



Final Exercise Report

McGuire Nuclear Station

Licensee: Duke Power Company

Exercise Date: August 24, 1999

Report Date: December 3, 1999

**FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION IV
3003 Chamblee Tucker Road
Atlanta, Georgia 30341**



Federal Emergency Management Agency

Region IV
3003 Chamblee-Tucker Rd
Atlanta, GA 30341

December 15, 1999

Mr. Luis A. Reyes
Regional Administrator - RII
Nuclear Regulatory Commission
61 Forsyth Street, SW, Suite 23T85
Atlanta, Georgia 30303

Dear Mr. Reyes:

Enclosed is a copy of the final exercise report for the August 24, 1999, full participation plume exposure pathway exercise of the offsite radiological emergency response plans site-specific to the McGuire Nuclear Station. This report addresses the evaluation of the plans and preparedness for the State of North Carolina and the Counties of Catawba, Gaston, Iredell, Lincoln and Mecklenburg, that are within the 10-mile EPZ and the Host County of Cabarrus. Copies of this report will be forwarded to the State of North Carolina and FEMA and NRC Headquarters by my staff.

All objectives of the exercise were demonstrated. No Deficiencies were identified. However, two Areas Requiring Corrective Action (ARCA) were identified during the exercise. The planned corrective actions from the State of North Carolina have been incorporated into this report. FEMA Region IV staff will work with the State of North Carolina in resolving the Areas Requiring Corrective Action. The five ARCAs from the 1997 exercise and one ARCA from the 1995 exercise were corrected during this exercise.

Based on the results of the August 24, 1999, exercise and FEMA's review of the Annual Letters of Certification for 1998 and 1999, the offsite radiological emergency response plans and preparedness 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 reasonable assurance that appropriate measures can be taken offsite 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 offsite radiological emergency response plans and preparedness site-specific to McGuire Nuclear Station granted on June 4, 1981, will remain in effect.

Should you have questions, please contact Robert E. Perdue at 770/220-5464.

Sincerely,



for John B. Copenhaver
Regional Director

Enclosure

cc: Ms. Vanessa E. Quinn, Acting Chief
FEMA HQ, PT-CR-RP

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TABLE OF CONTENTS

	Page
I. EXECUTIVE SUMMARY	1
II. INTRODUCTION	2
III. EXERCISE OVERVIEW.....	4
A. Plume Emergency Planning Zone Description	4
B. Exercise Participants	4
C. Exercise Timeline	5
IV. EXERCISE EVALUATION AND RESULTS	7
A. Summary Results of Exercise Evaluation	7
B. Status of Jurisdictions Evaluated	9
1. STATE OF NORTH CAROLINA	11
1.1 State Emergency Operations Center	11
1.2 Dose Assessment	12
1.3 Joint Information Center	12
1.4 Field Monitoring Teams	13
1.5 Emergency Operation Facility	14
2. RISK JURISDICTIONS	14
2.1 CATAWBA COUNTY	14
2.1.1 Emergency Operations Center	14
2.1.2 Traffic Control Points	15
2.1.3 Emergency Worker Decontamination	16
2.1.4 Reception Center/Congregate Care	16
2.2 GASTON COUNTY	17
2.2.1 Emergency Operations Center	17
2.2.2 Protective Actions For Schools	18
2.2.3 Reception Center/Congregate Care	18
2.2.4 Traffic Control Points	19

2.2.5	Emergency Worker Decontamination	19
2.3	IREDELL COUNTY	20
2.3.1	Emergency Operations Center.....	20
2.3.2	Protective Actions For Schools	20
2.3.3	Reception Center/Congregate Care	21
2.3.4	Traffic Control Points	21
2.4	LINCOLN COUNTY	22
2.4.1	Emergency Operations Center.....	22
2.4.2	Protective Actions For Schools	22
2.4.3	Reception Center/Congregate Care	23
2.4.4	Traffic Control Points	24
2.4.5	Emergency Worker Decontamination.....	24
2.5	MECKLENBURG COUNTY.....	25
2.5.1	Emergency Operations Center	25
2.5.2	Protective Actions For Schools	26
2.5.3	Traffic Control Points	27
2.5.4	Emergency Worker Decontamination	28
2.5.5	Lake Warning	28
2.5.6	Medical Drill	29
3.	HOST JURISDICTION.....	29
3.1	CABARRUS COUNTY	29
3.1.1	Emergency Operations Center.....	29
3.1.2	Reception Center/Congregate Care	29
3.1.3	Traffic Control Points	30
4.	SUMMARY OF DEFICIENCIES AND/OR AREAS REQUIRING CORRECTIVE ACTIONS (ARCAs).....	31
4.1	ARCAs RECEIVED IN 1999	31
4.1.1	ARCA 37-99-06-A-01	31
4.1.2	ARCA 37-99-10-A-02	32
4.2	PRIOR ARCAs RESOLVED.....	33
4.2.1	ARCA 37-97-09-A-01	33
4.2.2	ARCA 37-97-05-A-02	33

