Final Exercise Report

Sequoyah Nuclear Power Plant

Licensee: **Tennessee Valley Authority**

Exercise Dates: **October 2,2002**

Report Date: **December 30,2002**

FEDERAL EMERGENCY MANAGEMENT AGENCY
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I. EXECUTIVE SUMMARY

On October 2,2002, the Federal Emergency Management Agency (FEMA), Region IV, conducted a full participation plume pathway exercise in the emergency planning zone (EPZ) around the Sequoyah Nuclear Power Plant. The purpose of the exercise was to assess the level of State and local preparedness in responding to a radiological emergency. This exercise was conducted in accordance with FEMA's policies and guidance concerning the exercise of State and local radiological emergency response plans (RERP) and procedures. This report contains the evaluation of the biennial exercise

This was the 13th Federally evaluated offsite preparedness exercise conducted for the Sequoyah Nuclear Power Plant. The qualifying emergency preparedness exercise was conducted in June 1980, and the previous biennial exercise was conducted on October 4, 2000.

FEMA wishes to acknowledge the efforts of the many individuals, including volunteers, who participated in this exercise. The State of Tennessee, Risk Counties of Bradley and Hamilton and Host Counties of Meigs, Rhea and Sequatchie participated in the exercise. Protecting the public health and safety is the full-time job of some of the exercise participants and an assigned responsibility for others. Others have willingly sought this responsibility by volunteering to provide vital emergency services to their communities.

Cooperation and teamwork of all the participants were evident during this exercise. The U. S. Army Corps of Engineers and the U. S. Coast Guard participated in their normal support roles at the State Emergency Operations Center (SEOC).

State and local organizations, except where noted, demonstrated knowledge of their emergency response plans and procedures and successfully implemented them. No Deficiencies were found during this exercise. However, one Area Requiring Corrective Action (ARCA) concerning the activation of the siren system and the broadcast of the emergency alert system (EAS) message prior to notifying Hamilton County was identified during of this exercise. The correction of an ARCA, concerning coordination with Bradley County identified during the 2000 exercise and a 1998 ARCA for reception and congregate care in Sequatchie County were both demonstrated during the exercise..

II. INTRODUCTION

On December 7, 1939, the President directed FEMA to assume the lead responsibility for offsite nuclear planning and response. FEMA's activities are conducted pursuant to Title 44 Code of Federal Regulations (CFK) Parts 350, 351 and 352. 'These regulations are a key element in the Radiological Emergency Preparedness (REP) Program that was established following the Three Mile Island Nuclear Station accident in March 1979.

FEMA Title 44 CFR 350 establishes the policies and procedures for FEMA's initial and continued approval of State and local government's radiological emergency planning and preparedness for commercial nuclear power plants. This **approval** is contingent, in part, on State and local government participation in joint exercises with licensees.

FEMA's responsibilities *in* radiological emergency planning for fixed nuclear facilities include the following:

- Taking the lead in offsite emergency planning and in the review and evaluation of radiological emergency response plans (RERP) and procedures developed by State and local governments;

  Determining whether such plans and procedures can be implemented on the basis of observation and evaluation of exercises of the plans and procedures conducted by State and local governments;

- Responding to requests by the NRC pursuant to the Memorandum of Understanding between the NRC and FEMA (Federal Register, Vol. 58, No.176, September 14, 1993).

  Coordinating the activities of Federal agencies with responsibilities in the radiological emergency planning process:

  - Department of Commerce
  - Nuclear Regulatory Commission
  - Environmental Protection Agency
  - Department of Energy
  - Department of Health and Human Services
    Department of Transportation
    Department of Agriculture
  - Department of the Interior, and
  - Food and Drug Administration

Representatives of these agencies serve on the FEMA Region IV Regional Assistance Committee (RAC), which is chaired by FEMA.

Formal submission of the Multi-Jurisdictional Radiological Response Plan (MJRERP) for the Sequoyah Nuclear Power Plant to FEMA Region IV by the State of Tennessee was made in May of 1980. Formal approval of the MJRERP was granted on August 7, 1980, under 44 CFR 350. A joint REP exercise was conducted on October 2,2002, by FEMA Region IV to assess the capabilities of State and local emergency preparedness organizations in implementing their MJREW and procedures to protect the public health and safety during a radiological emergency involving the Sequoyah Nuclear Power Plant. The purpose of this report is to present the results and findings on the performance of the offsite response organizations (ORO) during a simulated radiological emergency.

The findings presented in this report are from the evaluations of the Federal Evaluator team, with final determinations made by the Chief Evaluator, FEMA Region IV RAC Chairperson and approved by the Regional Director.

The criteria utilized in the FEMA evaluation process are contained in:

- 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;

- FEMA- "Radiological Emergency Preparedness: Exercise Evaluation Methodoiogy," April 25, 2002.

Section III, entitled "Exercise Overview" presents basic information and data relevant to the exercise. This section contains a description of the plume and ingestion pathway EPZs, a listing of all participating jurisdictions and functional entities evaluated and a tabular presentation of the time of actual occurrence of key exercise events and activities.

Section IV, entitled "Exercise Evaluation and Results" presents summarized information on the demonstration of applicable exercise criterion at each jurisdiction or functional entity evaluated in a jurisdiction-based, issues-only format. This section also contains: (1) descriptions of all ARCAs assessed during this exercise, recommended corrective actions and the State and local governments' response, and (2) descriptions of ARCAs assessed during previous exercises and the status of the OROs' efforts to resolve them.

III. EXERCISE OVERVIEW

Contained in this section arc data and basic information relevant to the October 2,2002 exercise to test the offsite emergency response capabilities in the area surrounding the Sequoyah Nuclear Power Plant.

A. EPZ Description

The Sequoyah Nuclear Power Plant, operated by the Tennessee Valley Authority (TVA), is located on the Tennessee River near the town of Soddy-Daisy in Hamilton County, Tennessee. Portions of Bradley and Hamilton Counties lie within the 10-mile EPZ. The major highways are Interstate 75 and Tennessee Highways 27 and 58. Land use is a mix of residential, business and agricultural. All or portions of the following counties lie within the 50-mile EPZ: Bledsoe, Bradley, Coffee, Cumberland, Franklin, Grundy, Hamilton, Loudon, McMinn, Marion, Meigs, Monroe, Polk, Rhea, Roane, Sequatchic, Van Buren, Warren, and White. There are approximately 89,000 persons within the IO-mile EPZ.

B. Exercise Participants

The foilowing State agencies. organizations, and units of government participated in the Sequoyah Nuclear Power Plant exercise on October 2. 2002.

STATE OF TENNESSEE

Tennessee Emergency Management Agency
Department of Environment and Conservation
Division of Radiological Health
Division of Water Pollution Control
Department of Solid Waste Management
Bureau of State Parks
Department of Safety
Department of Transportation
Department of Agriculture
Public Service Commission
Division of Forestry
Department of Human Services
Department of Mental Health
Department of Military
Department of General Services
Wildlife Resource Agency
Tennessee Bureau of Investigation

RISK JURISDICTIONS

Bradley County
Hamilton County

HOST JURISDICTION

Meigs
Rhea
Sequatchie

PFUVATEIVOLUNTEER ORGANIZATIONS

AT&T
American Red Cross (ARC)
Bell South
WSKZ Radio, Chattanooga

C. Exercise Timeline

Table 1, on the following page, presents the time at which key events and activities occurred during the Sequoyah Nuclear Power Plant exercise on October 2, 2002.

Table 1. Exercise Timeline

DATE AND SITE: October 2,2002 - Sequoyah Nuclear Bower Plant

Emergency Classification Level for Event	Time Declared Utility	Time That Notification Was Received or Action Was Taken			
		SEOC	JIC	BRADLEY COUNTY	HAMILTON COUNTY
Unusual Event	0809	0834		0836	0829
Alert	0840	0849	0849	0854	0854
Site Area Emergency	0928	0935	0928	0941	0939
General Emergency	1030	1041	1030	1042	1044
Simulated Rad. Release Started	1230	0928		1138	
Simulated Rad. Release Terminated					
Facility Declared Operational		0900	0924	0930	0857
Declaration of State of Emergency		1145	1145	1210	
Exercise Terminated		1330	1330	1331	
Early Precautionary Actions: School relocation River closing				0942	0952
1st Protective Action Decision Activate public notification system		0855		0854	0910
1st Siren Activation		0905		0905	0910
1st EAS Message		0905		0905	0910
2nd Protective Action Decision: Evacuate near plant; A1, B1, C1 and D1		0945		0955	0946
2nd Siren Activation		0955		0955	0954
2nd EAS Message		0955		0955	0955
3rd Protective Action Decision: **Evacuate:** Quadrants B & C		1030		1047	1046
3rd Siren Activation		1045		1047	1046
3rd EAS Message		1045		1047	1046
KI Administration Decision: Department of Health repositioned KI to shelter.		1055			

IV. EXERCISE EVALUATION AND RESULTS

Contained in this section are the results and findings of the evaluation of all jurisdictions and functional entities that participated in the October 2,2002 exercise to test the offsite emergency response capabilities of State and local governments in the 10-mile EPZ around the Sequoyah Nuclear Power Plant.

Each jurisdiction and functional entity was evaluated on the basis of its demonstration of Exercise Evaluation Methodology Notice, dated April 25,2002. Detailed information on the exercise criteria and the extent-of-play agreement used in this exercise are found in Appendix 3 of this report.

