



FEMA

February 26, 2008

Victor M. McCree
Regional Administrator - RII
Nuclear Regulatory Commission
61 Forsyth Street, SW, Suite 23T85
Atlanta, Georgia 30303

Dear Mr. McCree:

Enclosed is a copy of the final exercise report for the October 16, 2007, McGuire Nuclear Station Exercise. The final exercise report was prepared by the Federal Emergency Management Agency Region IV Radiological Emergency Preparedness Program staff. Copies of this report will be forwarded to the State of North Carolina and NRC Headquarters by my staff.

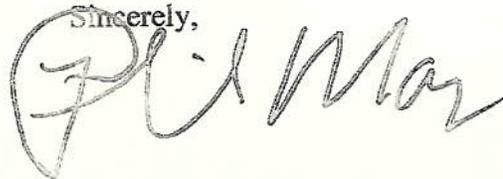
The evaluation of State and local government's plans and preparedness included emergency operations management, protective action decision-making and implementation, emergency notification and public information and support operations for the State of North Carolina and Catawba, Gaston, Iredell, Lincoln, and Mecklenburg Counties within the 10-mile EPZ and Cabarrus County, a host county. The good working relationship between Duke Energy, the State of North Carolina and the affected counties was evident at all locations.

FEMA did not identify any Deficiencies or Areas Requiring Corrective Actions (ARCA) during this exercise. The participation of both NRC and FEMA representatives at the State Emergency Operations Center added realism to the exercise and demonstrated commitment to keep the residents of North Carolina informed during an emergency. The State of North Carolina and the counties have dedicated emergency response staff who are serious and professional in executing their duties.

Based on the results of this exercise, evaluated out-of-sequence activities and the review of the 2006 and 2007 annual letters of certification, the offsite radiological emergency response plans for the State of North Carolina and the affected local jurisdictions, site-specific to the McGuire Nuclear Station, can be implemented, and are adequate to provide a reasonable assurance that appropriate measures can be

taken off site to protect the health and safety of the public in the event of a radiological emergency at the site. The Title 44 CFR, Part 350, approval of the State of North Carolina's off site radiological emergency response plans and preparedness site-specific to the McGuire Nuclear Station, granted on June 4, 1981, will remain in effect.

Should you have questions, please contact Kevin Keyes at 770/220-5378.

Sincerely,


Major P. May
Regional Administrator

Enclosure

cc: ✓ Mr. Anthony C. McMurtray, Section Chief
Inspection and Communications Section (Mail Stop 0-6H2)
US Nuclear Regulatory Commission Washington, DC 20555

Mr. Conrad S. Burnside, Chief
Technological Hazards Branch
Atlanta Regional Office

Ms. Vanessa E. Quinn, Acting Director
Federal Emergency Management Agency Headquarters
Radiological Emergency Preparedness
Branch – NP-TS-RP
500 C Street, SW (Crystal City)
Washington, D.C. 20472



FEMA

Final Exercise Report McGuire Nuclear Station

Licensee: Duke Power Company

Exercise Date: October 16, 2007

Report Date: February 26, 2008

**U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION IV**

**3003 Chamblee Tucker Road
Atlanta, Georgia 30341**

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I. EXECUTIVE SUMMARY

On October 16, 2007 the Department of Homeland Security, Federal Emergency Management Agency (FEMA), Region IV, Radiological Emergency Preparedness (REP) Program staff evaluated a plume exposure pathway exercise in the emergency planning zone (EPZ) around the McGuire Nuclear Station. The evaluation of out-of-sequence activities during the week of September 24, 2007 is included in this report. The activities included: traffic control points; protective actions for schools; reception and congregate care centers; emergency worker and vehicle monitoring and decontamination; and waterway warning. Two Medical Services (MS-1) Drills were conducted on October 17, 2007.

The purpose of the exercise was to assess the level of State and local preparedness in responding to a radiological emergency. This exercise was held in accordance with FEMA's policies and guidance concerning the exercise of State and local radiological emergency response plans and procedures. The previous Federally evaluated exercise was conducted on August 9, 2005. The qualifying emergency preparedness exercise was conducted in December 1980.

Officials and representatives from the State of North Carolina; the risk counties of Catawba, Gaston, Iredell, Lincoln, and Charlotte/Mecklenburg Counties; the host county of Cabarrus County; the Nuclear Regulatory Commission (NRC), Region II; and Duke Power Company as well as numerous volunteers participated in this exercise. The cooperation and teamwork of the participants was evident throughout all phases of the exercise. FEMA wishes to acknowledge the efforts of the many individuals who participated and made the exercise a success.

State and local organizations demonstrated knowledge of their emergency response plans and procedures and successfully implemented them. FEMA did not identify any Deficiencies or Areas Requiring Corrective Action (ARCA) during this exercise. Both FEMA Region IV and the NRC played in the exercise and provided response liaison personnel to the State of North Carolina, while NRC play included their headquarters element. Participation by key Federal agencies in providing personnel greatly contributed to the exercise realism, and their presence was smoothly integrated throughout all phases of the exercise, unlike several previous exercises. Senior officials from NRC and FEMA also observed the exercise. Particularly worthy of note throughout all phases of the exercise was the strength of the working relationships between the various State and local First Responder agencies in their mission planning and execution abilities.

II. INTRODUCTION

On December 7, 1979, the President directed the Federal Emergency Management Agency (FEMA) to assume the lead responsibility for all offsite nuclear planning and response. FEMA became a part of the Department of Homeland Security with its creation in 2002. The Radiological Emergency Preparedness (REP) Program conducts its activities pursuant to Title 44 Code of Federal Regulations (CFR) Parts 350, 351 and 352. These regulations are a key element in the REP Program that was established following the Three Mile Island Nuclear Station accident in March 1979.

Title 44 CFR 350 establishes the policies and procedures for the REP Program's initial and continued approval of State and local governments' 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 (FNF) 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 from the Nuclear Regulatory Commission (NRC) to the REP Program 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 Agriculture
 - Department of Commerce
 - Department of Energy
 - Department of Health and Human Services
 - Department of Homeland Security
 - Department of the Interior
 - Department of Transportation
 - Environmental Protection Agency
 - Food and Drug Administration and
 - Nuclear Regulatory Commission.

Field representatives of these agencies serve on the Radiological Assistance Committee (RAC), which is chaired by FEMA.

Formal submission of the RERPs for the McGuire Nuclear Station to FEMA by the State of North Carolina and involved local jurisdictions occurred on March 18, 1981. Formal approval of the RERP was granted by FEMA on June 4, 1981, under 44 CFR 350.

A REP exercise was evaluated on October 16, 2007, and included evaluations of the following out-of-sequence activities held from September 24 through 27, 2007 and Medical Services-1 (MS-1) Drills on October 17, 2007:

- Catawba County: Traffic control points at McGuire Nuclear Station Office Complex on September 26, 2007; reception and congregate care at Bandys High School on September 25, 2007; waterway warning at Lake Norman on September 26, 2007; and a MS-1 Drill at North Carolina Emergency Management (NCEM) Western Branch Office parking lot (field site) and Catawba Valley Medical Center (emergency room) on October 17, 2007.
- Gaston County: Traffic control points at McGuire Nuclear Station Office Complex on September 26, 2007; protective actions for schools at Gaston County emergency operations center (EOC) on September 24, 2007; and reception and congregate care at Ashbrook High School on September 24, 2007.
- Iredell County: Traffic control points at McGuire Nuclear Station Office Complex on September 26, 2007; protective actions for schools at Iredell County EOC on September 25, 2007; emergency worker and vehicle monitoring and decontamination at I-77 Rest Area (mile marker 39) on September 26, 2007; reception and congregate care at South Iredell High School on September 26, 2007; and waterway warning at Lake Norman on September 26, 2007.
- Lincoln County: Traffic control points at McGuire Nuclear Station Office Complex on September 26, 2007; protective actions for schools at Lincoln County EOC on September 27, 2007; and waterway warning at Lake Norman on September 26, 2007.
- Mecklenburg County: Traffic control points at McGuire Nuclear Station Office Complex on September 26, 2007; protective actions for schools at Charlotte/Mecklenburg Emergency Management offices on September 24, 2007; emergency worker and vehicle monitoring and decontamination at Charlotte Fire Department Station #27 on September 27, 2007; waterway warning at Lake Norman on September 26, 2007; and a MS-1 Drill at Charlotte-Mecklenburg County Emergency Management Services (EMS) MEDIC parking lot (field site) and Carolinas Medical Center- University (emergency room) on October 17, 2007.
- Cabarrus County: Traffic control points at McGuire Nuclear Station Office Complex on September 26, 2007; and reception and congregate care at Northwest Middle School on September 25, 2007.

FEMA assessed the capabilities of State and local emergency preparedness organizations to implement their RERPs and procedures to protect the public health and safety during a radiological emergency involving the McGuire Nuclear Station. This report presents the results of the exercise and findings on the performance by offsite response organizations (ORO) during a simulated radiological emergency.

The findings presented are based on the evaluations of the Federal evaluator team, with final determinations being made by the RAC Chair and final approval by the FEMA Region IV Regional Administrator.

The criteria utilized in the 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 "Interim Radiological Emergency Preparedness Manual," dated August 2002.

Section III, entitled "Exercise Overview," presents basic information and data relevant to the exercise. This section contains a description of the plume pathway emergency planning zone (EPZ), a listing of all participating jurisdictions and functional entities, which were evaluated, and a table presentation of the time of actual occurrence of key exercise events and activities.

Section IV, entitled "Exercise Evaluation and Results," presents summary information on the demonstration of applicable exercise criteria at each jurisdiction or functional entity evaluated in a results only format.

III. EXERCISE OVERVIEW

This section contains data and basic information relevant to the October 16, 2007 exercise and out-of-sequence activities that occurred during the exercise week. The purpose of the exercise was to test Federal, State and local response capabilities in the area surrounding the McGuire Nuclear Station.

A. Plume Emergency Planning Zone Description

The McGuire Nuclear Station is located in northwest Mecklenburg County, approximately 17 miles northwest of Charlotte, North Carolina. The topography of the 10-mile EPZ varies from the shoreline of Lake Norman and the Catawba River to the west, to hills from the north, east, south and west.

The 10-mile EPZ contains a resident population of approximately 132,000. Parts of Mecklenburg, Lincoln, Gaston, Iredell and Catawba counties lie within the plume EPZ. The land use within the EPZ is predominately suburban, non-farm residential and recreational with a small amount being used to support dairy and beef cattle, and fruit and vegetable farming. There are five parks in the EPZ.

The major transportation routes include: Interstate 77, US Highway 21, and North Carolina 115 to the east; North Carolina Highway 16 to the west and North Carolina Highway 73 to the south of the site. The CSX Railroad passes within four miles to the west, with a spur that travels to the McGuire Nuclear Station site. There is seasonal boat traffic on the Catawba River and Lake Norman. The EPZ is divided into 19 sub-zones designated A through S.

B. Exercise Participants

The following agencies, organizations, and units of government participated in the McGuire Nuclear Station exercise on October 16, 2007.

