cubic feet. The particulate filter and absorber media cartridge will be bagged, labeled and transported to a collection point for simulated transport to a laboratory. Field monitoring data will be injected by controllers supporting the exercise, and be transmitted by the teams to the RMCC over the normal communications network (portable hand-held/vehicle mounted radios). Cellular telephones will be utilized for back-up communications.

4.b. Post Plume Phase Field Measurements and Sampling

Criterion 4.b.1: Field teams will demonstrate the capability to make appropriate measurements and to collect appropriate samples (e.g., food crops, milk, water, vegetation, and soil) to support adequate assessments and protective action decision-making (NUREG-0654, I.8; J.11.).

EXTENT-OF-PLAY – Not applicable.

4.c. Laboratory Operations

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

EXTENT-OF-PLAY – Not applicable.

Evaluation Area 5 – Emergency Notification and Public Information

5.a. Activation of the Prompt Alert and Notification System

Criterion 5.a.1: Activities associated with primary alerting and notification of the public are completed in a timely manner following the initial decision by authorized off-site emergency officials to notify the public of an emergency situation. The initiation instructional message to the public must include as a minimum the elements required by current REP manual (10 CFR Part 50, Appendix E.IV.D and NUREG-0654, E.5,6,7).

EXTENT-OF-PLAY – The Emergency Alert System (EAS) will be activated simultaneously with the initial activation (silent test) of the Sequoyah Prompt Notification System (PNS) sirens with the simulated broadcast of a test message (EAS Message #1). After the initial activation of the PNS sirens and broadcast of the special test message, subsequent PNS activations and contact with the LP-1 EAS control station will be simulated. Should there be a difference between the State and TVA System Status Monitors (SSMs) or if siren failure/s is/are indicated, backup route alerting for the affected coverage areas will be simulated; except for Bradley County demonstrating a FEMA/TEMA selected route. Risk County law enforcement personnel will be available to discuss the routes and procedures that would be utilized in an actual emergency situation.

NOTE: There is no actual siren test. That is conducted the first Wednesday of each month. Records are on file with SEOC Operations.

Criterion 5.a.2: Reserved at this time. (NUREG-0654)

Criterion 5.a.3: Activities associated with FEMA approved exception areas (where applicable) are completed within 45 minutes following the initial decision by authorized off-site emergency officials to notify the public of an emergency situation. Backup alert and notification of the public is completed within 45 minutes following the detection by the ORO of a failure of the primary alert and notification system (NUREG-0654, E.6, Appendix 3.B.2.c).

EXTENT-OF-PLAY – One (1) law enforcement officer will discuss with the evaluators procedures for back up route alerting (one (1) law enforcement officer will discuss TCPs under Criterion 3.d.1.) Only Bradley County will send a law enforcement officer with a FEMA evaluator to travel along a pre-designated evacuation route affected by Siren # (FEMA/TEMA selected). River clearing will be demonstrated by Hamilton County. One (1) boat (Fire and Rescue) will conduct the river clearing, meeting with the FEMA evaluator at the boat ramp/dock. Real time communications will be conducted with the EOC.

5.b. Emergency Information and Instructions for the Public and the Media

Criterion 5.b.1: OROs provide accurate emergency information and instructions to the public and the news media in a timely manner (NUREG-0654, E.5, 7; G.3.a, 4.c.).

EXTENT-OF-PLAY – Emergency instructions/information will originate from the SEOC prior to JIC activation; after activation, information will be disseminated from the JIC while emergency instructions will continue to be disseminated from the SEOC via the EAS.

Evaluation Area 6 – Support Operations/Facilities:

6.a. Monitoring and Decontamination of Evacuees and Emergency Workers and Registration of Evacuees

Criterion 6.a.1: The reception center/emergency worker facility has appropriate space, adequate resources, and trained personnel to provide monitoring, decontamination, and registration of evacuees and/or emergency workers (NUREG-0654, J.10.h, 12; K.5.a.).

EXTENT-OF-PLAY – Out of Sequence Activities column.

6.b. Monitoring and Decontamination of EW Equipment

Criterion 6.b.1: The facility/ORO has adequate procedures and resources for the accomplishment of monitoring and decontamination of EW equipment, including vehicles (NUREG-0654, K.5.b).

EXTENT-OF-PLAY – Emergency Worker Decontamination Site will be done Out of Sequence (OOS)

6.c. Temporary Care of Evacuees

Criterion 6.c.1: Managers of congregate care facilities will demonstrate that the centers have resources to provide services and accommodations consistent with American Red Cross planning guidelines. Managers demonstrate the procedures through discussion to assure that evacuees have been monitored for contamination and have been decontaminated as appropriate prior to entering congregate care facilities (NUREG-0654, J.10.h, 12.).

EXTENT-OF-PLAY – Congregate care will be demonstrated, out-of- sequence, at the following locations (See table below). The shelter will be staffed with trained personnel, and at least six (6) monitoring demonstrations will be accomplished.

6.d. Transportation and Treatment of Contaminated Injured Individuals

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

EXTENT-OF-PLAY – Demonstrated out-of-sequence activity as MS-1 Drill on August 24th and 27th.