A. Summary Results of Exercise Evaluation -Table 2

The matrix presented in Table 2 on the following page presents the status of all exercise criteria which were scheduled for demonstration during this exercise by all participating jurisdiction? and functional entities. Exercise criteria are listed by number and the demonstration status of those criteria is indicated by the use of the following letters:

M - Met (No Deficiency or ARCAs assessed and no unresolved ARCAs 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)

Table 2. Summary Results of Exercise Evaluation

DATE AND SITE: October 2,2002 – Sequoyah Nuclear Power Plant

ELEMENT/Sub-Element	SEOC	RMCC	FCC	JIC	EOF	FIELD TEAMS	BRADLEY COUNTY	HAMILTON COUNTY	RHEA CO.	MEIGS CO.	SEQUATCHIE COUNTY
1. EMERGENCY OPERATIONS MANAGEMENT											
1.a.1. Mobilization	M	M	M		M		M	M			
1.b.1. Facilities	M	M	M	M	M		M	M			
1.c.1. Direction and Control	*A	M	M		M		M	M			
1.d.1. Communications Equipment	M	M	M	M	M	M		M			
1.e.1. Equipment & Supplies to Support Operations	M	M	M	M	M	M	M	M			
2. PROTECTIVE ACTION DECISION MAKING											
2.a.1. Emergency Worker Exposure Control	M	M					M	M			
2.b.1. Rad Assessment & PARs & PADs Based on Available Info	M	M									
2.b.2. Rad Assessment and PARs and PADs for the General Public	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	M	M	M	M	M
3.b.1. Implementation of KI Decisions	M					M	M	M			
3.c.1. Implementation of PADs for Special Populations							M	M			
3.c.2. Implementation of PADs for Schools							M	M			
3.d.1. Implementation of Traffic and Access Control							M				
3.d.2. Impediments to Evacuation and Traffic and Access Control								M			
3.e.1. Implementation of Ingestion Decisions Using Adequate Info											
3.e.2. Implementation of IP Decisions Showing Strategies and 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				M					
4.a.2. Plume Phase Field Measurement & Analysis Management		M				M					
4.a.3. Plume Phase Field Measurements & Analysis Procedures		M				M					
4.b.1. Post Plume Field Measurement & Analysis											
4.b.2. Laboratory Operations											
5. EMERGENCY NOTIFICATION & PUBLIC INFO											
5.a.1. Activation of Prompt Alert and Notification	M						M	M			
5.a.2. Activation of Prompt Alert and Notification 15-Minute (Fast Breaker)											
5.a.3. Activation of Prompt Alert and Notification Backup Alert and Notification											
5.b.1. Emergency Info and Instructions for the Public and the Media	M			M	M		M	M			
6. SUPPORT OPERATIONS/FACILITIES											
6.a.1. Monitoring and Decon of Evacuees and EWs and Registration of Evacuees							M	M	M	M	M
6.b.1. Monitoring and Decon of Emergency Worker Equipment											
6.c.1. Temporary Care of Evacuees							M	M	M	M	M
6.d.1. Transport and Treatment of Contaminated Injured Individuals	M										

LEGEND: M = Met D = Deficiency A = ARCA

B. Status of Jurisdictions Evaluated

This subsection provides information on the evaluation of each participating jurisdiction and functional entity, in a jurisdiction based, issues only format. Presented below are the definitions of terms used in this subsection relative to criterion demonstration status.

- **Met -** Listing of the demonstrated exercise criteria under which no Deficiencies or ARCAs were assessed during this exercise and under which no ARCAs assessed during prior exercises remain unresolved.

- **Deficiency** - Listing of the demonstrated exercise criteria under which one or more Deficiencies was assessed during this exercise. Included is a description of each Deficiency and recommended corrective actions.

- **Area Requiring Corrective Actions -** Listing of the demonstrated exercise criteria under which one or more **ARCAs** were assessed during the current exercise or ARCAs assessed during prior exercises that remain unresolved. Included is a description of the ARCA assessed during this exercise and the recommended corrective action to be demonstrated before or during the next biennial exercise.

- **Not Demonstrated -** Listing of the exercise criteria, which were not demonstrated as scheduled during this exercise and the reason they were not demonstrated.

- **Prior ARCAs- Resolved** - Descriptions of ARCAs assessed during previous exercises which were resolved in this exercise and the corrective actions demonstrated.

- **Prior ARCAs - Unresolved** - Descriptions of ARCAs assessed during prior exercises which were not resolved in this exercise. Included is the reason the ARCA remains unresolved and recommended corrective actions to be demonstrated before or during the next biennial exercise. The foilowing are definitions of the two types of exercise issues which may he discussed in this report.

- **A Deficiency** is defined in FEMA REP Program Manual as "...an observed or identified inadequacy of organizational performance in an exercise that could cause **a** finding that offsite emergency preparedness is not adequate to provide reasonable assurance that appropriate protective measures can be taken in the event of a radiological emergency to protect the health and safety of the public living in the vicinity of a nuclear power plant."

- An **ARCA** is defined in FEMA REP Program Manual as "...an observed or identified inadequacy of organizational performance in an exercise that is not considered, by itself, to adversely impact public health and safety."

FEMA has developed a standardized system for numbering exercise issues (Deficiencies and ARCAs). This system is used to achieve consistency in numbering exercise issues among FEMA Regions and site-specific exercise reports within each Region. It is also used to expedite tracking of exercise issues on a nationwide basis.

The identifying number for Deficiencies and **ARCAs** includes the following elements, with each element separated by a hyphen (-).

- **Plant Site Identifier - A** two-digit number corresponding to the Utility Billable Plant Site Codes.

- **Exercise Year - The** last two digits of the year the exercise was conducted.

- **Evaluation Area Criterion - A** number, letter and number corresponding to the criteria in the FEMA REP Program Manual.

- **Issue Classification Identifier -** (D =Deficiency, **A = ARCA).** Only Deficiencies and **ARCAs** are included in exercise reports.

- **Exercise Issue Identification Number – A** separate two (or three) digit indexing number assigned to each issue identified in the exercise.

1. STATE OF TENNESSEE

1.1 State Emergency Operations Center

The SEOC is located in a National Guard facility in Nashville, Tennessee. The use of commercial telephones for support coordination allowed for rapid assessment and deployment of requested assets and kept personnel apprised of situations within the affected area. Briefings were succinct, informative and updated the staff with plant conditions and external factors affecting communication as the exercise progressed. A team concept was apparent as the staff worked well together in decision-making and displayed their commitment to the citizens of Tennessee. Dissemination of information to Hamilton and Bradley Counties and the Sequoyah Nuclear Power Plant took place periodically with the Director and his staff. However, the Operations Office did not inform Hamilton County of the activation ofthe prompt notification system until after its activation.

a. **MET:** Criteria 1.a.1., 1.h.1., 1.d.1., 1.e.1., 2.a.1., 2.b.1., 2.b.2., 3.a.1., 3.b.1., 5.a.1. and 5.b.1.

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:**

Issue No.: 58-02-1.c.1-A-01

Condition: During the initial activation of the prompt notification system, the SEOC did not inform Hamilton County until after the sirens were activated and the **EAS** message was transmitted.

Possible Cause: The plan states in Annex B.I.B.2.b: "the warning of the general public is the responsibility of local governments in coordination with the SEOC..." and the Hamilton County Implementing Procedures state: "The Director of the SEOC will coordinate the issuance of evacuation orders with the Director of the Hamilton County Emergency Operation Center (HCEOC) prior to notification to the public." The activation of the sirens and the broadcast of an **EAS** message are accomplished at the SEQC. Specific instructions to coordinate with the counties prior to activation of the public alert and notification system are not provided for the decision-makers.

Reference: NUREG **0654,** E.1 and E. 5 Annex B.1.B.2.b, MJRERP

Effect: Not knowing when the public is notified of the emergency situation, could stress the emergency response organization by either overwhelming the 911 center or by not having sufficient staff available to deal with increased public inquiries at the County.

Recommendation: Review and revise procedures to ensure that coordination with the counties takes place before any notification of the public.

Schedule of Corrective Actions: In Annex A, Appendix 7 to the 2003 version of the Sequoyah and Watts Bar plans, an instruction to notify risk counties of alert and notification system activation times will be inserted in the SEOC Director's checklist. All personnel tasked with SEOC Director duties will be briefed on the subject finding and receive supplemental training on the revised checklists. All corrective actions will be complete with the publication of the January 1,2003 MJRERPs.

d. **NOT** DEMONSTRATED: NONE

e. PRIOR ARCAs - RESOLVED:

Issue No: 58-00-09-A-01

Description: The Tennessce MJRERP states: "Since a radiological release may have multi-jurisdictional implications, the State will activate this emergency plan and control the response to the emergency at all levels." (Basic Plan, Section V.A.2.b, page BP-4). The plan also states the primary responsibility of responding to an emergency affecting the health and safety of residents of Bradley County rests with local government. The County Executive made the decision to order an evacuation of all residents in Bradley County within the 10-mile EPZ, which exceeded the decision of the Tennessee Emergency Management Agency (TEMA). The TEMA Director of Operations, when presented with this information failed to properly coordinate with the County. He did not assure that the additional evacuation area requested by the Bradley County was effectively communicated to the public, or, if the State had not concurred, taken the necessary steps to inform the county.