STATE OF NORTH CAROLINA

- Governor's Office
 - Public Information
 - Office of Citizen's Affairs
- Department of Crime Control and Public Safety
 - Division of Emergency Management
 - State Highway Patrol
 - National Guard
 - Public Affairs Office
- Department of Environment and Natural Resources
 - Division of Environmental Health
 - Radiation Protection Section
 - Division of State Parks

Wildlife Resources Commission
Department of Health and Human Services
Division of Public Health
Office of Public Health and Response
Division of Facility Services

FEDERAL AGENCIES

Nuclear Regulatory Commission
Federal Emergency Management Agency, Region IV

RISK JURISDICTIONS

Cabarrus County
Emergency Management
Emergency Medical Service
Sheriff's Office
Department of Social Services
Health Department/Health Alliance
Cabarrus County Rescue
Cabarrus County Schools
Kannapolis Police Department
Kannapolis Fire Department

Catawba County
Emergency Management
Emergency Medical Service
Sheriff's Office
Department of Social Services
Health Department
Catawba County Schools
Bandys Fire Department
Maiden Fire Department
Catawba Valley Medical Center

Gaston County
Emergency Management
Emergency Medical Service
Sheriff's Office
Department of Social Services
Health Department
Gaston County Schools
Gaston County Police Department
Gastonia Fire Department

Iredell County

Emergency Management
Emergency Medical Service
Sheriff's Office
Department of Social Services
Health Department
Fire Marshal
Iredell County Schools
Iredell County Radiological Monitoring and Decontamination Team

Lincoln County

Emergency Management
Emergency Medical Service
Sheriff's Office
Department of Social Services
Health Department
Fire Marshal
Lincoln County Schools
Howard's Creek Volunteer Fire Department

Mecklenburg County

Emergency Management
Emergency Medical Service/MEDIC
Sheriff's Office
Department of Social Services
Health Department
Fire Marshal
Mecklenburg County Schools
Charlotte-Mecklenburg County Police Department
Charlotte Fire Department
Carolinas Medical Center (CMC) University Hospital

PRIVATE/OTHER VOLUNTEER ORGANIZATIONS

American Red Cross
Amateur Radio Emergency Services
Duke Power Company

C. Exercise Timeline

Table 1 on the following page presents the times at which key events and activities occurred during the plume phase of the McGuire Nuclear Station exercise on October 16, 2007. Included are times that notifications were made to the participating jurisdictions/functional entities.

Table 1. Exercise Timeline

DATE AND SITE: October 16, 2007 - McGuire Nuclear Station

Emergency Classification Level or Event	Time Utility Declared	Time That Notification Was Received or Action Was Taken											
		SERT/ SEOC	Western Branch	JIC	Catawba County	Gaston County	Iredell County	Lincoln County	Mecklenburg County	Cabarrus County			
Unusual Event	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Alert	0822	0835	0848	0833	0846	0847	0843	0900	0905	0850			
Site Area Emergency	1012	1021	1036	1018	1027	1024	1024	1030	1030	1030			
General Emergency	1217	1228	1219	1255	1232	1239	1230	1234	1234	1230			
Simulated Rad. Release Started	1217	1228	1219	1225	1232	1239	1300	1234	1234	1230			
Simulated Rad. Release Ended	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing			
Facility Declared Operational		0900	0854	0940	0847	0922	0855	0943	0905	0955			
Exercise Ended		1359	1359	1405	1359	1359	1358	1410	1406	1355			
Declaration of Local Emergency		N/A		1310	1204	1017	1029		1005				
State Assumes Direction and Control		1100	1100	1100	1100	1100	1100	1100	1100	1100			
State Declaration of Emergency		1305	1320				1310		1350	1310			
Early Precautionary Actions: Schools Evacuated: Schools Released: Schools Sheltered: Special Populations Relocated: Clear Lake Norman:		1030			1204	1054 1032	0920	1040	1035				
1st Protective Action Decision: Public Warning		1030	1030		1030	1030	1030	1030	1030	1030			
1st Siren Activation		1040	1040	1040	1040	1040	1040	1040	1040	1040			
1st EAS Message		1045	1045	1045	1045	1045	1045	1050	1045	1045			
1st NWS Message		1050	1050	1050	1050	1050	1050	1055	1050	1050			
2nd Protective Action Decision Evacuate Zones: A, B, C, L, M, N, O, R Shelter-in-place Zones: D, E, F, G, H, I, J, K, P, Q, S		1245	1245		1245	1245	1245	1245	1245	1245			
2nd Siren Activation		1250	1250	1250	1250	1250	1250	1250	1250	1250			
2nd EAS Message		1255	1255	1255	1255	1255	1255	1300	1255	1255			
2nd NWS Message		1300	1300	1300	1300	1300	1300	1305	1300	1300			
Placed Livestock on Stored Feed in EPZ				1100	1204	1245		1228					
KI Ingestion Decision for EW		1237		1230	1248	1247	1243	1254	1253	1245			

IV. EXERCISE EVALUATION AND RESULTS

This section contains the results and preliminary findings of the evaluation for all jurisdictions and functional entities that participated in the exercise on October 16, 2007 and out-of-sequence activities demonstrated during the week of September 24, 2007 and MS-1 Drills on October 17, 2007. The exercise tested the offsite emergency response capabilities of State and local governments within the 10-mile EPZ around the McGuire Nuclear Station.

Each jurisdiction and functional entity was evaluated based on their demonstration of criteria as delineated in REP Exercise Evaluation Methodology, dated August 2002. Detailed information on the exercise criteria and the extent-of-play agreement used are found in Appendix 3 of this report.

A. Table 2: Summary of Results of Exercise Evaluation -

The matrix presented in Table 2, on the following page, presents the status of all exercise criteria that were scheduled for demonstration during this exercise, by all participating jurisdictions and functional entities. Exercise criteria are listed by number. 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 of Exercise Evaluation

DATE AND SITE: October 16, 2007 - McGuire Nuclear Station

ELEMENT/Sub-Element	SERT/SEOC	WBO	Dose Assess	JIC	FMT/ Lab	EOF	Catawba County	Gaston County	Iredell County	Lincoln County	Mecklenburg County	Cabarrus County
1. EMERGENCY OPERATIONS MANAGEMENT												
1.a.1 Mobilization	M	M	M	M		M	M	M	M	M	M	M
1.b.1 Facilities												
1.c.1 Direction and Control	M	M	M			M	M	M	M	M	M	M
1.d.1 Communications Equipment	M	M	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	M	M	M
2. PROTECTIVE ACTION DECISION MAKING												
2.a.1 Emergency Worker Exposure Control	M		M				M	M	M	M	M	
2.b.1 Rad Assessment & PARs Based on Available Information			M			M						
2.b.2 Rad Assessment and PADs for the General Public	M		M				M	M	M	M	M	
2.c.1 Protective Action Decisions for Special Populations												
2.d.1 Rad Assessment & Decision Making for Ingestion Exposure												
2.e.1 Rad Assmt 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	M
3.b.1 Implementation of KI Decisions	M				M	M	M	M	M	M	M	M
3.c.1 Implementation of PADs for Special Populations												
3.c.2 Implementation of PADs for Schools												
3.d.1 Implementation of Traffic and Access Control												
3.d.2 Impediments to Evacuation and Traffic and Access Control												
3.e.1 Implementation of Ingestion Decisions Using Adequate Info												
3.e.2 Implementation of IP Decisions Showing Strategies/Instruct. Mater.												
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					M							
5. EMERGENCY NOTIFICATION & PUBLIC INFORMATION												
5.a.1 Activation of Prompt Alert and Notification	M						M	M	M	M	M	
5.a.2 Activation of Prompt Alert/Notification 15-Min(Fast Breaker)												
5.a.3 Activation of Prompt Alert/Notification Backup Alert/Notification	M						M	M	M	M	M	
5.b.1 Emergency Info and Instructions for the Public and the Media	M			M			M	M	M	M	M	
6. SUPPORT OPERATIONS/FACILITIES												
6.a.1 Monitor: Decon of Evacuees/Emerg. Workers/Registrat. of Evac.							M	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	M
6.d.1 Transport and Treatment of Contaminated Injured Individuals							M	M	M	M	M	M

LEGEND: M = Met A = ARCA D = Deficiency

B. Status of Jurisdictions Evaluated

This subsection provides information on the evaluation of each participating jurisdiction and functional entity in a jurisdictional results based format. Presented below is a definition of the 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 criterion 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 criterion 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** – Description(s) of ARCA(s) assessed during previous exercises, which were resolved in this exercise and the corrective actions demonstrated.
- **Prior ARCAs - Unresolved** – Description(s) of ARCA(s) 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 following are definitions of the two types of exercise issues, which may be discussed in this report.

- A **Deficiency** is defined in the FEMA Interim REP 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 the Interim REP 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."

1. STATE OF NORTH CAROLINA

1.1 State Emergency Operations Center

The North Carolina State Emergency Response Team (SERT) led the State's emergency response actions in an outstanding manner. The SERT Team Leader announced significant developments and periodically conducted operations briefings which kept the state emergency operations center (SEOC) staff informed of key events and decisions. SERT personnel were knowledgeable of their responsibilities and coordinated necessary actions with Charlotte/Mecklenburg, Catawba, Gaston, Iredell, Lincoln and Cabarrus Counties and various other State and Federal agencies throughout the exercise.

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

1.2 Dose Assessment

The North Carolina Radiation Protection Section (RPS) dose assessment staff successfully monitored and evaluated plant, radiological, and meteorological data and managed the field monitoring teams (FMT) to locate, track and quantify the simulated radiological plume. Dose projections were performed to determine worst case scenarios based on plant conditions and radiological data, as well as back-calculations from FMT data, and results evaluated in collaboration with the utility dose assessors in the emergency operations facility (EOF). The RPS SERT Coordinator provided excellent direction and control of the dose assessment staff, worked effectively with Public Health officials and with the utility Technical Advisor on potassium iodide (KI) decisions. The dose assessment staff accurately evaluated and assessed plant and off-site radiological conditions and provided good input for the protective action decisions (PAD) by the SERT Team Leader. Professional conduct, competence and dedication were apparent in the execution of dose assessment staff responsibilities.

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

The North Carolina Emergency Management (NCEM) Western Branch Office (WBO) provided effective and timely liaison between the county EOCs and other agencies. For example, the counties were not receiving any press releases on the WebEOC from the Joint Information Center (JIC). WBO personnel contacted the public information officer (PIO) at the JIC, who changed the distribution to include the counties. The WBO was staffed by a group knowledgeable in emergency operations and knew the key people to contact to resolve problems. They were a cohesive and confident group of professionals.

- a. **MET: Criteria 1.a.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 Mobile Laboratory

The RPS Mobile Laboratory and associated Sample Control Group had sufficient equipment and supplies on hand to process air filters and air cartridges that were generated during the exercise. Laboratory personnel correctly calibrated instrumentation to known standards during the exercise and used the instruments to accurately analyze air samples from the FMTs. Laboratory personnel used a gamma analysis unit with limited capability that was sufficient for plume phase activities. Laboratory personnel correctly used personal dosimetry throughout the exercise.