4.2.3 ARCA 37-97-22-A-03	33
4.2.4 ARCA 37-97-09-A-04	34
4.2.5 ARCA 37-97-05-A-05	34
4.2.6 ARCA 37-95-17-A-03	35

List of Appendices

APPENDIX 1 - ACRONYMS AND ABBREVIATIONS.....	36
APPENDIX 2 - EXERCISE EVALUATORS	38
APPENDIX 3 - EXERCISE OBJECTIVES AND EXTENT-OF-PLAY AGREEMENT	40
APPENDIX 4 - EXERCISE SCENARIO.....	55
APPENDIX 5 - MEDICAL DRILL.....	61

List of Tables

Table 1 - Exercise Timeline	6
Table 2 - Summary Results of Exercise Evaluation	8

I. EXECUTIVE SUMMARY

On August 24, 1999, a full scale, plume pathway exercise was conducted in the plume exposure pathway emergency planning zone (EPZ) around the McGuire Nuclear Station by the Federal Emergency Management Agency (FEMA) Region IV. This exercise was held in accordance with FEMA's policies and guidance concerning the exercise of state and local radiological emergency response plans (RERP) and procedures. The previous exercise at this site was conducted on August 5, 1997 and the qualifying emergency preparedness exercise was conducted in December, 1980.

FEMA wishes to acknowledge the efforts of the many individuals who participated in this exercise. The State of North Carolina, the Risk Counties of Catawba, Gaston, Iredell, Lincoln and Mecklenburg, and the Host County of Cabarrus, all participated in this exercise.

Protecting the public health and safety is the full-time job of some of the exercise participants and is an additional assigned responsibility for others. Still others have willingly sought this responsibility by volunteering to provide vital emergency services to their communities. Cooperation and teamwork by all the participants were evident during this exercise.

This report contains the evaluation of the biennial exercise as well as the evaluation of out-of-sequence activities that included: School evacuation, lake warning, traffic control points, emergency worker and vehicle decontamination, relocation centers and a medical drill. The school evacuation and Lake Warning activities were demonstrated and evaluated from July 13, -15, 1999.

The state and local organizations, with the exception of those noted in this report, demonstrated knowledge of their emergency response plans and procedures and adequately implemented them. There were no Deficiencies, however, two Areas Requiring Corrective Action (ARCA) were identified during this exercise. Five ARCAs identified during 1997 McGuire exercise and one ARCA from the 1995 McGuire exercise were resolved.

North Carolina's Schedule of Correction Actions for the two ARCAs has been incorporated into this report.

II. INTRODUCTION

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

FEMA Title 44 CFR 350 establishes the policies and procedures for FEMA's initial and continued approval of state and local 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 include:

- Taking the lead in off-site emergency planning and in the review and evaluation of RERPs and procedures developed by state and local governments;
- Determining whether such plans and procedures can be implemented on the basis of observation and evaluation of exercises of the plans and procedures conducted by state and local governments;
- Responding to requests by the U.S. Nuclear Regulatory Commission (NRC) pursuant to the Memorandum of Understanding between the NRC and FEMA dated June 17, 1993 (Federal Register, Vol. 58, No. 176, September 14, 1993); and
- Coordinating the activities of Federal agencies with responsibilities in the radiological emergency planning process:
 - Department of Commerce (DOC)
 - Nuclear Regulatory Commission (NRC)
 - Environmental Protection Agency (EPA)
 - Department of Energy (DOE)
 - Department of Health and Human Services (DHHS)
 - Department of Transportation (DOT)
 - Department of Agriculture (USDA)
 - Department of the Interior (DOI)
 - Food and Drug Administration (FDA)