Corrective Action: During the 2002 Sequoyah exercise, the decision-making process was performed smoothly and accurately. This resolves the 2000 **ARCA.**

f. PRIOR ARCAs - **UNRESOLVED:** NONE

1.2 Dose Assessment

The Tennessee Division of Radiological Health (DRH) Radiation Control Officer (RCO) interacted with the SEOC Director in formulating protective action recommendations (PAR). The Tennessee DRH dose assessment staff demonstrated their ability to produce dose projections using the Radiological Assessment System for Consequences Analysis (RASCAL) 2.2 computer program. The DRH RCO and the TVA Radiological Assessment Manager (RAM) in the Central Emergency Control Center (CECC) effectively communicated regarding radioactive material releases and shared all

appropriate information. l'he two TVA representatives in the SEOC were knowledgeable and provided information on plant conditions to the Tennessee DRH RCO. The ability to calculate and coordinate dose projections was professionally denionstrated by the staff.

a. **MET:** Criteria 1.a.1., 1.c.1., 1.d.1., 2.a.1., 2.b.1., 2.b.2. and 3.b.1

b. **DEFICIENCY:** NONE

c **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs – RESOLVED:** NONE

f. **PRIOR ARCAs – UNRESOLVED:** NONE

1.3 Field Coordination Center

The Field Coordination Center (FCC) serves as backup to the SEOC and provides a location for representatives from all State Agencies to coordinate State response activities in the local area. Each representative made contact with his/her counterpart in the SEOC and was kept well informed of the activities of their respective organizations. Frequent briefings were held in the FCC allowing each organization an opportunity to inform the FCC team of the activities, concerns and needs resulting in an overall coordinated response. Problems encountered, such as the actual loss of the commercial telephone system and the simulated loss of offsite power, were quickly overcome by the use of backup systems. Overall, the FCC staff was well managed, informed and ready to assume the State lead response role if needed.

a. **MET:** Criteria 1.a.1., 1.b.1., 1.c.1., 1.d.1. and 1.e.1.

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs- RESOLVED:** NONE

f. **PRIOR ARCAs – UNRESOLVED:** NONE

1.4 Radiological Monitoring Control Center

The DRH was pre-positioned at the Radiological Monitoring Control Center (RMCC) in the Air National Guard facility. Lovell Field, Chattanooga, TN. The DRH staff successfully demonstrated the ability to direct radiological field monitoring teams (FMT), exchange field team data with the TVA field team coordinator, arid promptly forward such data to the SEOC in Nashville. Seven FMTs, five state and two TVA, were efficiently directed from the RMCC. All personnel were knowledgeable and performed their duties in a professional manner.

a. **MET:** Criteria 1.a.1., 1.b.1., 1.c.1., 1.d.1., 1.e.1., 2.a.1., 2.b.1., 2.b.2., 3.a.1., 3.b.1., 4.a.1., 4.b.2. and 4.a.3.

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs – RESOLVED:** NONE

f. **PRIOR ARCAs – UNRESOLVED:** NONE

1.5 Radiological Field Monitoring Teams

Tennessee deployed five FMTs for the exercise, four were evaluated and one was deployed for training purposes. All evaluated teams established and maintained communications with the RMCC throughout the exercise. The teams were equipped with appropriate instrumentation that had been calibrated within the requirements of the plan. The teams, managed by the RMCC, located and defined the extent of the plume and used Global Positioning Systems for the first time. This allowed the precise location of each team relative to the reactor site and substantially contributed to the ease of finding pre-determined monitoring locations in the field. Proper procedures for emergency worker exposure control were used.

a. **MET:** Criteria 1.d.1., 1.e.1., 3.a.1., 3.b.1., **4.a.1., 4.a.2.** and 4.a.3.

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs –RESOLVED:** NONE

f. **PRIOR ARCAs – UNRESOLVED:** NONE

1.6 Central Emergency Control Center

The CECC is an excellent facility for effectively managing and conducting emergency operations. Communication, coordination and the flow of technical information between and among the utility operator and the State officials, both at CECC and the SEOC, were outstanding. The State officials dispatched to the CECC were knowledgeable, well trained, and carried out their responsibilities in a professional and efficient manner. All of the exercise criteria, as specified in the negotiated Extent-of-Play Agreement, were successfully demonstrated.

a. **MET:** Criteria I.a.1., 1.b.I., 1.c.1., 1.d.1., 1.e.1., 3.a.1. and 5.a.1.

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PFUOR ARCAs - RESOLVED:** NONE

f. **PRIOR ARCAs - UNRESOLVED:** NONE

1.7 Joint Information Center

The Joint Information Center (JIC) is located in the TVA Headquarters complex in downtown Chattanooga. This excellent facility provided working space for the JIC staff from the State, Bradley and Hamilton Counties and TVA. The JIC staff worked well together, providing accurate and timely information to the media. A total of four media briefings were conducted. Mock Media participation was challenging to the spokespersons, but handled very well. The briefings were supplemented by nine State and County news releases. Public Inquiry/Rumor Control was staffed by nine individuals who responded to 63 calls during the exercise.

a. **MET:** Criteria 1.b.1., 1.d.1., 1.e.1.and5.b.1.

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PFUQR ARCAs – RESOLVED:** SONE

f. **PRIOR ARCAs – UNRESOLVED:** NONE

2. RISK JURISDICTIONS

2.1 BRADLEY COUNTY

2.1.1 Emergency Operations Center

The EOC is co-located with the 911 center and is well equipped to handle emergency operations. The Emergency Management Director provided direction and control while receiving excellent support from a seasoned EOC staff. Elected officials including the County Executive and the County Manager were present and participated throughout the exercise. Volunteer agencies included radio amateur civil emergency services (RACES). the American Red Cross (ARC) and members of the Tennessee Civil Air Patrol who flew over the area and provided real time photos to the EOC staff. Visual aids included maps and a large display of the EOC's computerized activity log that was maintained throughout the exercise. The EOC staff were knowledgeable and pro-active during the exercise.

a. **MET:** Criteria 1.a.1., 1.b.1., 1.c.1. 1.d.1., 1.e.1., 2.c.1., 3.b.1., 3.c.1., 3.c.2., 3.d.1. and 5.b.1.

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs – RESOLVED:** NONE

f. **PRIOR ARCAs – UNRESOLVED:** NONE

2.1.2 Reception and Congregate Care

Personnel at the Ocoee Middle School mass care shelter successfully demonstrated the capability to provide services, accommodations, and appropriate monitoring and decontamination for evacuees. The ARC Shelter Manager and the Bradley County Radiological Officer provided a walk-through of the facility. Communications capabilities, shelter supplies, stations for various services, and staffing were described or observed. Monitoring demonstrations were performed in accordance with procedures. In addition, the workers displayed a thorough knowledge of radiological exposure control, including procedures for ingestion of potassium iodide (KI). Bradley County Health

Department personnel provided a walk-through of decontamination procedures. The staff was professional and displayed a positive attitude in the conduct of activities.

a. **MET:** Criteria 1.d.1., 3.a.1. 6.a.l. and6.c.i.

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs – RESOLVED:** NONE

f. **PRIOR ARCAs – UNRESOLVED:** NONE;:

2.1.3 Traffic Control Points

The Bradley County Sheriffs Department is responsible for establishing traffic control points (TCP). Establishment of TCPs was simulated by making appropriate telephone calls. The Lieutenant and his deputies identified the location of the TCPs, when they would be established, the equipment that would be available for use, and the communications equipment that would be employed. Both deputies were very knowledgeable about radiological exposure control, including the procedures for ingestion of KI. The Lieutenant and deputies were professional and knowledgeable of their responsibilities.

a. **MET:** Criteria 1.d.1., 3.a.1., 3.b.1., 3.d.i. and 3.d.2.

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs – RESOLVED:** NONE

f. **PRIOR ARCAs – UNRESOLVED:** NONE

2.2 HAMILTON COUNTY

2.2.1 Emergency Operations Center

The EOC is co-located with the 911 center. **A** well trained staff accomplished their tasks promptlyand planned the actions to take *if the* situation worsened. The Director of Operations and the Emergency Management Director effectively managed emergency operations. They notified EOC staff immediately of changes in plant conditions and protective actions received from the SEOC. Briefings included discussion from the staff on their activities.

a. **MET:** Criteria 1.a.1., 1.b.1., 1.c.1., 1.d.1., 1.e.1., 2.a.1., 2.c.1., 3.a.1., 3.b.1., 3.c.1., 3.c.2. and 3.d.2.

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs – RESOLVED:** NONE

f. **PRIOR ARCAs – UNRESOLVED:** NONE

2.2.2 Reception and Congregate Care

Hamilton County demonstrated reception and congregate care at East Ridge and Orchard Knob Middle Schools on September 26,2002. The staffrepresented the health department, responsible for monitoring, and the ARC, responsible for mass care operations. All staff were knowledgeable of their duties and performed them well. They monitored the evacuees in accordance with their procedures and walked through the decontamination process. The shelter managers discussed mass care operations including staffing of the facility, obtaining additional supplies and opening additional shelters if needed.

a. **MET:** Criteria 3.a.1., 6.a.1. and 6.c.1.

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs – RESOLVED:** NONE

f. **PRIOR ARCAs – UNRESOLVED:** NONE

2.2.3 Protective Action for Schools

On May 14-15, 2002, nine schools demonstrated relocation procedures in accordance with plans and procedures. The evaluation was conducted through interviews with the school principals and selected staff. Principals of Soddy, Ganns, John Allen, Falling Water and North Hamilton County Elementary, Hunter Road, Loftis and Soddy-Daisy Middle and Soddy-Daisy High schools were very knowledgeable of their pians and procedures for relocating students to paired schools. Schools are equipped with Tone Alert Radios located in the principal's office. Principals are assigned pagers. buses are equipped with two-way radios and teachers are equipped with walkie-talkies, which allows for communication between school officials, bus drivers, arid the emergency management office. Teachers are assigned buses to ride to maintain accountability of their students.

a. **MET:** Criteria 3.a.1. and 3.c.2.