- a. **MET: Criteria 1.e.1, 3.a.1 and 4.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**

1.5 Radiological Field Monitoring Teams

The two RPS FMTs effectively used their field monitoring procedures and demonstrated their knowledge and competence in the use of radiological survey instruments and air sampling techniques. The FMTs demonstrated use of the primary and backup communication systems and accurately and efficiently provided field radiological data and other key information to the field team leaders. FMT personnel properly verified required equipment inventories and instrument operability. Team members were cognizant of administrative exposure limits and attentive to exposure rates and cumulative dosimetry readings while in the field, and used effective contamination control measures to minimize the potential for cross-contamination of field samples. Both FMTs successfully accomplished their assigned tasks and exhibited a high degree of professionalism throughout the exercise.

- 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 Waterway Warning

Waterway warning and notification for the Lake Norman portion of the EPZ at the State level was performed by law enforcement officers of the North Carolina Wildlife Resources Commission. In addition to their boat operations, three officers from this agency provided effective operations section assistance to the Incident Commander at the ground control element at Ramsey Park. They ensured the boat teams status were tracked and updated continuously and had the boat operators radio in their dosimetry readings on time. All personnel demonstrated excellent knowledge of their roles in the waterway warning mission.

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

1.7 Emergency Operations Facility

The McGuire Nuclear Station Emergency Operations Facility (EOF), located in Charlotte, North Carolina, is an excellent facility from which all participating organizations can effectively manage emergency operations. Communications, coordination, and the flow of technical information between and among the State officials deployed to the EOF, and with the utility operator and the SEOC were outstanding. All officials deployed to the EOF were well trained, knowledgeable, followed applicable procedures, and overall performed their respective responsibilities in an efficient and professional manner.

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

1.8 Joint Information Center

The Duke Energy Public Information Manager and the Lead State PIO mobilized the JIC effectively and efficiently. The JIC staff demonstrated good cooperation, coordination, and dissemination of media information throughout the exercise. JIC and media briefings were held on a regular basis, accurately updating information in a timely fashion. Media inquiries were handled effectively, with updated information available in the media briefing area. State rumor control staff received and responded to calls from the public in a polite and empathetic manner, providing each caller with accurate and up-to-date information. If they could not give them the answers they needed they made every effort to obtain the information from within the JIC or referred the caller to an appropriate contact.

- a. **MET: Criteria 1.a.1, 1.e.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. RISK JURISDICTIONS

2.1 CATAWBA COUNTY

2.1.1 Emergency Operations Center

The EOC was well managed with frequent briefings and updates of information. Redundant systems were used for notification of the public including the Community Alerting System (CAS) in conjunction with the sounding of sirens, and the broadcast of emergency alert system (EAS), and National Weather Service (NWS) messages. All staff performed their duties with knowledge and experience. The professional staff worked well as a team to protect the local citizens.

- a. **MET:** 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.1, 5.a.3 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 Traffic Control Points

The traffic control points (TCPs) were staffed by a combination of North Carolina Highway Patrol, Sheriff's Deputies, and volunteer firefighters. During interviews the representatives demonstrated a good understanding of dosimetry and factors related to the ingestion of KI. They correctly consulted detailed notebooks provided to individuals establishing TCPs which contained all TCP locations, maps, and refresher material on personal radiological protective measures. Their explanation of how to remove impediments to traffic reflected a good understanding of normal and emergency procedures.

- a. **MET:** Criteria 1.d.1, 1.e.1, 3.a.1, 3.b.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

2.1.3 Reception and Congregate Care

The County Division of Emergency Management, Department of Social Services, Mental Health Department, Catawba County Chapter of the American Red Cross (ARC) and volunteers from a variety of organizations teamed to demonstrate reception, monitoring, decontamination, and care of evacuees at Bandys High School. The team was trained and equipped to safeguard the public and limit the spread of contamination through monitoring and decontamination. Subsequently, the ARC volunteers were fully prepared to register evacuees and provide management functions at the congregate care center.

- a. **MET:** Criteria 1.b.1, 1.e.1, 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

2.1.4 Backup Route Alerting

The County Fire Services successfully performed backup route alerting procedures for emergency notification of the public in the event of siren failure. The Fire Services representative clearly described the four route-alerting zones identified; K-1 thru K-2 (assigned to Sherill Ford-Terrell Volunteer Fire Department); K-3 (Catawba County Rescue); and K-4 (Maiden Rescue Squad) and how the agencies would be activated and deployed. The Fire Services representative successfully demonstrated tracking their progress over VHF radio and recording individual dosimetry readings.

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

2.1.5 Waterway Warning

The Sheriff's Office Lake Patrol officers were very knowledgeable of their role in the clearance of Lake Norman as well their use of personal radiological protective measures. They were very familiar with the area of the lake they were assigned to clear, since they patrol it on a daily basis. They were equipped with a script that accurately addressed actions both boaters and residents were to take. Faced with the challenges of a current low water level, they explained how they would request aerial assistance from helicopters assigned to assist in lake clearance for those areas the boat could not enter. They were well trained and equipped, and were capable of performing the mission.

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

2.1.6 MS-1 Drill

Emergency medical service (EMS) personnel responded to a simulated accident scene staged at the NCEM Western Branch Office. They properly handled the patient to control the spread of radiological contamination and transported the patient to the Catawba Valley Medical Center. After arriving at the hospital, EMS personnel gave a detailed medical update to the emergency room staff and assisted in the proper transfer of the patient to emergency room personnel. Hospital staff and supporting radiation technicians demonstrated proper contamination control and medical care, placing the emergency medical needs of the patient first. They successfully performed decontamination for the

patient to be admitted for further medical treatment. EMS and hospital staff effectively demonstrated the ability to care for a radiologically contaminated patient.

- a. **MET:** Criteria 1.e.1, 3.a.1 and 6.d.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 GASTON COUNTY

2.2.1 Emergency Operations Center

The EOC staff effectively and efficiently accomplished the mission of protecting citizens from the simulated effects of an accident at the McGuire Nuclear Station. Newly instituted position guidelines for each function in the EOC contributed to the overall success of EOC operations. Members of the staff were attentive and engrossed in the scenario as it unfolded, and were truly interested in their work as they collaborated to reach workable solutions. The Emergency Management Coordinator demonstrated excellent direction and control throughout the exercise. He held frequent staff briefings and encouraged both feed-back and problem solving from the staff.

- a. **MET:** 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.1, 5.a.3 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

2.2.2 Traffic Control Points

Law enforcement personnel representing the County Sheriff's Office, Police Department, and the Emergency Management Department demonstrated proficiency in operating the 31 pre-identified TCPs that could require activation. After drawing their ready kits from the designated staging area (the East Gaston High School) they described how they would proceed to their designated locations, read and report the values from their direct reading dosimetry (DRD), and direct traffic as assigned. The officers were fully prepared to direct evacuees to the nearest reception and congregate care center. The officers would be aided by the public emergency information announcements received from the EOC. The county is well-prepared to perform TCP actions in the event of an emergency.

- a. **MET:** Criteria 1.d.1, 1.e.1, 3.a.1, 3.b.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

2.2.3 Protective Actions for Schools

The County Emergency Management Coordinator, Schools Administrator, and the principals of Ida Rankin Elementary, Pinewood Elementary, Mount Holly Elementary and South Point High School, as well as a County Health Department representative (who addressed KI for students and staff) demonstrated effective emergency planning and response by interview. They were well versed in the process by which the schools would be notified and the subsequent actions to be taken by the staff and faculty. The Schools Administrator described the essential elements of bus transportation and presented a comprehensive plan. The school system is proactive in its emergency planning, prepared to initiate school population relocation early in the event of a radiological emergency, and prepared to safeguard its school population during a radiological emergency.

- a. **MET:** Criteria 1.a.1, 3.a.1, 3.b.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 Reception and Congregate Care

The County Fire Department, Emergency Management Department, Department of Social Services, Department of Health, Gastonia Emergency Medical Services, the State of North Carolina Medical Assistance Team, and the Gaston County Chapter of the American Red Cross all participated in a demonstration of reception, monitoring, decontamination of evacuees, and congregate care activities at the Ashbrook High School. Fulltime staff and volunteers worked closely together in implementing procedures designed to identify and mitigate the potential contamination of evacuees and subsequently meet their needs for temporary care.

- a. **MET: Criteria 1.e.1, 3.a.1, 1.b.1, 6.a.1 and 6.c.1.**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCA - RESOLVED: NONE**
- f. **PRIOR ARCA - UNRESOLVED: NONE**

2.2.5 Backup Route Alerting

Fire department personnel successfully demonstrated their ability to perform backup route alerting. They referred to a map of the area and discussed which routes would be implemented, what agencies had which assigned zones, what routes they would take through the zone, what pre-scripted messages to read, and how often to stop and read them. The firemen were also well-trained on KI, dosimetry equipment and how to use it, and knew the appropriate radiation exposure limits.

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

2.3 IREDELL COUNTY

2.3.1 Emergency Operations Center

The Emergency Management Director demonstrated excellent direction and control throughout the exercise. He conducted frequent staff briefings and encouraged feedback from the staff. The EOC staff, representing various key agencies, was familiar with their expected tasks and responsibilities. Staff members actively participated in discussions of the current situation as well as future possibilities and expected outcomes. They demonstrated extensive knowledge of their radiological emergency response requirements and exhibited commendable professionalism and enthusiasm. Plans and procedures were in place for implementing protective action decisions, and through excellent teamwork and dedication they successfully accomplished their missions.

- a. **MET:** 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.1, 5.a.3 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

2.3.2 Traffic Control Points

Officers from the Sheriff's Office and the North Carolina State Highway Patrol participated in an interview on establishing TCPs following training on individual radiological protective measures. The officers were familiar with the sequence of actions following their assignment to establish and staff a TCP. They had supplemental information to describe their responsibilities and information to assist in responding to evacuee queries. The officers were confident in their ability to execute the assigned task and obtain assistance to overcome any impediments to traffic flow.

- a. **MET:** Criteria 1.d.1, 1.e.1, 3.a.1, 3.b.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**

2.3.3 Protective Actions for Schools

Representatives of the Iredell-Statesville School District and the principal of the Woodland Heights Elementary School thoroughly described the actions that would be taken to safeguard students, staff and faculty in the event of an incident at the McGuire Nuclear Station. The principal's grasp for the details of the district plan and his supplemental plan indicated this subject had a high level of attention. The school district staff routinely engages in dialogue with the principals and actively seek improvements to their procedures.

- a. **MET: Criteria 1.a.1, 3.a.1, 3.b.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**

2.3.4 Emergency Worker and Vehicle Monitoring and Decontamination

Representatives from County Emergency Management, Office of the Fire Marshal, Emergency Medical Services, Animal Control, Solid Waste and volunteer firefighters demonstrated emergency worker decontamination at a rest area on Interstate 77. Personnel were well briefed on personal radiological protection. The site was sufficiently equipped to support emergency worker decontamination functions and the various agencies capably performed the mission.

- a. **MET: Criteria 1.e.1, 3.a.1, 6.a.1 and 6.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**

2.3.5 Reception and Congregate Care

Reception of evacuees was demonstrated at one of two sites identified in Iredell County for evacuee reception and congregate care. Support for overall activities was provided by County Emergency Management, Emergency Medical Services, Fire Marshal's Office, Troutman Fire Department, Statesville Fire Department, Iredell Emergency Communications, and the Greater Carolina's Chapter of the American Red Cross. While personnel in the monitoring and decontamination stations were technically proficient, existing procedures limited the evacuee throughput. After discussion with the emergency workers, a recommended change was implemented and greatly sped up monitoring operations. Red Cross volunteers were prepared to establish and manage the congregate care facility and respond to evacuee needs.