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

Formal submission of the RERPs for the McGuire Nuclear Station to FEMA Region IV 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 conducted on August 24, 1999 by FEMA Region IV to assess the capabilities of State and local emergency preparedness organizations in implementing their RERPs and procedures to protect the public health and safety during a radiological emergency involving the McGuire Nuclear Station. The purpose of this exercise report is to present the exercise results and findings on the performance of the off-site response organizations (ORO) during a simulated radiological emergency. The findings presented in this report are based on the evaluations of the Federal evaluator team, with final determinations made by the Chief Evaluator and the Region IV RAC Chairman, and approved by the Regional Director.

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

- NUREG-0654/FEMA-REP-1, Rev. 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980;
- FEMA-REP-14, "Radiological Emergency Preparedness Exercise Manual," September 1991; and
- FEMA-REP-15, "Radiological Emergency Preparedness Exercise Evaluation Methodology," September 1991.

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

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

III. EXERCISE OVERVIEW

Contained in this section are data and basic information relevant to the August 24, 1999, exercise to test the offsite emergency response capabilities in the area surrounding the McGuire Nuclear Station. This section also includes a description of the plume pathway EPZ, a listing of all participating jurisdictions and functional organizations which were evaluated. There is a presentation of exercise events and activities.

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 total population of 116,458 within the five counties of Mecklenburg, Lincoln, Gaston, Iredell and Catawba. The land use within the EPZ is predominately rural, 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 area is served by various forms of transportation. Interstate 77, US Highway 21, and North Carolina 115 to the east; North Carolina 16 to the west and North Carolina 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 site. There is seasonal boat traffic on the Catawba River. The EPZ is divided into 20 sub-areas.

B. Exercise Participants

The following agencies, organizations, and units of government participated in the McGuire Nuclear Station exercise on August 24, 1999.

STATE OF NORTH CAROLINA

Governor's Office
Department of Crime Control and
Public Safety
Division of Emergency Management
State Highway Patrol
National Guard
Civil Air Patrol
Department of Environment, Health
and Natural Resources

Division of Forest Resources
Department of Agriculture
Department of Human Resources
Division of Social Services
Emergency Medical Services Section,
Division of Facility Services
Wildlife Resources Commission
Division of Radiation Protection

Division of Environmental Health
Division of Solid Waste Management

Department of Transportation
Division of Highways
Division of Motor Vehicles
Department of Administration

RISK JURISDICTIONS

Mecklenburg County
Lincoln County
Gaston County
Iredell County
Catawba County

HOST JURISDICTION

Cabarrus County

PRIVATE/VOLUNTEER ORGANIZATIONS

American Red Cross
Amateur Radio

C. Exercise Timeline

Table 1, on the following page, presents the time at which key events and activities occurred during the plume phase of the McGuire Nuclear Station exercise on August 24, 1999. Included are times notifications were made to the participating jurisdictions/functional entities.

Table 1. Exercise Timeline

DATE AND SITE: August 24, 1999 - McGuire Nuclear Station

Emergency Classification Level or Event	Time Utility Declared	Time That Notification Was Received or Action Was Taken							
		SEOC	JC	CATAWBA COUNTY	GASTON COUNTY	IREDELL COUNTY	LINCOLN COUNTY	MECKLENBURG COUNTY	CABARRUS COUNTY - HOST
Alert	0931	0942	0942	0942	0942	0945	0942	0942	1005
Site Area Emergency	1048	1103	1118	1103	1048	1108	1103	1112	1110
General Emergency	1243	1257	1306	1247	1317	1257	1257	1307	1305
Simulated Rad. Release Started	0920								
Simulated Rad. Release Terminated	1451								
Facility Declared Operational		1015	1055	0950	1048	0945	1120	0945	1005
Declaration of State of Emergency		1245		1243	1350	1245	1239	1244	1245
Exercise Terminated		1445		1445	1448	1450	1448	1447	1449
Early Precautionary Actions: Agricultural Advisory School Evacuation		1310			1131	1143	1112	1112	
1st Protective Action Decision Notification of Public				1124	1124	1124	1124	1124	1124
1st Siren Activation				1128	1128	1128	1128	1128	1128
1st EAS Message				1131	1131	1131	1131	1131	
2nd Protective Action Decision Shelter: Zones A,E,F,G,H,I,J,K,N,O,P,Q,S & T Evacuate: Zones B,C,D,L,M & R		1317		1317	1317	1317	1317	1317	
2nd Siren Activation		1320		1320	1320	1320	1320	1320	
2nd EAS Message		1323		1323	1323	1323	1323	1323	
KI Administration Decision: Move to Staging Area/Issue to EWs		1124				1405	1300	1128	