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs – RESOLVED:** NONE

f. **PRIOR ARCAs – UNRESOLVED:** NONE

2.2.4 Traffic Control Points

Personnel from Public Works and the Sheriff's Department demonstrated the ability to establish TCPs. Plans and procedures identify TCPs to be manned or to be controlled by barricades. The Sheriff's Department personnel demonstrated an excellent knowledge of their responsibilities. During exercise play, impediments to evacuation were identified and resolved. The EOC simulated using Traffic Assistance Teams (TAT) *to* clear impediments. The teams have wreckers to move vehicles. and are equipped to provide fuel and oil, and have the ability to make minor repairs to vehicles to keep traffic flowing **All** personnel interviewed were knowledgeable of dosimetry and radiological exposure control procedures.

a. **MET:** Criteria 3.a.1., 3.d.1. and 3.d.2.

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE.

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs – RESOLVED:** NONE

f. **PRIOR ARCAs – UNRESOLVED:** NONE

2.3 RHEA COUNTY

2.3.1 Reception and Congregate Care

On September 25,2002, County personnel successfully demonstrated reception and congregate care activities at Rhea Central Elementary School. Two emergency workers from the Rhea County Fire Department Emergency Medical Service (EMS) conducted monitoring demonstrations. Monitors performed operational checks on equipment and took *a* background reading prior to monitoring. Emergency worker kits were complete including dosimeters, Thermoluminescent Dosimeters (TLD) and exposure control instructions. **A** walk through of the decontamination process **was** conducted. The shelter manager was knowledgeable and described the placement of agencies and services. The Department of Health and Human Services (DHHS) discussed their roles of processing evacuees into the shelter. Security was provided by the Sheriff 's office and communication was available.

a. **MET:** Criteria 3.a.1., 6.a.1. and6.c.l.

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs – RESOLVED:** NONE

f. **PRIOR ARCAs – UNRESOLVED:** NONE

2.4 MEIGS COUNTY

2.4.1 Reception and Congregate Care

On August 15, 2002, personnel successfully demonstrated reception and congregate care activities at Meigs County High School. Two emergency workers from Meigs County Fire and Rescue EMS conducted monitoring demonstrations. Monitors performed pre-operational checks on equipment and took a background reading prior to monitoring. **A** walk through of the decontamination process was conducted. The shelter manager had an

excellent knowledge of operations and had a diagram depicting station layout and responsibilities of participating agencies. Department of Health and Human Services described their duties at the shelter. The facility is spacious and able to accommodate *560* personnel. The **RACES** personnel denionstrated their remote capabilities using a laptop computer and cross band radio provided communications.

a. **MET:** Criteria 3.a.1., 6.a.1. and 6.c.1.

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs – RESOLVED:** NONE

f. **PRIOR ARCAs – UNRESOLVED:** NONE

2.5 SEQUATCHIE COUNTY

2.5.1 Reception and Congregate Care

On September 10, 2002, personnel successfully demonstrated reception and congregate care activities **at** Sequatchie County High School. Two emergency workers from the Sequatchie County Fire Department and the Health Department conducted monitoring demonstrations. Monitors performed pre-operational checks of equipment and took background readings prior to monitoring. Emergency worker kits were complete to include dosimeters, TLDs and exposure control instructions. **A** detailed discussion and demonstration of the revised decontamination plan monitoring and decontamination for both contaminated and clean areas for evacuees was conducted. The shelter manager was extremely knowledgeable and had a diagram-depicting placement of organizational layout and responsibilities. DHHS discussed their services at the shelter. The Sheriffs office provided security and communications **was** available. This evaluation corrects an ARCA identified during the 1998 exercise.

a. **MET:** Criteria 3.a.1., 6.a.1. and 6.c.1.

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

f. **PRIOR ARCAs – RESOLVED:**

Issue No.: 58-98-18-A-03

Description: Personnel from the Sequatchie County Fire Department performed the initial monitoring of the evacuees. The monitor did not appropriately follow County procedures for radiological monitoring (Sequatchie County Implementing Procedures, Sequatchie County Health Department, Revision 4, July 1998, pg. EE-16, Section VIII.H.) He did not cover the probe or wear gloves while monitoring. He also did not check the feet, front and back of the evacuees. **He** moved the probe too rapidly over the area he surveyed.

The set-up of the decontamination area for evacuees requires both contaminated and clean evacuees to traverse a narrow entry **hall** that makes the separation of clean and contaminated evacuees very difficult, and may cause decontaminated evacuees to step into contaminated area.

Corrective Action Demoestrated: Personnel from the Sequatchie County Fire Department and the Health Department successfully demonstrated evacuee monitoring procedures. The set up of the decontamination area was proper and in accordance with their procedures.

f. PRIOR ARCAs – UNRESOLVED: NONE

3. SUMMARY OF AREAS REQUIRING CORRECTIVE ACTION

3.1 2002 ARCAs

3.1.1 58-02-1.c.1-A-01 SEOC

Condition: During the initial activation of the prompt notification system the SEOC did not inform Hamilton County until after the sirens were activated and the EAS message was transmitted.

Possible **Cause:** The plan states in Annex B.I.B.2.b: "the warning of the general public is the responsibility of local governments in coordination with the SEOC..." and the Hamilton County Implementing Procedures state: "The Director of the SEOC will coordinate the issuance of evacuation orders with the Director of the Hamilton County Emergency Operation Center (HCEOC) prior to notification to the public." The activation of the sirens and the broadcast of an EAS message are accomplished at the SEOC. Specific instructions to coordinate with the counties prior to activation of the public alert and notification system are not provided for the decision-makers.

Reference: NUREG 0654, E.1 and E.5 and Annex B.LB.2.b. MJRERP.

Effect: Not knowing when the public is notified of the emergency situation, could stress the emergency response organization by either overwhelming the 911 center or by not having sufficient staff available to deal with increased public inquiries at the County.

Recommendation: Review and revise procedures to ensure that coordination with the counties takes place before any notification of the public.

Schedule **of** Corrective Actions: In Annex A. Appendix 7 to the 2003 versions of the Sequoyah and Watts Bar plans, the following addition will be inserted in the SEOC Director's checklist. **All** personnel tasked with SEOC Director duties will he briefed on the subject finding and receive

supplemental training on the revised checklists. **All** corrective actions will be complete with publication of the January 1, 2003 MJRERPs.

3.2. 2000 PRIOR ARCA - RESOLVED

3.2.1 58-00-09-A41 SEOC

Description: The Tennessee MJRERP states: "Since a radiological release may have multi-jurisdictional implications, the State will activate this emergency plan and control the response to the emergency at all levels." (Basic Plan, Section V.A.2.b, page BP-4). The plan also states the primary responsibility of responding to an emergency affecting the health and safety of residents of Bradley County rests with local government. The County Executive made the decision to order an evacuation of all residents in Bradley County within the 10-mile EPZ, which exceeded the decision of the Tennessee Emergency Management Agency (TEMA). The TEMA Director of Operations, when presented with this information failed to properly coordinate with the County. He did not assure that the additional evacuation area requested by the Bradley County was effectively communicated to the public, or, if the State had not concurred, taken the necessary steps to inform the county.

Corrective Actions: During the 2002 Sequoyah exercise, the decision-making process was performed smoothly and accurately. The plan has been changed to include new working on authorities for decisions. This resolves the 2000 ARCA.

3.3 1998 PRIOR ARCA – RESOLVED

3.3.1 58-98-18-A-03 Sequatchic County EWD

Description: Personnel from the Scquatchie County Fire Department performed the initial monitoring of the evacuees. The monitor did not appropriately follow County procedures for radiological monitoring (Sequatchie County Implementing Procedures, Scquatchie County Health Department, Revision 4, July 1998, pg. EE-16, Section VIII.H.) He did not cover the probe or wear gloves while monitoring. He also did not check the feet, front and back of the evacuees. He moved the probe too rapidly over the area he surveyed.

The set-up of the decontamination area for evacuees requires both contaminated and clean evacuees to traverse a narrow entry hall that makes the separation of clean and contaminated evacuees very difficult, and may cause decontaminated evacuees to step into contaminated area.

Corrective Action Demonstrated: Personnel from the Sequatchie County Fire Department and the Health Department successfully demonstrated evacuee monitoring procedures. The set up of the decontamination area was proper and in accordance with their procedures.

APPENDIX 1

ACRONYMS AND ABBREVIATIONS

The following is a list of the acronyms and abbreviations, which may have been used in this report.

ARC	American Red Cross
ARCA	Area Requiring Corrective Action
CECC	Central Emergency Control Center
CFR	Code of Federal Regulations
DHHS	Department of Health and Human Services
DRK	Division of Radiological Health
EAS	Emergency Alert System
EEM	Exercise Evaluation Methodology
EMA	Emergency Management Agency
EMS	Emergency Medical Services
EOC	Emergency Operations Center
EPZ	Emergency Planning Zone
FCC	Field Coordination Center
FEMA	Federal Emergency Management Agency
FMT	Field Monitoring Team
HCEOC	Hamilton County Emergency Operations Center
GE	General Emergency
GPS	Global Position System
ICF	ICF Consulting, Inc
JIC	Joint Information Center
KI	Potassium Iodide
MJRERP	Multi-Jurisdictional Radiological Response Plan
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*

QRO	Offsite Response Organization
PAD	Protective Action Decision
PAR	Protective Action Recommendation
PIO	Public Information Officer
PNS	Prompt Notification System
RAC	Regional Assistance Committee
RACES	Radio Amateur Civil Emergency Service
RCO	Radiation Control Officer
REP	Radiological Emergency Preparedness
RERP	Radiological Emergency Response Plan
RMC	Radiological Monitoring Coordinator
RMCC	Radiological Monitoring Control Center
SAE	Site Area Emergency
SEOC	State Emergency Operations Center
SOP	Standard Operating Procedures
SQN	Sequoyah Nuclear Power Plant
TAT	Traffic Assistance Team
TCP	Traffic Control Point
TEMA	Tennessee Emergency Management Agency
TLD	Thermoluminescent Dosimeter
TVA	Tennessee Valley Authority

APPENDIX 2

EXERCISE EVALUATORS

The following is a list of the personnel who evaluated the Sequoyah Nuclear Power Plant exercise on October 2,2002. The organization represented by each evaluator is indicated below.