- a. **MET:** Criteria 1.e.1, 3.a.1, 6.a.1, 6.b.1 and 6.c.1
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:**
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.3.6 Backup Route Alerting

The County Fire Marshal and North Carolina State Highway Patrol trooper were well organized and equipped to provide backup route alerting and demonstrated by interview that they could successfully cover the designated routes within the required 45 minutes. They were thoroughly familiar with county backup route alerting procedures, exposure control procedures, and demonstrated their ability to share resources and work as a cohesive team.

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

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

2.4.4 Backup Route Alerting

The County Fire Marshal successfully demonstrated backup route alerting procedures. He was familiar with the exposure control training for fire department personnel assigned to backup route alerting. He accurately explained the process to compensate for failed sirens and the specific routes assigned, and how each route could be completed within twenty to thirty minutes.

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

2.4.5 Waterway Warning

The Sheriff's Office successfully demonstrated its role in the multi-jurisdiction clearance of Lake Norman. They provided two deputies and launched one boat from the Beatty Ford boat launch. The deputies had earlier participated in training on dosimetry and KI, and demonstrated good knowledge of the instruction. They demonstrated clearance operations in their assigned sector by covering areas on the western half of the lake. They traveled at a 10-20-mile an hour rate and simulated stopping to tell boaters to immediately leave the lake by returning to the boat launch ramp. Boaters were also advised by megaphone to refer to the signs at the boat launch ramp that identify radio or television stations to tune to for more information.

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

2.5 MECKLENBURG COUNTY

2.5.1 Emergency Operations Center

The Emergency Management Director and his staff demonstrated an outstanding understanding of the concepts within the county plan to protect the health and safety of both the general population and county emergency workers. The EOC Incident Commander effectively managed the efforts of the staff, provided frequent briefings and information on plant conditions, ECLs, and response activities. He continued to make improvements in equipment and displays in the EOC, making it easier for the staff to find information and act on it in a timely manner. The staff used up-to-date Geospatial Information System (GIS) positioning in their databases for special needs populations to assist EMS personnel to efficiently locate and transport those individuals when required. The staff was very knowledgeable about their roles and the requirements contained in the plans and procedures for their respective departments. The county and city officials were fully involved in the decision making process and worked together to solve problems.

- a. **MET:** 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.1, 5.a.3 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

2.5.2 Traffic Control Points

Law enforcement officers representing Cornelius, Davidson, Charlotte-Mecklenburg, and Davidson College Police Departments, the North Carolina State Highway Patrol, and personnel of the North Mecklenburg Communications Center participated in an interview addressing TCPs following training on personal radiological exposure control. They were confident their experience in supporting a variety of high profile/large scale events would correlate to similar functions in event of an incident at McGuire Nuclear Station. They noted they would be aided by a copy of the “Guide to Establishing Traffic Control Points & Zone Security Roadblocks” maintained in their vehicles. This pocket folder contains a synopsis of traffic control and school escort duties, an overview on dosimetry and KI, and instructions on personal protection. Several described how they would use their vehicles and inherent equipment to constrict traffic flow. The officers stated that requests for assistance in impediment removal would be handled expeditiously through normal communications channels.

- a. **MET:** Criteria 1.d.1, 1.e.1, 3.a.1, 3.b.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

2.5.3 Protective Actions for Schools

Representatives of the Charlotte-Mecklenburg Schools (CMS) Transportation and Safety Departments, Bailey and Bradley Middle Schools, Hopewell High School, Mountain Island, Torrence Creek, and J.V. Washam Elementary Schools demonstrated by interview they could successfully implement their emergency procedures. The CMS plan was supplemented by the individual schools to address their individual situations and circumstances. All personnel were familiar with the CMS and local plans, recognized the challenges of an evacuation, and could implement procedures to safeguard their students, staff, and faculty.

- a. **MET:** Criteria 1.a.1, 3.a.1, 3.b.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

2.5.4 Emergency Worker and Vehicle Monitoring and Decontamination

The emergency worker decontamination center was established at Charlotte Fire Station #27. The demonstration attested that equipment, displays, maps, supplies and dosimetry were sufficient to support emergency operations for an extended period of time. Personnel performing monitoring with hand held monitors demonstrated good techniques and were knowledgeable of radiological protective measures to prevent cross-contamination.

- a. **MET:** Criteria 1.e.1, 3.a.1, 6.a.1 and 6.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

2.5.5 Backup Route Alerting

The Fire Marshal demonstrated the ability to implement backup route alerting by interview using the assets of the Charlotte Fire Department and the Cooks, Cornelius, Davidson, Gilead, Huntersville, Long Creek, Mallard Creek and West Mecklenburg Volunteer Fire Departments. The Fire Marshal was familiar with the plans and procedures and successfully answered all interview questions for backup route alerting and exposure control practices.

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

2.5.6 Waterway Warning

The Charlotte-Mecklenburg Police Department Lakes Enforcement Division (CMPD-LED) ably managed their many responsibilities in waterway warning activities at Lake Norman. In addition to a ground control element at Ramsey Park, CMPD-LED provided backup waterborne support with a well-equipped vessel. Prior to launch, officers assigned to the command boat demonstrated their receipt of dosimetry and KI, how to zero the dosimeter, and record-keeping procedures. Subsequent to launching the vessel the officers fully described the variety of functions they would perform in a primary or backup role. They were conversant with the assignments of the various departments represented in the demonstration and described on a map a familiarity with planned routes and the lake itself that would facilitate their assisting any other jurisdiction. Several means of communications demonstrated a level of redundancy necessary to performing a waterborne command mission.

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

2.5.7 MS-1 Drill

MEDIC EMS personnel responded to a simulated accident scene staged at the far corner of the MEDIC garage area. They properly handled the patient to control the spread of radiological contamination and transported the patient to the Carolinas Medical Center (CMC) University Hospital. After arriving at the hospital, EMS personnel gave a detailed medical update to the emergency room staff and assisted in the proper transfer of the patient to emergency room personnel. Hospital staff and supporting radiation technicians demonstrated proper contamination control and medical care, placing the emergency medical needs of the patient first. They successfully performed decontamination for the patient to be admitted for further medical treatment. EMS and hospital staff unmistakably demonstrated the ability to care for a radiological contaminated patient.

- a. **MET:** Criteria 1.e.1, 3.a.1 and 6.d.1
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs – RESOLVED:** NONE
- f. **PRIOR ARCAs – UNRESOLVED:** NONE

3. HOST JURISDICTIONS

3.1 CABARRUS COUNTY

3.1.1 Emergency Operations Center

The Emergency Management Coordinator (EMC) demonstrated excellent direction and control. Members of the EOC staff actively participated in discussions of the current situation as well as future possibilities and expected outcomes. The EMC and his staff were knowledgeable, professional and enthusiastic in the performance of their duties.

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

3.1.2 Traffic Control Points

An evaluation of the ability of the county to establish TCPs was conducted by interview at the McGuire Nuclear Station (MNS) Training Facility after training on the proper use of dosimetry and KI. Two Sheriff's Deputies and two Kannapolis Police Department officers explained that their jurisdictions were responsible for four TCPs in the county. Upon the utility's declaration of Site Area Emergency, the EOC staff would direct them to the TCPs to be established. The officers were knowledgeable of the locations and prepared to manage the flow of traffic, remove impediments, and assist evacuees.

- a. **MET:** Criteria 1.d.1, 1.e.1, 3.a.1, 3.b.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

3.1.3 Reception and Congregate Care

The county demonstrated its ability to monitor, decontaminate, register, and shelter evacuees at the Northwest Middle School. Full-time employees and volunteers representing the Kannapolis Fire Department, County Rescue, Emergency Management Agency, County Health Alliance, and the Cabarrus County Chapter of the American Red Cross supported the demonstration. Participants understood their role and met all their assigned requirements.

- a. MET: Criteria 1.e.1, 3.a.1, 3.b.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**

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
CFR	Code of Federal Regulations
DEM	Division of Emergency Management
DHHS	Department of Health and Human Services
DOC	Department of Commerce
DOE	Department of Energy
DOI	Department of the Interior
DOT	Department of Transportation
DRD	Direct Reading Dosimeter
DSS	Department of Social Services
EAS	Emergency Alert System
ECL	Emergency Classification Level
EMA	Emergency Management Agency
EMS	Emergency Medical Services
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EPA	Environmental Protection Agency
EPZ	Emergency Planning Zone
ER	Emergency Room
EWD	Emergency Worker Decontamination
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
FMT	Field Monitoring Team
FR	Federal Register
FTL	Field Team Leader
GE	General Emergency
JIC	Joint Information Center
KI	Potassium Iodide
NCDT	North Carolina Department of Transportation
NCDA	North Carolina Department of Agriculture

NCEM	North Carolina Emergency Management
NCSHP	North Carolina State Highway Patrol
NRC	Nuclear Regulatory Commission
NUREG-0654	NUREG-0654/FEMA-REP-1, Rev. 1, <i>"Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980</i>
ORO	Offsite Response Organization
PAD	Protective Action Decision
PAR	Protective Action Recommendation
PIO	Public Information Officer
RAC	Regional Assistance Committee
REP	Radiological Emergency Preparedness
RERP	Radiological Emergency Response Plan
SEOC	State Emergency Operations Center
SERT	State Emergency Response Team
SOG	Standard Operating Guide
SOP	Standard Operating Procedures
TCP	Traffic Control Point
TLD	Thermoluminescent Dosimeter
USDA	U.S. Department of Agriculture

APPENDIX 2

EXERCISE EVALUATORS

Following is a list of the personnel who evaluated the McGuire Nuclear Station Exercise. The organization represented by each evaluator is indicated by the following abbreviations:

FDA-	Food and Drug Administration
FEMA-	Federal Emergency Management Agency
ICF-	ICF Consulting, Incorporated
NRC-	Nuclear Regulatory Commission

RAC Chair	Conrad Burnside	FEMA
Senior Site Specialist	Lawrence Robertson	FEMA
Senior Site Specialist	Kevin Keyes	FEMA
Site Specialist	Michael Dolder	FEMA

<u>EVALUATION SITE</u>	<u>EVALUATOR</u>	<u>ORGANIZATION</u>
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STATE OF NORTH CAROLINA- Director: Mr. Douglas Hoell, Jr.