GRADED OUT-OF- SEQUENCE ACTIVITIES by date:

SHELTERS	**LOCATON**	**DATE**
Hamilton County Shelter	Brainerd High School	October 21, 2010 – 1:00 PM
Hamilton County Shelter	Chattanooga High School	October 22, 2010 – 9:00 AM
Hamilton County Shelter	Dalewood Middle School	October 22, 2010 – 1:00 PM
EW Decontamination Site	**LOCATION**	**DATE**
Hamilton County EW/Equipment Decontamination Site	Red Bank High School	October 21, 2010 - 9:00 AM
ENDANGERED SCHOOLS	**LOCATION**	**DATE**
Hamilton County	Hixson Middle School	November 3, 2010 – 8:00 AM
Hamilton County	Sequoyah Vocation School	November 3, 2010 – 9:30 AM
Hamilton County	Daisy Elementary School	November 3, 2010 – 10:45 AM
Hamilton County	McConnell Elementary School	November 3, 2010 – 1:00 PM
Hamilton County	Ooltewah High School	November 4, 2010 – 8:00 AM
Hamilton County	Brown Middle School	November 4, 2010 – 9:30 AM
Hamilton County	Harrison Elementary School	November 4, 2010 – 10:45 AM
MS-1 DRILL	**LOCATION**	**DATE**
Hamilton County	Parkridge Hospital	August 24, 2010

Hamilton County	Memorial Hospital	August 27, 2010

Note: Escort provided by the Hamilton/Bradley County EMA FNF staff officers to the FEMA (REP) Evaluators.

Appendix F: Acronyms

Acronym	Meaning
μC/gm	Micro Curies per Gram
AAC	After Action Conference
AAR	After Action Report
ARC	American Red Cross
ARCA	Area Requiring Corrective Action
ARES	Amateur Radio for Emergency Services
CECC	Central Emergency Coordination Center
CFR	Code of Federal Regulations
DACO	Direction and Control Officer
DEI	Dose Equivalent Iodine
DHS	Department of Homeland Security
DOF	Tennessee Division of Forestry
DRD	Direct Reading Dosimeter
DRH	Department of Radiological Health
EAL	Emergency Action Level
EAS	Emergency Alert System
ECL	Emergency Classification Level
EEG	Exercise Evaluation Guide
EM	Emergency Management
EMD	Emergency Management Director
EMS	Emergency Medical Services
EOC	Emergency Operations Center
EPZ	Emergency Planning Zone
ERC	Emergency Response Coordinator
ESF	Emergency Support Function
EST	Eastern Standard Time
EWD	Emergency Worker and Vehicle Monitoring and Decontamination
EXPLAN	Exercise Plan
FCC	Field Coordination Center
FEMA	Federal Emergency Management Agency
FMT	Field Monitoring Team
FNF	Fixed Nuclear Facility

Acronym	Meaning
FOUO	For Official Use Only
GE	General Emergency
GIS	Geographic Information System
HAZMAT	Hazardous Materials
HCHD	Hamilton County Health Department
HSEEP	Homeland Security Exercise and Evaluation Program
ICS	Incident Command System
IOF	Initial Operating Facility
IP	Improvement Plan
IPZ	Ingestion Pathway Zone
JIC	Joint Information Center
JIS	Joint Information System
KI	Potassium Iodide
LOCA	Loss of Coolant Accident
LP-1	Local Primary -1
MAC	Multi-Agency Coordination
MACC	Multi-Agency Coordination Center
MCC	Mission Control Center
MJRERP	Multi-Jurisdictional Radiological Emergency Response Plan
MOU	Memorandum of Understanding
mR	milliroentgen
mR/h	milliroentgen per hour
NAWAS	National Warning System
NGO	Non-Governmental Organization
NIMS	National Incident Management System
NOAA	National Oceanic and Atmospheric Administration
NOUE	Notification of Unusual Event
NRC	Nuclear Regulatory Commission
NUREG-0654	NUREG-0654/FEMA-REP-1, Rev. 1, *"Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980*

Acronym	Meaning
OOS	Out-of-Sequence
ORO	Offsite Response Organization
PAD	Protective Action Decision
PAG	Protective Action Guide
PAR	Protective Action Recommendation
PIO	Public Information Officer
PNS	Prompt Notification System
PPE	Personal Protective Equipment
PRD	Permanent Record Dosimetry
R	Roentgen
R/h	Roentgen(s) per hour
RAC	Regional Assistance Committee
RACES	Radio Amateur Civil Emergency Service
RCO	Radiation Control Officer
RCP	Reactor Coolant Pump
REM	Roentgen Equivalent Man
REP	Radiological Emergency Preparedness
REPP	Radiological Emergency Preparedness Program
RERP	Radiological Emergency Response Plan
RMC	Radiological Monitoring Coordinator
RMCC	Radiological Monitoring Coordination Center
RO	Radiological Officer
SAE	Site Area Emergency
SEID	State Emergency Information Director
SEOC	State Emergency Operations Center
SIP	Shelter-in-Place
S-JICD	State JIC Director
SOG	Standard Operating Guide
SOP	Standard Operating Procedure
SQN	Sequoyah Nuclear Power Plant
SRD	Self-Reading Dosimeter
TCL	Target Capabilities List
TCP	Traffic Control Point
TDEC	Tennessee Department of Environment and Conservation

Acronym	Meaning
TEMA	Tennessee Emergency Management Agency
TLD	Thermoluminescent dosimeter
TVA	Tennessee Valley Authority
TVA-JICD	TVA JIC Director
UTL	Universal Task List
VOAD	Voluntary Organizations Active in Disasters
VSRS	Volunteer State Rescue Service

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