FEMA - Federal Emergency Management Agency
ICF - ICF Consulting Incorporated
NRC - Nuclear Regulatory Commission
USCG - United States Coast Guard

Thomas E. Reynolds **Co-RAC Chairman**

EVALUATION SITE	EVALUATOR	ORGANIZATION
Chief Evaluator	Eddie Hickman	FEMA
STATE OF TENNESSEE		
SEQC	Eddie Hickman	FEMA
	John Grijak	FEMA
Central Emergency Control Center	Robert Trojanowski	NRC
Forward Coordinating Center	Robert Black	ICF
RMCC	Bernie Hannah	ICF
Dose Assessment	Eddie Fuente	ICF
FMT #1	Keith Earnshaw	ICF
FMT #2	Jan Radder	ICF
FMT #3	James Willison	ICF
FMT#4	Brad McRee	ICF
Joint Information Center	David Moffet	ICF
	Joshua Moore	ICF

BRADLEY COUNTY

Emergency Operations Center	Joseph Canoles Alvin Hall	FEMA ICF
Traffic Control Points	Wayne Wagner	ICF
Congregate Care (Ocoee Middle School)	Alvin Hall	ICF

HAMILTON COUNTY

Emergency Operations Center	Lawrence Robertson Tom Scheel Wendy Swygert	FEMA USCG ICF
Traffic Control Points	Wendy Swygert	ICF

RHEA COUNTY

Reception and Congregate Care	Eddie Hickman	FEMA

MEIGS COUNTY

Reception and Congregate Care	Eddie Hickman	FEMA

SEQUATCHIE COUNTY

Reception and Congregate Care	Eddie Hickman	FEMA

APPENDIX 3

EXERCISE CRITERION AND EXTENT-OF-PLAY AGREEMENT

This appendix lists the exercise criteria scheduled for demonstration in the Sequoyah Nuclear Power Plant exercise on October 2, 2002 and the extent-of-play agreement approved by FEMA Region IV.

A. Exercise Criterion

Attached are the specific radiological emergency preparedness criteria scheduled for demonstration during this exercise.

B. Extent-of-Play Agreement

The Extent-of-Play Agreement on the following pages was submitted by Tennessee and was approved by FEMA Region IV.

THE STATE 0F 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

2002 SEQUOYAH NUCLEAR PLANT EXERCISE

STATE OF TENNESSEE

IO-MILE PLUME EXPOSURE PATHWAY

GOALS, CRITERIA, AND EXTENT-OF-PLAY

A full participation exercise will be conducted during the week of September 30, 2002 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, lasting approximately eight hours, encompassing response capabilities and requirements of the State, local governments. and **TVA** in the 10-Mile Plume Exposure Pathway.

The State of Tennessee and Tennessee Valley Authority 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 Sequoyah Nuclear Plant. The six evaluation area coupled with specific criteria to accomplish the following goals have been written in accordance with the **FEMA** Federal Register Notice, "Radiological Emergency Preparedness: Exercise Evaluation Methodology."

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 Multi-jurisdictianal Radiological Emergency Response Plan 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. Ensure capability inadequacies are noted and corrected as well as pertinent recommendations for improvement implemented.

Evaluation Area **1 – Emergency** Operations Management

1.a. Mobilization

Criterion 1.a.1: Offsite Response Organizations (OROs) should use effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner.

EXTENT-OF-PLAY – The SEOC will demonstrate the capability to receive the emergency notification from TVA, verify the notification, and contact, alert, and mobilize key personnel in a timely manner. Notification to adjacent states will be demonstrated at the SEOC in accordance with *the* appropriate notification checklist as contained in the Sequoyah MJRERP. Facilities will be considered operational at START EX with assigned personnel to the SEOC, FCC, RMCC (to include Field monitoring teams), and **Risk** County (Bradley and Hamilton) EOCs pre-positioned and in-place no later than 7:00 **AM** Central/8:00 AM Eastern time. The JIC personnel, State/local and TVA, will be pre-positioned and in place no later than 8:30 **AM** Eastern. All assigned personnel will remain on duty until END EX. The SEOC and Risk County **EMA** Director/staffs 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.

EXTENT-OF-PLAY – The SEOC, FCC, RMCC, JIC, and Risk County EOCs (Bradley and Hamilton) will be set up in accordance with established plans and procedures and remain fully operational during the course of the exercise. All facilities will be evaluated to establish a base-line for future exercise.

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.

EXTENT-OF-PLAY – The SEOC Director will assume primary responsibility for direction and control while working in concert with the Directors: FCC, JIC, Bradley County EOC, and Hamilton County EOC.

*** ARCA Issue No.: 71-01-03-A-0** **(WBN01)**

Description: At 1055, the State activated sirens and the EAS to inform the public of the decision **to** evacuate the near plant area **(AI.** B1, C1, and D1) and all of quadrants C and D. Simultaneously, the Protective Action Decision (PAD) was communicated to the McMinn, Meigs and **Rhea** County Emergency Operations Centers (EOC) to implement their actions to support the evacuation. The counties

did not have enough time to implement protective actions before the public began to evacuate.

Providing information to the counties before evacuation decisions are broadcast to the public will ensure iniplementing actions prior to the start of an evacuation. Follow-up to ensure counties have acted on the decisions is essential.

* **ARCA Issue No.:** ***58-00-09-A-01*** **(SQN01)**

Description: The Tennessee Multi-Jurisdictional Radiological Emergency Response Plan states: "Since a radiological release may have multi-jurisdictional implication, the State will activate this emergency plan and control the response to the emergency at all levels:' (Basic Plan, Section V.A.2.B.), Bradley County did not follow this plan. The County Executive made the decision to order an evacuation of all residents in Bradley County within the EPZ, which exceeded the decision of TEMA. Although, TEMA representatives later stated that they would support and assist the County with actions in excess of the State decision, the County did not assure that the additional evacuation area was effectively communicated to the State and that appropriate actions at the State were taken to inform the public.

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.

EXTENT-OF-PLAY – Functionality of a primary and one (1) backup communications system will be demonstrated at SART EX by all facilities. 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.

EXTENT-OF-PLAY – The SEOC, FCC, RMCC, JIC, and Risk County EOCs (Bradley and Hamilton) will be set up in accordance with established plans and procedures, considered operational at START EX, and remain fully operational during the course of the exercise.

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.

EXTENT-OF-PLAY – The decision making process will be scenario driven and denionstrated by appropriate staff through observations by and discussions with evaluators in the SEOC.

2.6. Radiological assessnient 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.

EXTENT-OF-PLAY – Demonstration will **be** scenario driven and accomplished by appropriate staff in the SEQC, RMCC. and CECC. Personnel (DRH) at the SEOC in concert with TVA counterparts in the CECG wiil perform dose assessment. 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 (PADs) for the genera! public (including the recommendation for the use of KI, if ORO policy).

EXTENT-OF-PLAY – Demonstration will be scenario driven and accomplished by appropriate staff personnel in the SEOC. Prior to implementation, decisions will be coordinated with the Risk County EOC Directors to ensure understanding/concurrence.

2.c. Protection Action decisions for Protection to Special Populations:

Criterion 2.c.1: Protective action decisions are made, as appropriate, for special population groups.

EXTENT-OF-PLAY – Demonstration of this process by appropriate staff; i.e., D M , EMS, TEMA, etc., in the State Emergency Operations Center will be scenario driven and based on projected exposure. Decisions will be coordinated through affected county EOCs for concurrence and implementation. Lists of the

special needs as well as the resources necessary and available for evacuation are maintained by local **EMA** Directors. When requested, the lists will be provided to the evaluator. Organizational procedures for executing protective actions will be discussed with evaluators. Contact with the Public School System must be actual.

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

Criterion 2.d.1: Radiological consequences for the ingestion pathway are assessed and appropriate protective action decisions are made based on the ORO planning criteria.

EXTENT-OF-PLAY – Not applicable for the exercise.

2.e. Radiological Assessnient and Decision-Making Concerning relocation, Reentry, 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 OROs plan and/or procedures.

EXTENT OF PLAY – Not applicable for the exercise.

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.

EXTENT-OF-PLAY – Emergency workers with assignments in the IO-mile EPZ and those involved in radiological monitoring and/or decontamination are issued Emergency Worker Dosimetry Kits. The kits contain: a Thermoluminescent dosimeter (TLD). a direct-reading pocket dosimeter with a range capable of measuring radiation exposure of 0-20 R, a course (14 tablets) of Potassium Iodide (KI), and a Daily Exposure Record card. Four **(4)** emergency workers in each of the Risk County EOCs (Bradley and Hamilton) 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 exceeded.

3.b. Implementation of KI Decision:

Criterion 3.b.l: 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.

EXTENT-OF-PLAY – Demonstration hy appropriate staff in the State Emergency Operations Center will be: scenario driven and based on projected exposure. The Chief Medical Officer for the Tennessee Department of Health is located at the SEOC and, 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 relayed through the local EOCs and, if the general population is included, distribution of KI to shelters will be simulated however, procedural discussions between the Chief Medical Officer and other appropriate staff in the SEOC and the evaluators will be conducted.