State Emergency Operations Center	Michael Dolder Bud Iannazzo	FEMA ICF
Dose Assessment	Brad McRee	ICF
NCEM Western Branch Office	Bob Lemeshka	ICF
Joint Information Center	Jim McClanahan Deborah Bell	ICF ICF
Emergency Operations Facility	Robert Trojanowski	NRC
Radiological Field Monitoring Teams	Richard Watts Scott Lonchar	ICF ICF
Mobile Laboratory	Jim Willison	ICF

MECKLENBURG COUNTY- EMA Director: Mr. L. Wayne Broome

Emergency Operations Center	Kevin Keyes Wayne Davis Gerald McLemore (OJT)	FEMA ICF FEMA
Traffic Control Points	Bill Larrabee	ICF

Protective Action for Schools	Bill Larrabee	ICF
Emergency Worker and Vehicle Monitoring and Decontamination	Deborah Bell Carl Wentzell	ICF ICF
Waterway Warning	Bill Larrabee	ICF
Backup Route Alerting	Wayne Davis	ICF
MS-1 Drill	Brad McRee Scott Lonchar	ICF ICF

CATAWBA COUNTY- EMA Director: Mr. David Weldon

Emergency Operations Center	Helen Wilgus Glenn Kinnear	FEMA ICF
Traffic Control Points	Deborah Bell	ICF
Reception and Congregate Care	Deborah Bell Carl Wentzell	ICF ICF
Backup Route Alerting	Glenn Kinnear	ICF
Waterway Warning	Deborah Bell	ICF
MS-1 Drill	Jim Willison Richard Watts	ICF ICF

GASTON COUNTY- EMA Coordinator: Mr. Tommy Almond

Emergency Operations Center	Obhie Robinson Carl Wentzell	FEMA ICF
Traffic Control Points	Michael Dolder	FEMA
Protective Actions for Schools	Glenn Kinnear	ICF
Reception and Congregate Care	Bill Larrabee Glenn Kinnear	ICF ICF
Backup Route Alerting	Carl Wentzell	ICF

IREDELL COUNTY- EMA Director: Mr. David Martin

Emergency Operations Center	Wendy Swygert Keith Earnshaw	ICF ICF
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Traffic Control Points	Carl Wentzell	ICF
Protective Actions for Schools	Bill Larrabee Glenn Kinnear	ICF ICF
Emergency Worker and Vehicle Monitoring and Decontamination	Deborah Bell Carl Wentzell	ICF ICF
Reception and Congregate Care	Bill Larrabee Glenn Kinnear	ICF ICF
Backup Route Alerting	Keith Earnshaw	ICF
Waterway Warning	Carl Wentzell	ICF

LINCOLN COUNTY- EMA Director: Ms. Susan Spake

Emergency Operations Center	Joe Harworth Jon Christiansen	FEMA ICF
Traffic Control Points	Michael Dolder	FEMA
Protective Actions for Schools	Bill Larrabee Glenn Kinnear	ICF ICF
Backup Route Alerting	Jon Christiansen	ICF
Waterway Warning	Glenn Kinnear	ICF

CABARRUS COUNTY – EMA Coordinator: Mr. Bobby Smith

Emergency Operations Center	Rosemary Samsel Tom Trout	ICF FDA
Traffic Control Points	Glenn Kinnear	ICF
Reception and Congregate Care	Bill Larrabee Glenn Kinnear	ICF ICF

APPENDIX 3

EXERCISE CRITERIA AND EXTENT-OF-PLAY AGREEMENT

This appendix lists the exercise criteria and the extent-of-play agreement for the McGuire Nuclear Station Exercise.

A. Exercise Criterion Matrix

This subsection contains the specific radiological emergency preparedness criteria.

B. Extent-of-Play Agreement

This subsection contains the extent of play agreement submitted by the State of North Carolina and approved by FEMA Region IV. The extent of play agreement includes any significant modification or change in the level of demonstration of each exercise criterion listed in Subsection A of this appendix.

2007 McGuire Nuclear Station Exercise Criterion Matrix

Evaluation Sub Elements (EPZ) = Emergency Planning Zone County (IPZ) = Ingestion Pathway Zone County E – Evaluated T – Training Only O – Off Scenario	N C S E R T	R A D P r o t e c t i o n	M e c k l e n b u r g EPZ	C a t a w b a EPZ	G a s t o n EPZ	I r e d e l l EPZ	L i n c o l n EPZ	C a b a r r u s HOST
1. Emergency Operations Management								
1.a.1. Mobilization of Response Personnel	E	E	E	E	E	E	E	E
1.b.1. Facilities	Baseline Set 2002	Baseline Set 2002	Baseline Set 2006	Baseline Set 2002	Baseline Set 2002	Baseline Set 2002	Baseline Set 2002	Baseline Set 2002
1.c.1. Direction and Control	E	E	E	E	E	E	E	E
1.d.1. Communications Equipment	E	E	E	E	E	E	E	E
1.e.1. Equipment & Supplies to Support Operations	E	E	E-O	E-O	E-O	E-O	E-O	E-O
2. Protective Action Decision-making								
2.a.1. Emergency Worker Exposure Control	E	E	E	E	E	E	E	N/A
2.b.1. Rad Assessment PARs & PADs Based on Available Information	E	E	E	E	E	E	E	N/A
2.b.2. Rad Assessment of PARs & PADs for General Public	E	E	E	E	E	E	E	N/A
2.c.1. Protective Action Decisions for Protection of Special Populations	N/A	N/A	E	E	E	E	E	N/A
2. d.1. Radiological Assessment and Decision Making for Ingestion Exposure	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008
2. e.1. Radiological Assessment and Decision Making for Relocation, Re-entry & Return	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008
3. Protective Action Implementation								
3.a.1. Implementation of Emergency Worker Exposure Control	E	E	E	E	E	E	E	N/A
3.b.1. Implementation of KI Decisions	E	E	E	E	E	E	E	E
3.c.1. Implementation of PADs for Special Pops.	E	E	E	E	E	E	E	N/A
3.c.2. Implementation of PADs for Schools	N/A	N/A	E-O	N/A	E-O	E-O	E-O	N/A
3.d.1. Implementation of Traffic and Control	E-O	N/A	E	E-O	E-O	E-O	E-O	E
3.d.2. Impediments to Traffic and Access Control	E	N/A	E	E	E	E	E	E
3.e.1. Implementation of Ingestion Pathway Decisions Using Adequate Information	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008
3.e.2. Implementation of Ingestion Pathway Decisions Showing Instructional Materials	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008
3.f.1. Implement Relocation, Re-entry, & Return	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008	Catawba IPZ Exr 2008

B. Meeting Times

I. Federal Evaluator Briefing:

*Charles Mack Citizen Center
215 North Main Street
Mooreville, NC 265115*

Date & Time: 2:00 p.m., Monday, October 15, 2007

State and County Critique: (IF NECESSARY)

*Charles Mack Citizen Center
215 North Main Street
Mooreville, NC 265115*

Date & Time: 2:00 p.m., Wednesday, October 17, 2007

II. Participant's Critique:

*Charles Mack Citizen Center
215 North Main Street
Mooreville, NC 265115*

Date & Time: 10:00 a.m. Thursday, October 18, 2007

III. Public Briefing:

*Charles Mack Citizen Center
215 North Main Street
Mooreville, NC 265115*

Date & Time: 11:00 a.m. Thursday, October 18, 2007

1. EMERGENCY OPERATIONS MANAGEMENT

1.a. – Mobilization

Criterion 1.a.1

ORO will 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.,2., H.4.)

EXTENT OF PLAY:

Participants: NC SERT, NC Radiation Protection, Mecklenburg Catawba, Gaston, Iredell, Lincoln and Cabarrus Counties

- State and local EOCs will be activated and staffed based on standard operational guidelines/procedures for that agency.
- State and local response personnel may pre-position staff at their EOC. *Federal Evaluators will need a walk-through explanation of the EOC activation process, to include the notification process for key staff.*
- *Notification rosters will be utilized during an “Actual” call up of SERT members. Emergency management personnel will discuss alert notification procedures with the evaluator, following the activation of the facility.*

1.b. – Facilities

Criterion 1.b.1

Facilities are sufficient to support the Emergency Response.
(NUREG-0654, H.)

EXTENT OF PLAY:

Since the State and Local emergency operations Centers (EOCs) were baselined during the McGuire 2002 exercise (Mecklenburg Co during 2006 Catawba exercise), FEMA will not formally evaluate this criterion. (FEMA Letter dated May 3, 2005)

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., 2.a., b.)

EXTENT OF PLAY:

Participants: NC SERT, Radiation Protection, Mecklenburg, Catawba, Gaston, Iredell, Lincoln and Cabarrus Counties

- Mecklenburg County is the lead-coordinating county for the McGuire NS Counties. Following the simulated sounding of sirens and issuance of the first PAD recommendations to the public at Site Area Emergency, Mecklenburg County will request the State assume direction and control.
- All participants in agreement with criterion.

1.d – Communications Equipment:

Criterion 1.d.1:

**At least two communication systems are available and operate properly, and communication links are established with appropriate locations. Communications capabilities are managed in support of emergency operations.
(NUREG-0654, F.1., 2.)**

EXTENT OF PLAY:

Participants: NC SERT, Mecklenburg, Catawba, Gaston, Iredell, Lincoln and Cabarrus Counties

- Communication breakdown/failures will be discussed with the federal evaluators during the exercise at state and county EOCs.
- All participants in agreement with criterion.

1.e – Equipment and Supplies to Support Operation:

Criterion 1.e.1:

**Equipment, maps, displays, dosimetry, potassium iodide (KI), and other supplies are sufficient to support emergency operations.
(NUREG-0654, H., J.10.a.b.e.f.j.k., 11, K.3.a.)**

EXTENT OF PLAY:

Participants: NC SERT, Mecklenburg, Catawba, Gaston, Iredell, Lincoln and Cabarrus Counties

- Availability and currency of emergency worker KI will be verified by a FEMA Staff Assistance Visit (SAV) to the EPZ Counties prior to or during the exercise.
- Dosimeters will be inspected by FEMA during the Staff Assistance Visit to the EPZ Counties prior to or during the exercise.
- All participants in agreement with criterion.

Charlotte/Mecklenburg County:

Staff Assistance Visit will take place off-scenario, **Monday September 24, 2007 at 13:00**

Location: Charlotte-Mecklenburg Emergency Management Office
228 East 9th Street
Charlotte, NC 28202-2530

Catawba County:

Staff Assistance Visit will take place off-scenario, **Tuesday, September 25, 2007 @ 1500**

Location: Catawba Co. EM Office
100-A Southwest Blvd
Newton, NC 28658

Gaston County:

Staff Assistance Visit will take place off-scenario, **Monday, September 24, 2007 @ 1500**

Location: Gaston County EOC
615 North Highland Ave
Gastonia, NC 28052

Iredell County:

Staff Assistance Visit will take place off-scenario, **Tuesday, September 25, 2007 @ 1030**

Location: Iredell County EOC
Hall of Justice Annex (LL)
201 East Water Street
Statesville, NC 28677-5200

Lincoln County:

Staff Assistance Visit will take place off-scenario, **Thursday, September 27, 2007 @ 1000**

Location: Lincoln County EOC
Lincoln County Court House (basement)
#1 Court Square
Lincolnton, NC 28092-2739

Cabarrus County:

Staff Assistance Visit will take place off-scenario, **Tuesday, September 25, 2007 @ 1530**

Location: Cabarrus Co. EM Office
65 Church St SE
Concord, NC 28025

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).

EXTENT OF PLAY:

Participants: NC SERT, Mecklenburg, Catawba, Gaston, Iredell, Lincoln and Counties

- No distribution of actual or simulated KI will be accomplished during the exercise.
- All participants in agreement with criterion.

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 on 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., 11., & Supplement 3.)

EXTENT OF PLAY:

Participants: NC SERT, Mecklenburg, Catawba, Gaston, Iredell, and Lincoln Counties

- Radiation Protection will establish an independent dose assessment and projection team at the State EOC. This team will communicate with the utility EOF, State Mobile Lab and deployed field survey teams to obtain data for developing dose projections.
- Back-up dose assessment will be demonstrated by Radiation Protection.
- All participants in agreement with criterion.