3.c. Implementation of Protective Actions for Special Populations:

Criterion 3.c.1: Protective action decisions are implemented for special population groups within areas subject to protective actions.

EXTENT-OF-PLAY – Denronstration of this process by appropriate staff in the SEOC and Risk County EOCs will be scenario driven and based on projected exposure. Decisions will he coordinated through affected county EOCs for concurrence and implementation. (See Sub-paragraph 2.c.1j Implementation of protective actions will be simulated however, procedural discussions between appropriate staff in the State/Risk County EOCs and the evaluators will he conducted. Some contact with transportation providers should be actual.

Criterion 3.c.2: OROs/school officials decide upon and implement protective actions for schools.

EXTENT-OF-PLAY – County school superintendents and transportation supervisors or designees wiil be available at respective EOCs for interviews by evaluators. In order to reduce the number of events to **be** demonstrated on exercise day, out-of-sequence interviews with nine (9) Hamilton County schools/principals were conducted for the purpose of ascertaining staff know ledge of relocation plans and procedures:

ENDANGERED SCHOOL	LOCATQN	DATE
Soddy Elementary School	9042 Career Lane Ooltewah, TN 37363	May 14, 2002
Ganns Elementary School	1609 Thrasher Pike Hixson, TN 37343	May 14, 2002
Hunter Road Middle School	5973 Hunter Road Ooltewah, TN **37163**	May 14, 2002
John Allen Elementary School	9811 Dallas Hollow Road Soddy Daisy, TN 37379	May 14, 2002

Soddy-Daisy High School	618 Sequoyah Access Road Soddy Daisy, TN 37379	May 14, 2002
Loftis Middle School	8611 Columbus Road Hixson, TN 37343	May 15, 2002
North Hamilton County Elementary School	601 Industrial Boulevard Sale Creek, TN 37373	May 15, 2002
Falling Water Elementary School	715 Roberts Mille Road Hixson, TN 37343	May 15, 2002
Soddy-Daisy Middle School	200 Turner Road Soddy Daisy, TN 37379	May 15, 2002

3.d. Implementation of Traffic and Access Control:

Criterion **3.d.l:** Appropriate traffic and access control is established. Accurate instructions are provided to traffic and access control personnei.

EXTENT-OF-PLAY – Deployment of traffic and access control personnel will be simulated however, two (2) Emergency Workers tasked with performing such duties will be interviewed at each of the Risk County EOCs. This activity will be in sequence with the scenario; i.e., at the point 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 such points as: roles and responsibilities, personal dosimetry, turn-back values, and KI procedures.

Criterion 3.d.2: Impediments to evacuation arc Identified and Resolved,

EXTENT-OF-PLAY – Demonstration of impediments, if any, will be scenario driven. Regardless. law enforcement personnel at the State and Risk County EOCs will be available for out-of-scenario sequence discussion and interview.

3.e. Impiementation of Ingestion Pathway Decisions:

Criterion 3.e.1: The ORO demonstrates the availability and appropriate use of adequate information regarding water, food supplies, milk, and agricultural production within the ingestion exposure pathway emergency planning zone for implementation of protective actions.

EXTENT-OF-PLAY – Not applicable for the exercise

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.

EXTENT-OF-PLAY – Not applicable for the exercise

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

Criterion 3.f.1: Decisions regarding controlled re-entry of emergency workers and relocation and return of the public are coordinated with appropriate organizations and implemented.
EXTENT-OF-PLAY – Not applicable for the exercise

Evaluation Area 4 – Field Measurement and Analysis

4.a. Plume Phase Field Measurements and Analysis:

Criterion 4.a.l: The field teams are equipped to perform field measurements of direct radiation exposure (cloud and ground shine) and to sample airborne radioiodine and particulates.

EXTENT-OF-PLAY – Field teams will utilize appropriate instrumentation and guideline 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.

EXTENT-OF-PLAY – (See Sub-paragraph 4.a.l.) All field teams will be under the direction of the RMCC. In addition to the four **(4)** field teams being evaluated, additional teams may also be participating for training purposes.

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 proceduresj amount of radioactivity has been collected on the sampling media.

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 will be transnritted by the teams to the RMCC over the normal communications network (portable hand-held radios). Cellular telephones will be used as a back-up communication system.

4.b. Post Plume Phase Field Measurements and Sampling:

Criterion 4.h.l: The field teams 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.

EXTENT-OF-PLAY – Not applicable for the exercise.

4.c. Laboratory Operations:

Criterion 4.b.l: The laboratory is capable of performing required radiological analysis to Support protective action decisions.
EXTENT-OF-PLAY – Not applicable for the exercise.

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 **FEMA** REP guidance. (10 CFR Part *50*, Appendix E.IV.D and NUREG-0654, E.5,6,7): *(1)* identification of the State or local government organization and the official with the authority for providing the alert signal and instructional message; (2) identification of the commercial nuclear power plant and a statement that an emergency situation exists at the plant; **(3)** reference to REP-specific emergency information (e.g., brochures and information in telephone books) for use **by** the general public during an emergency; and (4) a closing statement asking the affected and potentially affected population to stay tuned for additional information.

EXTENT-OF-PLAY – The Emergency Alert System (EAS) will be activated simultaneously with the initial activation (SILENT TEST) of the Sequoyah (PNS) sirens with the 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 siren activations and EAS message broadcasts will be simulated.

NOTE: 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. In any case, two **(2)** Emergency Workers who would be involved in such activity will be dispatched (in sequence with scenario events) to the Bradley and Hamilton County EOCs. These EWs will be available for interviews to discuss the routes and procedures that would be utilized in an actual emergency situation.

NOTE: In order to avoid alarming the residents in the 10-Mile EPZ, live activation/s of the Prompt Notification System (PNS) sirens will be simulated.

Criterion 5.a.2: Removed.

EXTENT-OF-PLAY – Not applicable for the exercise

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 coniplcted within 45 minutes following the detection hy the ORO of a failure of the primary alert and notification system.

EXTENT-OF-PLAY – Not applicable for this exercise

5.h. 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.

EXTENT-OF-PLAY – Public Information Officers in the SEOC and JIC will work in concert as the scenario dictates. 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 he disseminated from the SEOC via the EAS. Both entities will continually exchange information to ensure a "one voice" response to the public/media is maintained. After the initial activation of the EAS and broadcast of the special test message, subsequent contact with the EAS control station and the broadcast of emergency instruction messages will he simulated,

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, arid registration of evacuees and/or emergency workers.

EXTENT-OF-PLAY – See Sub-paragraph 6.c..

NOTE: There are no "Reception Centers" per se in the SQN MJRERP. According to the definitions in FEMA REP 14, the Relocation Center/Congregate Care Center activities are combined and designated as "Mass Care Shelters."

6.b. Monitoring and Decontamination of Emergency Worker Equipment:

Criterion 6.b.l: The facility has adequate procedures and resources for the accomplishment of monitoring and decontamination of emergency worker equipment including vehicles.

EXTENT-OF-PLAY – Not applicable for the exercise. Demonstration was accomplished during Sequoyah '2000 at the Ooltewah Middle School, Hamilton County, and Bradley County High School, Bradley County.

6.c. Temporary Care of Evacuees:

Criterion 6 c.1: Managers of congregate care facilities wiil demonstrate that the centers have resources to provide services and accommodations consistent with American Red Cross planning guidelines. Managers demonstrate the procedures to assure that evacuees have been monitored for contamination and have been decontaminated as appropriate prior to entering congregate care facilities.

EXTENT-OF-PLAY – Congregate care will be demonstrated, out of scenario sequence, at the following **six** (6) locations. Each shelter will he staffed with trained personnel, and at least six (6) monitoring demonstrations will be accomplished at each shelter. **A** walk-through of decontamination procedures will be conducted for the evaluators. Schools may be in session; demonstrations of monitoring, decontamination, and sheltering activities should be held to a minimum in order to lessen disruption of regular school activities. However, the staff will be available for interview by evaluators.

SHELTER	LOCATON	DATE
Meigs County High School	105 Able Avenue, Decatur, TN 37322	August 15, 2002
Sequatchie County High School *	523 Highway 28 South, Dunlap, Tennessee 37327	September 10, 2002
Ocoee Middle School	2250 N. Ocoee Street, Cleveland, TN 37311	September 18, 2002
Rhea Central Elementary School	1005 Delaware Avenue, Dayton, TN 37321	September 25, 2002
East Ridge Middle School	400 Bennett Road, East Ridge, TN 37412	September 26, 2002
Orchard Knob Middle School	500 No.Highland Park Ave., Chattanooga, TN 37404	September 26, 2002

* **ARCA Issue *No.*: 58-98-18-A-03** **(SQN00)**

Description: Personnel from the Sequatchie County Fire Department performed the initial monitoring of the evacuees. The monitor did not appropriately follow County procedures for radiological monitoring (Sequatchie county Implementing Procedures, Sequatchie County Health Department, Revision 4. July 1998, pp. EE-16, Section VIII.H.). We did not cover the probe or wear gloves while monitoring. He also did not check the feet. front, and back of the evacuees. The probe was moved too rapidly over the area that he surveyed

The set-up of the decontamination area for evacuees requires both contaminated and clean evacuees to traverse a narrow entryway that would be difficult to prevent decontaminated evacuees from stepping in contaminated areas.6.d – Transportation and Treatment of Contaminated Injured Individuals:

6.d. Transportation and Treatment of Contaminated Injured Individuals:

Criterion 6.d.I: The facility/ORO has the appropriate space, adequate resources, and trained personnel to provide transport, monitoring, decontamination, and medical services to contaminated injured individuals.