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 general public (including the recommendation for the use of KI, if ORO policy).

(NUREG-0654, J.9., 10.m.)

EXTENT OF PLAY:

Participants: NC SERT (SERT Leader, Radiation Protection, DHHS), Mecklenburg Catawba, Gaston, Iredell, and Lincoln Counties

- Radiation Protection and DHHS will analyze technical data and make recommendations to SERT Leader who in turn will make recommendations to the EPZ County's EM Coordinator.
- Weather data will be pre-determined and will include a wind shift during the exercise in order to demonstrate OROs capability to adapt to changes requiring protective actions.
- All participants in agreement with criterion.

2.c – Protective Action Decisions for Protection of Special Populations:

Criterion 2.c.1:

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

EXTENT OF PLAY:

Participants: Mecklenburg, Catawba, Gaston, Iredell and Lincoln Counties

- Counties will discuss procedures with the federal evaluator, and demonstrate the use of a special populations list.
- Transportation resources necessary to evacuate special needs populations will be identified and calls will be simulated.
- Distribution of KI to institutionalized individuals, who cannot be evacuated, will be via "discussion only" with the federal evaluator.

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.)

EXTENT OF PLAY:

Participants: NC State Highway Patrol, Mecklenburg Catawba, Gaston, Iredell, and Lincoln Counties

- All participants in agreement with criterion.

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 is maintained. (NUREG-0654, E.7., J.10. e, f.)

EXTENT OF PLAY:

Participants: NC SERT, Mecklenburg, Gaston, Iredell, Lincoln and Catawba Counties

- Demonstration of KI will be through “Discussion Only” at State and County EOCs.
- No distribution of actual or simulated KI will be accomplished during the exercise.

Demonstration of KI distribution for the General Public will be accomplished during Off-scenario activity by local Public Health officials through discussion and with presentation of distribution documentation to the federal evaluator.

- All participants in agreement with criterion.

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. (NUREG-0654, E.7., J.9., 10.c.d.e.g.)

EXTENT OF PLAY:

Participants: Mecklenburg, Catawba, Gaston, Iredell and Lincoln Counties

- A current list of special needs populations will be provided to the federal evaluator.
- **Evacuation/relocation requirements will be demonstrated via discussion at the EOCs, based on the scenario and county implementation procedures.**
- **Contact via telephone with special population groups for PADs and transportation resources will be simulated.**
- **Counties in agreement with criterion.**

Criterion 3.c.2:

**OROs/School officials decide upon and implement protective actions for schools.
(NUREG-0654, J.10.c.,d., g.)**

EXTENT OF PLAY:

Participants: Mecklenburg, Gaston, Iredell and Lincoln Counties

- Schools & School agencies will be via discussion only with administrators, school principals, and school bus drivers at the below designated locations.
- Counties will demonstrate the protective action decision making process for schools during the actual exercise. A communication coordinating call may be made to the school (no action required by the school).
- Counties in agreement with criterion.

Mecklenburg County Schools for evaluation include:

Charlotte-Mecklenburg Schools Transportation & Safety Dept
Bailey Middle School, Hopewell High School, Bradley Middle School, Mountain
Island Elementary School, Torrence Creek Elementary School, J. V. Washam
Elementary School

Location: Charlotte-Mecklenburg Emergency Management Office
228 East 9th Street
Charlotte, NC 28202-2530

Date & Time: Off-Scenario, **Monday, September 24, 2007 @ 1300**

Gaston County Schools for evaluation include:

Pinewood & Ida Rankin Elementary
Mount Holly Middle School
Southpoint High School (Host School)

Location: Gaston Co EOC
615 North Highland Street
Gastonia, NC 28052

Date & Time: Off-Scenario, **Monday September 24, 2007 @ 1400**

Iredell County Schools for evaluation include:

Woodland Heights Elementary

Location: Iredell County EOC

Hall of Justice Annex (Lower Level)
201 East Water Street
Statesville, NC 28677

Date & Time: Off-Scenario, **Thursday, September 25, 2007 @ 0900**

Lincoln County Schools for evaluation include:

Rock Springs Elementary
East Lincoln Middle School

Location: Lincoln County EOC
Lincoln County Court House (basement)
#1 Court Square
Lincolnton, NC 28092-2739

Time: Off-Scenario, **Thursday September 27, 2007 @ 0900**

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, k.)

EXTENT OF PLAY:

Participants: NC State Highway Patrol, Mecklenburg, Catawba, Gaston, Iredell, Lincoln and Cabarrus Counties

- Traffic control points will be discussed with the federal evaluator by law enforcement personnel, who will discuss proper procedures, equipment and turn back values.
- When State is in direction & control the SERT Leader will determine appropriate access control measures to restrict access to contaminated areas.
- Counties in agreement with criterion.
- Interviews will be conducted at the McGuire NS Office Complex (MOC) following Lake Norman Alert & Notification Training.

Date & Time: **Wednesday, September 26, 2008, 1000 - 1200**

Mecklenburg County Representatives available for interview include:

Charlotte/Mecklenburg Police Department, NC Highway Patrol, Huntersville Police Department

Catawba County Representatives available for interview include:

Catawba County Sheriff Department and NC State Highway Patrol

Gaston County Representatives available for interview include:

Gaston County Emergency Management, Gaston Sheriff's Office, Gaston Police Department

Iredell County Representatives available for interview include:

Iredell County Emergency Management, Iredell County Sheriff's Department, NC State Highway Patrol

Lincoln County Representatives available for interview include:

Lincoln County Emergency Management, Lincoln County Sheriff's Department, NC State Highway Patrol

Cabarrus County EOC representatives available for interview include:

Kannapolis Police Department, Cabarrus County Sheriff Department

Criterion 3.d.2:

Impediments to evacuation are identified and resolved. (NUREG-0654, J.10., j., k.)

EXTENT OF PLAY:

Participants: NC SERT, Mecklenburg, Catawba, Gaston, Iredell, Lincoln and Cabarrus Counties

- The EM Coordinator or appropriate EOC staff will describe what resources are available to remove impediments from thoroughfares.
- Counties in agreement with criterion.

4. FIELD MEASUREMENT AND ANALYSIS

4.a – Plume Phase Field Measurement & 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.8., 9.,11.)

EXTENT OF PLAY:

- **Participants:** NC Radiation Protection
- Radiation Protection will demonstrate this criterion using *two* field survey teams.
- Date and Time: On-scenario, October 16, 2007

- If a siren is deemed to have failed, back-up alerting will be discussed with the federal evaluator for a pre-determined zone (siren failure feedback sheet or simulated).
- Lake Warning will be accomplished at the Environmental Center Boat Ramp (Off-scenario, *Wednesday, September 26, 2007 @ 1330*). NC Wildlife Commission will have one boat available to take a federal evaluator out on the lake if requested.
- Physical demonstrations will be conducted out-of-sequence, but counties will also be available to discuss their procedures during the regular exercise.
- Counties in agreement with criterion.

Lake Norman Warning Training, (Not Evaluated)

North Carolina Wildlife Commission
 Charlotte/Mecklenburg Police Department
 Lincoln County Sheriff
 Catawba County Sheriff
 Iredell County Sheriff

Location: McGuire Office Center (MOC)
 McGuire Nuclear Station, Huntersville, NC

Date and Time: Off-scenario, *Wednesday, September 26, 2007 @ 0930*

Lake Norman Warning (Drill)

North Carolina Wildlife Commission
 Charlotte/Mecklenburg Police Department
 Lincoln County Sheriff
 Catawba County Sheriff
 Iredell County Sheriff

Location: Environmental Center Boat Ramp
 McGuire Nuclear Station, Huntersville, NC

Date and Time: Off-scenario, *Wednesday, September 26, 2007 @ 1330*

Backup alert and notification (Backup route alerting procedures for any failed siren will be discussed by the appropriate response agency in the County EOC during the exercise.)

Gaston County:

Gaston County Fire Marshal, Lucia Riverbend VFD, Mount Holly Fire & Rescue

Location: Gaston Co EOC
615 North Highland Avenue
Gastonia, NC 28052

Date and Time: On-scenario, *Tuesday, October 16, 2007 @ 1100*

Catawba County:

Catawba County Sheriff's Office

Location: Catawba EOC
911 Blvd
Newton, NC 28658

Date and Time: On-scenario, *Tuesday, October 16, 2007*

Iredell County:

Iredell County Sheriff's Office

Location: Iredell County EOC
201 East Water Street
Statesville, NC 28677-5200

Date and Time: On-scenario, *Tuesday, October 16, 2007*

Lincoln County:

Agency: Lincoln County Sheriff's Office

Location: Lincoln County EOC
#1 Court Square
Lincolnton, NC 28092

Date and Time: On-scenario, *Tuesday, October 16, 2007*

Mecklenburg County:

Agency: Mecklenburg County Fire Marshal

Location: Mecklenburg EOC (Charlotte Police & Fire Academy)
1770 Shopton Road
Charlotte, NC 28217

Date and Time: On-scenario, *Tuesday, October 16, 2007*

Emergency Worker Monitoring & Decontamination will **NOT BE DEMONSTRATED**.
Criterion was **previously demonstrated** at Spencer Mtn. FD in 2005.

Iredell County:

Iredell Co EM, R&M Decon Team, Red Cross, and Troutman FD will demonstrate
Evacuee registration, monitoring & decontamination at:

South Iredell High School
299 Old Mountain Rd
Statesville, NC

Date & Time: Off-scenario, Wednesday, September 26, 2007 @ 1800

Iredell Co EM, R&M Decon Team, and Sheppard VFD will demonstrate Emergency
Worker registration, monitoring and decontamination at:

North Bound I-77 Rest Area – Mile marker 39

Date & Time: Off-scenario, Wednesday, September 26, 2007 @ 1600

Lincoln County:

Lincoln County EM, Social Services, American Red Cross, Howard's Creek Volunteer
FD will demonstrate Evacuee registration, monitoring and decontamination at:

West Lincoln High School
172 Shoal Road
Lincolnton, NC 28092

Date & Time: Off-scenario, Thursday, September 27, 2007 @ 1800

Emergency Worker Monitoring & Decontamination will **NOT BE DEMONSTRATED**.
Criterion was **previously demonstrated** at North 321 VFD in 2005.

Cabarrus County (Host County):

Cabarrus County EM, Health Department, & Social Services, American Red Cross and
Kannapolis Fire Department will demonstrate Evacuee registration, monitoring and
decontamination at:

Northwest Middle School
5140 Cabarrus Drive
Kannapolis, NC 28081

Date & Time: Off Scenario, Tuesday, September 25, 2007. 1800

Emergency Worker Monitoring & Decontamination: As a Host County, Cabarrus County does not have emergency workers assigned within the 10-mile EPZ.

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

Criterion 6.b.1:

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

EXTENT OF PLAY:

- **Participants:** Mecklenburg and Iredell Counties
- Two vehicles will be monitored and decontaminated using water at the following times and locations (dependant upon weather conditions):

Mecklenburg County:

Charlotte Fire Department, Station #27 will demonstrate at:

Charlotte Fire Station #27
111 Ken Hoffman Rd.
Charlotte, N.C. 28215

Date & Time: Off-scenario, Thursday, September 27, 2007 @ 0930

Iredell County:

Iredell Co EM, Iredell Co R&M Decon Team, and Sheppard VFD will demonstrate at:

North Bound I-77 Rest Area – Mile marker 39

Date & Time: Off-scenario, Wednesday, September 26, 2007 @ 1600

6.c – Temporary Care of Evacuees:

Criterion 6.c.1:

Managers of congregate care facilities 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. (NUREG-0654, J.10.h.,12.)

EXTENT OF PLAY:

- **Participants:** Catawba, Gaston, Iredell, Lincoln and Cabarrus Counties.
- Six individuals per site will be registered.
- Counties in agreement with criterion.

Mecklenburg County:

Mecklenburg County Evacuee registration, monitoring and decontamination demonstrated in 2005. **WILL NOT BE DEMONSTRATED** - (Will demonstrate in support of 2008 Catawba NS Evaluation)

Cabarrus County:

Cabarrus County Emergency Management, American Red Cross, Cabarrus County Social Services and Kannapolis Fire Department, will demonstrate at:

Northwest Middle School
5140 Cabarrus Drive
Kannapolis, NC 28081

Date & Time: Off-scenario, *Tuesday, September 25, 2007 @ 1800*

Catawba County:

Catawba County EM, American Red Cross, Maiden Fire Department will demonstrate at:

Bandys High School
5040 East Bandys Road
Catawba, NC 28609

Date & Time: Off-scenario, *Tuesday, September 25, 2007 @ 1830*

Gaston County:

Gaston Co EM, Health Department, Social Services, Red Cross, and Gastonia FD HazMat will demonstrate at:

Ashbrook High School
2222 S. New Hope Road
Gastonia, NC 28054

Date & Time: Off Scenario, *Monday, September 24, 2007 @ 1800*

Iredell County:

Iredell County EM, Red Cross, Troutman Fire & Rescue, Iredell Co. R&M Decon Team will demonstrate at:

South Iredell High School
299 Old Mountain Road
Statesville, NC 28677-2065

Date & Time: Off-scenario, Wednesday, September 26, 2007 @ 1800

Lincoln County:

Lincoln County Emergency Management, American Red Cross & Dept. of Social Services, Howard's Creek Vol. Fire Department will demonstrate at:

West Lincoln High School
172 Shoal Rd
Lincolnton, NC 28092

Date & Time: Off-scenario, Thursday, September 27, 2007 @ 1800

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:

- **Participants:** Mecklenburg County and Catawba County
- MS-1 scenario and EOP provided under separate cover to FEMA

Mecklenburg County:

Charlotte-Mecklenburg Emergency Management, Mecklenburg County EMS (MEDIC), and University Memorial Hospital for Charlotte/Mecklenburg;

Accident Site:

Charlotte/Mecklenburg County MEDIC Parking Lot
4525 Statesville Road
Charlotte, NC 28269

Hospital Site:

Carolinas Medical Center-University
8800 North Tryon Street
Charlotte, NC 28262

Date & Time: *Off-scenario, Wednesday, October 17, 2007 @ 0900*

Catawba County:

Catawba County EM, Catawba County EMS and Catawba Valley Medical Center will demonstrate at:

Accident Site:

NCEM Western Branch Parking Lot
3305-15 16th Avenue SE
Conover, NC 28613

Hospital Site:

Catawba Valley Medical Center
810 Fairgrove Church Road N.E.
Hickory, NC 28602
828-326-3000

Date & Time: *Wednesday, October 17, 2007 @ 0530*

APPENDIX 4

EXERCISE SCENARIO

This appendix contains a summary of the simulated sequence of events used as the basis for invoking emergency response actions in the McGuire Nuclear Station exercise on October 16, 2007.

This exercise scenario was prepared by Duke Energy and approved by the State of North Carolina and DHS/FEMA Region IV.

**McGuire Nuclear Station
Biennial Exercise Scenario
October 16, 2007**

Narrative Summary

This exercise will be a full station exercise with the Simulator Control Room, Technical Support Center (TSC), Operations Support Center (OSC), and the Emergency Operations Facility (EOF) staffed with players, controllers, and evaluators. The Joint Information Center (JIC) and the Media Center will be staffed. The State of North Carolina and the counties of Gaston, Mecklenburg, Lincoln, Cabarrus, Catawba and Iredell are participating in this exercise. One of the site assigned NRC Residents is assumed to fully participate. The offsite NRC participation will involve NRC Headquarters response staff, including participation by one of the NRC Commissioners, as well as regional response staff.

A Public Spokesperson will provide stand-up press conferences at the offsite Media Center. A Public Spokesperson will provide stand-up press conferences at the Media Center in the O.J. Miller auditorium in Charlotte.

The exercise begins with the plant operating at full power on both units. The plant conditions are as follows:

- The 1A Diesel Generator in operation as part of a normally scheduled surveillance test.
- The 1A NI Pump is tagged out for motor bearing replacement.
- Unit 1 has a slightly elevated nuclear criticality safety (NCS) activity due to a suspected slight fuel pin leak. NCS activity is within Tech spec allowable limits.

When conditions for site assembly are met, this onsite Protective Action will be demonstrated. When conditions for a site evacuation are met, this onsite protective action will be simulated.

The State and Counties have dictated when they need each classification to occur, thus the following plant casualties are used to accomplish their objectives:

Note: The crew may also opt to assess plant damage prior to event classification/declaration.

An Alert is declared due to IC 4.6.A.1 (Fire or Explosion Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe Shutdown). This occurs when a fire develops in the 1A Diesel Generator Voltage Regulator. The fire is extinguished by local fire extinguishers. The extent of damage renders the voltage regulator inoperable.

Due to the required 2 hour length of time to remain in the Alert, approximately 1 hour after the event declaration a failure of the 1B CF Pump will occur causing an automatic runback to 50% power. This will not require an upgrade in classification, but additional information should be provided to the off site agencies via a follow up message.

Approximately two hours after the initial event a SITE AREA EMERGENCY is declared due to IC 4.4.S.1 (Failure of Reactor Protective System Instrumentation to Complete or Initiate An Automatic Reactor Trip Once a Protective System Set Point Has Been Exceeded and Manual Trip Was Not Successful).

This event is caused by the loss of the 1D NC Pump while reactor power is greater than P-8. At this point actual (10 mile EPZ) sirens will not be sounded, nor will the EAS be activated. The counties will perform a Silent Siren Test, providing input of actual siren status. Any further activations will be simulated.

At about 4 hours after the initial event a LOCA outside containment will occur when check valve failures occur on the discharge of the 1B ND Pump.

A GENERAL EMERGENCY is declared due to IC 4.1.G.2 (Loss of Any Two Fission Product Barriers and the Potential Loss of the Third).

A LOCA occurs in the 1B ND Heat Exchanger Room that requires Safety Injection. This results in an off-site radiological release due to gaseous dispersion in the Auxiliary building. The VA system transports the released gases to the unit vent, which is a monitored but currently unfiltered release path to the environment. The released gases are diluted but not filtered due to the failure of the VA system filter paths. This release path provides a traceable plume in the environment for the exercise.

At this point Siren and EAS activation will be simulated upon the General emergency. The ERO will provide a minimum evacuation recommendation of a two mile radius and five miles down wind.

Time: Event:

- 0800 The exercise begins with the plant operating at full power.
- 0810 A fire in the 1A Diesel Generator Room occurs.
- 0815 Operator reports that fire is extinguished and damage has occurred to the voltage regulator for 1A Diesel Generator.
- 0830 Operations Shift Manager (OSM)/Emergency Coordinator (EC) declares an ALERT based on Emergency Action Level (EAL) 4.6.A.1 (Fire or Explosion Affecting the Operability of Plant Safety Systems Required to Maintain Safe Shutdown). Site Assembly will demonstrate accountability for all onsite personnel.
- 0845 State and Counties notified of ALERT via Emergency notification Form (ENF) using Selective Signaling System. NRC notification follows immediately but no later than one hour after ALERT declaration.
- 0920 Unit 1 Runback to 50% occurs.

- 0930 EOF is Operational.
- 1000 An Anticipated Transient Without Scram (ATWS) occurs due to loss of 1D NC Pump, with Reactor Power greater than P8 (48%).
- 1015 TSC EC or Emergency Operations Facility Director (EOFD) declares SITE AREA EMERGENCY (SAE) based on EAL 4.4.S.1 (Failure of Reactor Protective System instrumentation to complete or initiate an automatic reactor trip once a reactor protection system set point has been exceeded and manual trip was not successful).
- 1030 State and Counties notified of SAE via ENF using Selective Signaling System.
- 1200 A leak occurs in the 1B ND Heat Exchanger Room that requires Safety Injection. This results in an off-site radiological release due to gaseous dispersion in the Auxiliary Building. The VA system transports the released gases to the unit vent, which is a monitored but currently unfiltered release path to the environment. The released gases are diluted but not filtered due to the failure of the VA system filter paths. This release path provides a traceable plume in the environment for the exercise.

Note: Due to the known Fuel Pin leakage, the EOFD may deem the Fuel Barrier lost and may make the General Emergency Classification as EAL 4.1.G.1 (Loss of All Three Barriers. This should be graded as satisfactory.

- 1215 The EOFD declares a GENERAL EMERGENCY (GE) based on EAL 4.1.G.2 (Loss of any two fission product barriers (Containment and NCS Barriers) and potential loss of the third (Fuel barrier: Core cooling Orange path)).

Protective Action Recommendations (PARs) should be to evacuate the 2 mile radius and 5 miles downwind (Zones A, B, C, L, M, N, O, R), plus Shelter in Place the remainder of the emergency planning zone (Zones D, E, F, G, H, I, J, K, P, Q, S).

- 1230 State and Counties notified of GE via ENF using Selective Signaling System. PARs are communicated.
- 1245 The LOCA outside containment is isolated.
- 1300 The Unit 1 VA system filter bypass damper has been closed by repair teams. Any radiological gases released in the Auxiliary Building will now be filtered as well as monitored prior to release to the environment, resulting in a much-reduced radiological release rate to the environment.
- 1400 This exercise will be terminated when all required objectives have been demonstrated.

APPENDIX 5
MEDICAL SERVICE DRILLS

McGuire Nuclear Station

Medical Drill

October 17, 2007

Catawba County- Catawba County Emergency Medical Services (EMS) and Catawba Valley Medical Center

Participating agencies at or supporting the MS-1 Drill were as follows:

1. Catawba County Communications Center for communication support.
2. Catawba County Emergency Medical Services (EMS) for emergency treatment and medical transport.
3. Catawba Valley Medical Center for emergency treatment, monitoring, and decontamination.
4. Catawba County Emergency Management for coordination support.
5. North Carolina Emergency Management Western Branch Office for Controller support.

The Medical Services (MS-1) Drill began at 0530 on October 17, 2007 in the parking lot of the North Carolina Emergency Management Western Branch Office at 3305-15 16th Avenue SE, Hickory, North Carolina. The scenario involved a research laboratory which handles a multitude of chemicals and radioactive isotopes in both liquid and solid forms. A lab researcher was beginning a project involving powdered Cesium 137. Unknown to the researcher, an earlier experiment had left an explosive mixture of gases in the work area under an exhaust hood. Due to a malfunctioning exhaust fan with a shorted wire, when the gas mixture reached the fan there was a small explosion and a flash fire. The researcher was injured, and the radioactive powder was spilled and blown out into the immediate area in front of the exhaust hood in the laboratory.