EXTENT-OF-PLAY – Demonstration at the following locations was accomplished out of scenario sequence:

FACILITY	LOCATION	DATE
Memorial Hospital	Chattanooga, Hamilton County	June 19, 2002
Parkridge Medical Center	Chattanooga/Hamilton County	July 11, 2002

EXTENT-OF-PLAY (EOP): Refers to the degree actions taken by State arid local response organizations during exercise events will conform to those actions to be taken under the Sequoyah MJRERP. In instances where actions are to he simulated, it is so noted in the EOP.

ACCRQNYMS:

ARCA	Areas Requiring Corrective Action
DRH	Division of Radiological Health
EMA	Emergency Management Agency
EMS	Emergency Medical Services
END EX	End Exercise
EOC	Emergency Operations Center
EOP	Extent of play
EPZ	Emergency Planning Zone
FCC	Field Coordination Center
JIC	Joint Information Center
MJRERP	Multi-jurisdictional Radiological Emergency Response Plan
OES	Office of Emergency Services
ORO	Off-site Response Organization
RMCC	Radiological Monitoring Control Center
SEOC	State Emergency Operations Center
START EX	Start Exercise

APPENDIX 4

EXERCISE SCENARIO

This appendix contains a summary of the simulated sequence of events used as the basis for invoking emergency response actions by OROs in the Sequoyah Nuclear Power Plant exercise on October 2,2002.

This exercise scenario was submitted by the State of Tennessee and approved by FEMA Region IV.

SEQUOYAH NUCLEAR PLANT (SQN) 2002 NRC/FEMA GRADED EXERCISE
SCENARIO NARRATIVE
CONFIDENTIAL.
Rev. date: 7/18/02

INITIAL CONDITIONS:
UNIT-I:

- 100% power for the last 120 days. The core is at BOL. The Boron concentration is 978 ppm and burnup is *5085* MWD/MTU.
- 1A-A SI Pump *is* O.Q.S. for repairs. LCO 3.5.2 has been entered.
- Known leak of .1 gallon/day *at* the Seal Tabie. *An* inspection of this leak will *occur* this shift.
- 1-XX-55-6C socket for FCV-63-98 bas failed. MEG is planning to repair it.

UNIT-2:

- *As* is.

COMMON:

- An uncontrolled release of water from Chickamauga Dam began several hours ago when a barge entering the lock broke free from its tug and struck the downstream gates resulting in a breach of the lock. The tug struck the upstream gate which can not be closed completely. At the start of the exercise the river level is at *693.5* feet and decreasing. Repairs are under way which will stop the release of water and are expected to be completed within two hours.

EVENTS: Note: Times are in scenario elapsed time(hr:min). While the Scenario has certain EALs listed which the SED is expected to make declaration of the emergency classifications(ALERT, SAE, GE), it is possible that the SED may declare an emergency classification based on judgment or some other set of EALs which the Scenario did not expect. If any of these situations arise the Controllers must be ready to evaluate the accuracy and timeliness of these unexpected emergency declarations.

At five minutes (T=00:05) into the exercise, personnel enter the lower airlock of U-1 containment. Shortly after this the River level reaches 672.8 feet.

By twenty minutes (T=00:20) into the exercise a NOUE should be declared based on EAL5.5U(River level is < 673 feet as reported by River Operations).

At about thirty minutes(T=00:30) into the exercise, a plug for a steam generator (SG) tube comes out and makes its way through the lower core plate. Loose parts monitor alarms occur during this trip to the lower head. Shortly the thimble tube leak increases. The workers present try to exit the containment but one of them falls off the Seal Table platform breaking a leg and becomes contaminated from the hot water and steam leaking from the tube. The other workers manage to get the injured person and themselves into the airlock and close the inner door to the Containment. The medical emergency and leak are reported within five minutes. While the Reactor Coolant Pumps are running this SG tube plug is constantly damaging the debris screen at the bottom of a particular fuel assembly. Shortly, this debris screen is punctured and the plug begins to impact some fuel rods resulting not only in clad failures but the plug also pulverizes numerous fuel pellets over time. This produces coolant activites comparable to fuel melt situations.

At about forty minutes(T=00:40) into the exercise, Operations Scrams the reactor and initiate a SI. When the reactor Scrams two control rods(N9 and N11) do not insert completely and 1B-B Si pump motor trips on start up. An ALERT should be declared based on EAL. 1.2.2P(Non isolatable RCS leak exceeding one charging pump in the normal alignment). When containment pressure reaches 2.81 PSIG the Reactor Coolant Pumps should be locked out by Operations but may be started again later to assist with the cool down.

At about one hour twenty five minutes(T=01:25) into the exercise enough radioactivity has entered containment to cause the lower compartment Accident Monitors 1-RM-90-273 and 274 to reach about 30 R/hr. EAL 1.1.5(Valid reading greater than 29 R/hr on 1-RE-90-273 and 274) is reached. A SAE should be declared based on loss or potential loss of two barriers(RCS and Fuel clad).

At about one hour forty five minutes(T=01:45) into the exercise, the 1B Air return fan in U-1 containment trips.

At about two hours twenty minutes(T=02:20) into the exercise, when containment pressure has again reached about 2.2 psig the Containment fails at the lower access personnel hatch . A GE should be declared based on EAL 1.1.5(Valid reading greater than 29 R/hr on 1-RE-90-273 and 274), EAL 1.2.2P (Non isolatable RCS leak exceeding one charging pump in the normal alignment), and EAL 1.3.2L(Rapid unexplained pressure decrease following initial increase).

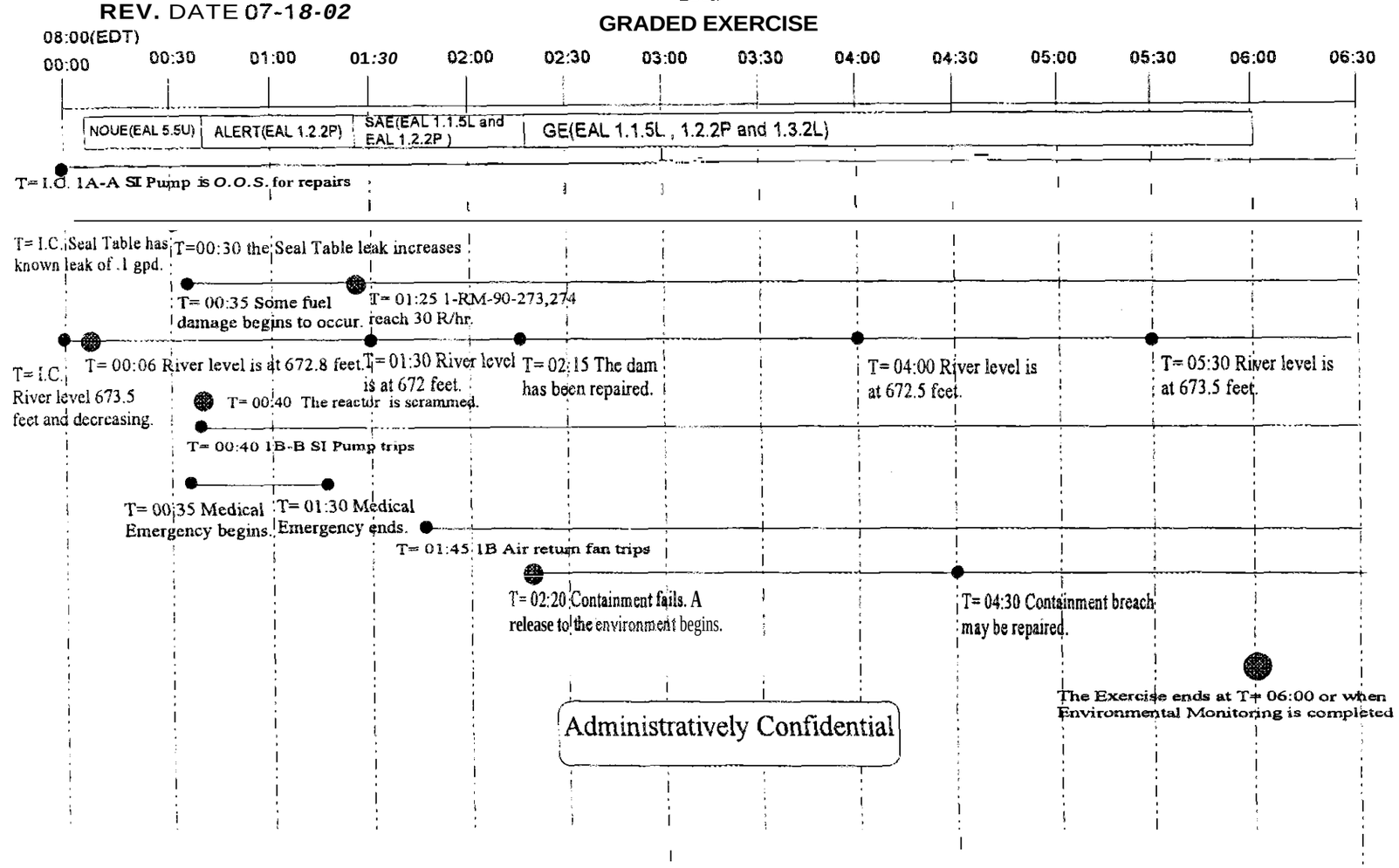
The exercise will terminate at about six hours(T=06:00) into the exercise or when off site environmental monitoring objectives have been demonstrated .