Upon hearing the explosion, his fellow employees investigated and found the researcher injured and not responsive. Knowing that the area was possibly contaminated, they did not enter the laboratory room, but called the Catawba County Communications Center (simulated) and reported the accident. They reported the injury and stated that radioactive materials were involved. The Communications Center contacted the Catawba County Emergency Medical Services (EMS) for response, who sent a response unit from their base at 1101 South Brady Avenue, Newton, North Carolina. The Catawba County EMS unit was called at 0642 to transport an injured and potentially contaminated patient. The ambulance crew consisted of three emergency medical technicians (EMTs) who donned protective clothing. Two of the EMTs handled the patient and one served as the driver and communicator. Protective clothing consisted of disposable paper suits, hoods, double sets of disposable gloves and plastic shoe covers, protective eyewear and dust masks. Sleeves and pant cuffs were sealed with masking tape. Each crew member had a Model 622 direct reading dosimeter (DRD) manufactured by Dosimeter Corporation of America, 0-20 R range (calibration date 07/26/2007, calibration due 07/26/2008). Each crew member zeroed his DRD and recorded the initial reading on the exposure record card provided.

of the right arm as well. Decontamination efforts proceeded for this arm in the same manner as for the injured left arm until the contamination was removed.

After surveys confirmed that the patient was no longer contaminated, the patient was carefully moved to a wheelchair for transport. The patient was moved from the area at 0752. One member of the staff then demonstrated the proper technique for removing PPE and exited the potentially contaminated area. He was assisted by a radiation technician. Throughout the drill, the staff periodically read out their dosimeters, and the readings were recorded by one of the radiation technicians.

Throughout the drill, all actions of the responding EMS and hospital personnel were correctly performed in accordance with the appropriate plans and procedures. The treatment of the medical wound took precedence in the initial assessment, and the patient received correct medical care and decontamination.

- a. **MET:** Criteria 1.e.1, 3.a.1 and 6.d.1
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:** NONE
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

McGuire Nuclear Station

Medical Services Drill

October 17, 2007

Mecklenburg County- Charlotte-Mecklenburg Emergency Management, Charlotte-Mecklenburg County MEDIC Emergency Medical Services (EMS), and Carolinas Medical Center (CMC) University Hospital, Charlotte, North Carolina

Participating agencies at or supporting the MS-1 Drill were as follows:

1. Charlotte-Mecklenburg County MEDIC Emergency Medical Services (EMS) for communication support, emergency treatment, and medical transport.
2. Carolinas Medical Center (CMC) University Hospital for emergency treatment, monitoring, and decontamination.
3. Charlotte-Mecklenburg County Emergency Management for coordination.
4. North Carolina Emergency Management Western Branch Office for Controller support.

The Medical Services (MS-1) Drill began at 0900 on October 17, 2007 at the simulated accident scene in the far corner of the garage area of the MEDIC building at 4525 Statesville Road, Charlotte, North Carolina. The scenario involved a McGuire Nuclear Station General Emergency declared at 0300 which involved the release of noble gases with Iodine, Cesium and Cobalt particulates. Citizens within a 10-mile area of the McGuire Nuclear Station were directed to evacuate shortly afterward, but this citizen decided to delay evacuating until after she had first consumed an alcoholic beverage (to better enjoy her stay at a shelter). At 0800 she began driving south on I-77 when she ran off the roadway and down an embankment. After sustaining injuries, she made her way from her car to a nearby telephone, where she dialed 911 and asked for help. The MEDIC Communications Center personnel confirmed she was presently outside the evacuated zone, but had been inside it and could have been exposed to radioactive contamination. This information was relayed to a MEDIC emergency medical services (EMS) team, which responded to the victim at the simulated accident site at 0830.

At that time the Controller read the scenario to the EMS response team. The EMS response team included two emergency medical technicians (EMTs) and an EMT Supervisor. Each member of the EMS response team carried a handheld 800 MHz radio, which operated on the Mecklenburg Trunk System that all area First Responders use. The response vehicle (ambulance) had a vehicle 800 MHz Radio, and a back-up cell phone was assigned to the vehicle. Communications were demonstrated on both the fixed and handheld radios. The vehicle contained a geospatial positioning system (GPS) unit which both showed the location of the ambulance to the EMTs and continuously broadcast its location to the MEDIC Communications Center.

The Supervisor served as the on-scene Incident Commander (IC). Upon arrival, the EMTs spoke to the victim and determined her condition did not require immediate care. She had sustained an open 3-inch laceration to her left forearm and a bruise on her forehead. The victim remained alert, oriented, and did not complain of any immediate life-threatening symptoms. At 0831 the IC made

a status report to the MEDIC Communications Center and confirmed there was an injured accident victim, and asked to have the supporting hospital (Carolinas Medical Center (CMC) University Hospital) be alerted.

Since the EMS Supervisor suspected the victim was contaminated he directed the EMS team to wear personal protective equipment (PPE). At 0832 the Controller (simulating contact with the MEDIC Communications Center) directed the ingestion of potassium iodide (KI) by the EMS team. The Incident Commander handed out the KI (simulated) and recorded ingestion on the Dose Card. After ingestion of KI, the EMS team began donning PPE, consisting of coveralls, boot covers (taped to the coveralls), two pair of latex gloves (first pair taped to the cuffs of the coveralls), eye protection, and face masks. The Incident Commander directed the EMTs to maintain effective contamination control while preparing the transport litter for patient transport, and at 0833 he alerted University Hospital of the victim's status and pending victim transport.

At 0838 EMS personnel successfully performed preoperational checks of their Ludlum Model LM 2241-2 radiation detector with pancake probe (calibration date 04/04/07, calibration due date 04/04/2008). The Cs-137 source attached to the side of the instrument was used to perform the source check. The Incident Commander zeroed three 0-20 R direct reading dosimeters (DRDs) and issued two to the two EMTs and one to himself. He recorded the initial DRD readings on the individual Dose Cards. Simulated permanent record dosimeters (PRDs) were also issued to all three members of the team.

EMS personnel (excluding the IC) completed PPE donning by 0848. The EMTs personnel maintained a dialog with the victim during this time to ensure the patient was remaining stable. Immediately after donning PC, the two EMTs moved toward the accident victim while performing a contamination survey. Pertinent information and survey results were called out by the EMTs and recorded by the Incident Commander. The EMTs maintained effective contamination control by laying down a ground sheet near the victim. Results of initial contamination on the clothed victim indicated 2,150 counts per minute (CPM) in the direct area of the left forearm injury. After cutting away her clothing (simulated) the contamination survey indicated 2,070 CPM in the same area of the forearm injury. The body contained other areas of smaller disbursed contamination, but none above 300 CPM. The Incident Commander notified the hospital the victim was radioactively contaminated at 0855. He provided details of the contamination and indicated that he anticipated transport shortly.

The EMTs placed another ground sheet next to the patient, set a backboard on it, placed a third sheet on the backboard, and then the patient onto the backboard. They then rolled the patient onto the backboard, wrapped her in the top sheet, and secured her to the board. They frequently changed their outer gloves throughout this time, maintaining good contamination control.

The patient was loaded into the ambulance at 0915 and the ambulance began transport to the hospital. The EMT providing patient care during transport called the hospital and gave a comprehensive brief of patient status. EMS personnel continued to provide a high level of patient care and contamination control throughout the ride to the hospital. At 0934 the ambulance arrived at CMC University Hospital, 8800 North Tryon Street, Charlotte, North Carolina, unloaded the patient and turned over the patient to the hospital emergency room (ER) staff. The hospital

radiation safety officer (RSO) monitored the EMS personnel at 0937 and found no contamination. The hospital RSO then monitored the ambulance at 0942 and also found no contamination. The RSO used a Ludlum Model 2241-2 survey instrument (calibration date 04/2007, calibration due 04/2008) with pancake probe.

Prior to the ambulance arrival the CMC University Hospital ER staff had been preparing to receive the potentially contaminated patient. The initial call was received at 0833 by the ER clinician stating that there had been a vehicle accident with one victim. A follow-up call at 0855 indicated the victim was radioactively contaminated. The ER clinician alerted the ER staff, logged the information and notified appropriate hospital staff to respond and set up a radiological emergency area (REA). An initial review of supplies and plans had begun with the first notification of a potentially radiologically contaminated patient was performed. A Craftsman rolling storage cart contained all of the supplies necessary to establish the REA, including a decontamination room and entrance area. The supplies included:

- a Stryker gurney covered with an RMC Medical disposable decontamination system (DDS) with a catch basin, drain, drain tube, and storage container for collecting potentially contaminated water
- a yellow trash container with plastic liner
- rolls of brown paper for covering potentially contaminated surfaces
- rolls of yellow tape labeled "Caution: Radiation Area"
- rubber gloves (with and without powder)
- Tyvek suits
- plastic booties
- hair nets
- face shields
- masking tape
- saline solution
- cotton gauze
- cotton bandages
- swabs
- "Caution: Radioactive Area" signs
- step-off pads (labeled with Remove Protective Clothing Before Stepping Here)
- two Ludlum Model 2241-2 survey instruments (calibration date 04/2007, calibration due 04/2008) with pancake probes
- 28 MGP DMC 2000 S electronic dosimeters (calibration date 04/11/07, calibration due 04/11/08)
- Luxel optically stimulated luminescence (OSL) permanent record dosimeters (PRDs)

Supplies were available in sufficient quantities to supply all members of a response team and support personnel. Also available were detailed procedures for handling a radioactive contaminated patient with guides and checklists for various decontamination potentialities.

The ER team leader started organizing personnel into teams to get the area ready. One group of people started setting up the outside area; another group set up the decontamination room; the

APPENDIX 6

RECOMMENDATIONS

RECOMMENDATIONS FOR IMPROVEMENT:

STATE OF NORTH CAROLINA

1. As operations for response is shifting to computer technology, communication and coordination directly with local EOC management has lessened, we recommend that traditional coordination methods continue until all EOC managers are comfortable with the technology and know that coordination and concurrence is going to occur over the computer systems.
2. Training and commitment of staff to emergency worker decontamination and monitoring of evacuees was minimal. State and county emergency management staff need to work with responders on training and during the development of extent-of-play agreements to ensure sufficient and well trained staff is available.
3. Give the JIC staff additional training on the use of WebEOC and rumor control staff training on trend identification.
4. The Radiation Protection Section Mobile Laboratory should expedite procurement of an instrument with a larger capacity dewar flask and large enough to include the capability to analyze samples in the marinelli geometry.

IREDELL COUNTY

1. Examine the overall process for monitoring of evacuees and their vehicles. A potential exists to create a large backlog of vehicles and their occupants while waiting to be monitored and decontaminated.

GASTON COUNTY

1. Post schematics of the shelter facility layout as informational posters on hallway walls so evacuees will know what and where various resources are located in the facility.
2. Have evacuees fill out registration forms while standing in line, thus minimizing the time the reception team has to spend in-processing each individual.