The importance of scenario events:

IA-A SI Pump is O.O.S. for repairs	Provides an additional OSC task. Also as the Scenario progresses allows an opportunity for the TSC/OSC to prioritize tasks. Also needs to be out for the Simulator to simulate the location of the thimble tube leak.
Known leak of .1 gallon/day at the Seal Table	Provides a reason for entering the containment and when the leak increases it becomes the initiating went for the ALERT declaration and also for the Medical emergency.
1-XX-55-6C socket for FCV-63-98 has failed.	This is to support simulation of the thimble tube leak using an existing leak location. Also as the Scenario progresses allows an opportunity for the TSC/OSC to prioritize tasks.
River Level at 673.5 feet and decreasing	When River level reaches < 673 feet the NOUE conditions are met
1B-B SI pump motor trips on start up	Provides an additional OSC task. Also as the Scenario progresses allows an opportunity for the TSC/OSC to prioritize tasks. Also needs to be out for the Simulator to simulate the location of the thimble tube leak.
A SG tube ping comes out and damages fuel.	Provides reason for fuel damage.
Two Control Rods do not insert completely.	Complicates cool down.
1-RM-90-273 and 274 reach 30 R/hr.	Combined with the thimble tube leak, allows for loss of the RCS and Fuel Clad barrier resulting in the SAE declaration
1B air return fan trips.	Allows containment pressure lo increase above 2 psig again
Containment fails.	Combine with loss of the previous two barriers results in a GE declaration.

SQN
EMERGENCY PREPAREDNESS
2002
GRADED EXERCISE

SCENARIO TIMELINE
REV. DATE 07-1*8-02*



Administratively Confidential

General Notes:

Locations in the actual operating areas of the plant will be used for training purposes in certain events. Please be aware of the operating areas that are sensitive to radio communications and other effects that may effect the units.

Mock-ups will be utilized for certain events associated with the exercise. Controllers will manage events associated with the mock-ups to ensure that team members are made aware of the locations and conditions of the mock-ups.

ICS data will be generated and supplied from the simulator. ICS will be limited in its ability to perform as it currently exists hut we are capable of producing plant parameters necessary for the exercise.

The training simulator will be utilized during the exercise to simulate the Unit 1 Control Room. For this reason, communications will be conducted as follows:

SM	**4210**	**FAX(Simulator)**	**4235**
US, RO, BOP	**4397,4398**		

Simulation and Personnel Safety

No action will actually be taken that may alter the operation of the site. Valves, pumps. switches, and other equipment will be physically located but verbal descriptions will be given instead of actual operations which may impact site operation. Actions which WILL NOT impact the site operations. like protective clothing and supplies, will be performed unless otherwise instructed by the controllers.

Personnel WILL NOT enter High Radiation or Contamination Areas

Full actions are expected and allowed on mock-ups

Simulation Specifics:

1. Accountability — Assembly - Will be performed
   Site Evacuation - Simulate
2. Security — Roadblocks - Simulate
3. Environmental Monitoring — Environs Vans - Full participation for SQN,
   WBN van - Full participation.
   Screening Van - Full participation
   Courier - Full participation
4. NRC Notification — Make first call to inform NRC of the exercise
   Ask NRC if further follow-up is desired
   All other contacts are based on NRC wishes
   Notify NRC of termination of the exercise
5. Post-Accident Sampling — PASF - Simulate
6. Offsite Support
   - Central Emergency Control Center will fully participate.
   - Joint Information Center will fully participate,
   - State Emergency Operations Center will fully participate.
   - Risk Counties Emergency Operations Centers will fully participate
   - State Field Coordination Center will fully participate.
   - State Radiological Monitoring Control Center will fully participate.
   - State Field Teams will fully participate.

   Other TVA Off Site Support - Contact BUT DO NOT ACTIVATE.
7. ERDS — Activation - Simulate

Instructions and Rules for Plant Players

A. Time

Even though controliers may refer to "Elapsed" or "Scenario" time, all players are to use only clock time (local time) in actions. logs, etc.

B. Conduct of an Exercise

There are seven categories of persons during an exercise...

1. **Controller --** runs the exercise. evaluates when won't interfere with conducting the exercise
   Controllers conduct an exercise by providing information to players. A controller must accompany players on any task given. If a controller is **not** standing by. players should locate the lead controller for the area and notify him of her of their need for a controller.
2. Evaluator -- evaluates the actions of the controllers and players
   May not interact, assist. or interfere with actions of players.
3. Visitor (or Observer) -- observes for own information, performs no evaluations
   May not interact, assist. or interfere with actions of players
4. **Player** -- any person who participates in the exercise and actions are being graded
   Must ensure a controller is available before performing tasks for proper exercise conduct.
5. Drill Exempt -- excluded from the exercise to perform routine duties
   May not interact, assist, or interfere with actions of players. Does not have to react to drill events.
6. **Mentor** – any person who is participating in the exercise to work along side of a player and provide training or specific guidance and instruction. This person will not be knowledgeable of the exercise material.
7. Coach – any person who is participating in the exercise to observe and offer assistance only as requested by the player. This person will not be knowledgeable of the exercise material.

Demonstrate your knowledge of the emergency plan, emergency operations and procedures. Utilize Status boards, log books. etc. **as** much as possible to document and record your actions. instructions, and reports to your co-workers. The controllers use these logs to credit you with actions and failure to maintain good legs may result in not being credited with actions you did perform.

C. Simulation

Play out all actions ***as*** much as possible as if this were a real emergency. Unless authorized by a controller, you ***SHOULD*** *NOT* simulate actions. It is to our advantage to perform as many of our actual tasks under simulated accident conditions to identify problems and improve our actions. Plant and personnel safety, however, always take precedent over exercise activities.

If authorized to simulate an action. tell the controller how and when you would actually perform each step. Clearly identify all actions you would perform *so* that the controller may credit **you** with prior actions. Remember. you are entering plant areas with actual day-to-day restrictions. A drill or exercise DOES NOT suspend plant procedures. ***NO*** ONE, not even controllers or evaluators, are exempt from normal station radiological, safety. or operating procedures. Report any hazardous conditions or situations immediately to the controller.

You must play as if the simulated radiological conditions provided by the controllers were real. You will be required to wear the appropriate protective equipment and follow proper practices including ALARA practices. Since controllers would not actually exist in a real emergency, controllers will not be wearing equivalent radiological protective clothing. **Do** not allow this to confuse you or make you act unwisely.

IN ALL CASES: Do not enter high radiation areas. contamination areas, or airborne contarnination areas in the plant. The benefit of experience *DOES NOT* justify the additional dose arid potential for contamination.

D. Communications

Speak out, identifying your key actions and decisions to the controliers and evaluators. Remember to always say the words "This is a drill" at the start and conclusion of all your communications to other people about drill events or information. This is especially important with radio communications where members of the public may hear your conversations and could become alarmed.

Always use the Phonetic Alphabet and 3-Way Communications

Controller Messaoes If you are ever in doubt about a message, ask the controller for clarification. Controllers will always repeat or clarify a message. The controller will not, however, prompt or coach you, but will tell you only what you would perceive with you own senses.

Controller Intervention If a controller intervenes with your actions, it is for a good reason. Obey the controller's directions at all times. The controller will afso periodically issue messages or instructions designed to initiate, clarify. or terminate an activity. You MUST accept these messages immediately and respond accordingly.

If a situation arises where you disagree with the information that a controller provides, you may ask to have the information verified by the lead controller for that area. Once verified, however. you must act on the information without further delay. We cannot allow a technical disagreement to derail the exercise so, please continue with the information you have and the issue will be addressed after the exercise.

E. Post-Exercise Critique

At the end of the exercise. the players will be expected to evaluate their own performance. This is a very important activity as it demonstrates our ability to be self-critical and our desire to improve our own programs without the need for outside organizations. The intent of these critiques. both the players and controllers, is to improve TVA's response to an actual emergency.

Keep a list of items you feel will improve the emergency plan and procedures. Provide this during the post-exercise critique and give your notes to your lead controller after the player critique and he or she will ensure that they are considered.

APPENDIX 5

MEDICAL DRILL

June 18,2002

Memorial Hospital of Chattanooga, Chattanooga, Tennessee

On June **18,2002, a** medical services drill was conducted to evaluate the response of Memorial Hospital, Chattanooga, Tennessee.

The medical drill was initialed at 0915, when Memorial Hospital Emergency Medical Service (EMS) responded to an accident involving a contaminated individual, who was suffering from **a** large contusion on his forehead with lacerations to the right leg and ann. The EMS unit examined the patient while obtaining basic information regarding the accident and reassuring the patient that he would be fine. The patient was placed on a draped backboard, cocooned and carried to the ambulance.

The ambulance **was** properly insulated. Communication between EMS personnel and Memorial Hospital **was** demonstrated while in route to the hospital. The hospital was prepared to receive the patient. **A** security line was established around the receiving area and security personnel maintained control. The receiving area outside the radiation emergency area and radiation treatment **area** floors had protective covering. The monitoring was satisfactory. Contamination control and decontamination procedures were good. Staff was knowledgeable and worked well as a team. Emergency room (ER) staff wore direct-reading dosimetry and permanent-record dosimetry.

Patient monitoring, decontamination, and contamination control procedures followed by ER staff were good. The fact that ER staff members would contact Oak Ridge for assistance on contamination, if required, *is* commendable. Appropriate medical samples were taken from the patient's wound and other ingestion areas. **An** x-ray of the patient injury was done. The hospital staff demonstrated the capability to respond to **an** injured and contaminated patient.

a. **MET: CRITERIA** 3.a.1. and 6.d.l.

h. **DEFICIENCY:** NONE

c **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs – RESOLVED:** NONE

f. **PRIOR ARCAs – UNRESOLVED:** *NONE*