IV. EXERCISE EVALUATION AND RESULTS

Contained in this section are the results and findings of the evaluation of all jurisdictions and functional entities which participated in the August 24, 1999 exercise to test the offsite emergency response capabilities of State and local governments in the 10-mile EPZ surrounding the McGuire Nuclear Station.

Each jurisdiction and functional entity was evaluated on the basis of its demonstration of criteria delineated in exercise objectives contained in FEMA-REP-14, REP Exercise Manual, September 1991. Detailed information on the exercise objectives and the extent-of-play agreement used in this exercise are found in Appendix 3 of this report.

A. Summary Results of Exercise Evaluation - Table 2

The matrix presented in Table 2, on the following page presents the status of all exercise objectives from FEMA-REP-14 which were scheduled for demonstration during this exercise by all participating jurisdictions and functional entities. Exercise objectives are listed by number and the demonstration status of those objectives 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)
- C - Credit Granted for response to actual emergencies

Table 2. Summary of Exercise Evaluation

DATE AND SITE: August 24, 1999 - McGuire Nuclear Station

JURISDICTION/FUNCTIONAL ENTITY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33			
STATE OF NORTH CAROLINA																																				
State Emergency Operations Center	M	M	M	M					M	M	M													M												
Dose Assessment							M																													
Joint Information Center		M		M								M	M																							
Field Monitoring Teams				M	M	A		M						M																						
Emergency Operations Facility	M	M	M	M																																
RISK JURISDICTIONS																																				
CATAWBA COUNTY																																				
Emergency Operations Center	M	M	M	M					M	M	M			M	M																					
Traffic Control Points					M												M																			
Emergency Worker Decontamination					M																		M													
Reception Center/Congregate Care					M														M	M																
GASTON COUNTY																																				
Emergency Operations Center	M	M	M	M					M	M	M			M	M																					
Protective Actions For Schools																M																				
Reception Center/Congregate Care																				M	M															
Traffic Control Points					M													M																		
Emergency Worker Decontamination					M																			M												
IREDELL COUNTY																																				
Emergency Operations Center	M	M	M	M					M	M	M			M	M																					
Protective Actions For Schools																M																				
Reception Center/Congregate Care					M															M	M															
Traffic Control Points					M													M																		
LINCOLN COUNTY																																				
Emergency Operations Center	M	M	M	M					M	M	M			M	M																					
Protective Actions for Schools																M																				
Reception and Congregate Care					M															M	M															
Traffic Control Points					M													M																		
Emergency Worker Decontamination					M																															
MECKLENBURG COUNTY																																				
Emergency Operations Center	M	M	M	M					M	A	M			M	M	M																				
Protective Actions for Schools																M																				
Traffic Control Points					M														M																	
Emergency Worker Decontamination					M																															
Lake Warming					M					M																										
Medical Drill					M																															
HOST JURISDICTION																																				
CABARRUS COUNTY																																				
Emergency Operations Center	M	M	M	M					M																											
Reception Center/Congregate Care					M																															
Traffic Control Points					M													M																		

LEGEND:

M = Met (No Deficiency or ARCA's assessed and no unresolved prior ARCA's)

A = ARCA(s) assessed and/or unresolved prior ARCA's

N = Not Demonstrated

Blank = Not scheduled for demonstration

B. Status of Jurisdictions Evaluated

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

- **Met** - Listing of the demonstrated exercise objectives 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 objectives 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 objectives under which one or more ARCAs were assessed during the current exercise or ARCAs assessed during prior exercises remain unresolved. Included is a description of the ARCAs 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 objectives which were not demonstrated as scheduled during this exercise and the reason they were not demonstrated.
- **Prior ARCAs - Resolved** - Descriptions of ARCAs assessed during previous exercises which were resolved in this exercise and the corrective actions demonstrated.
- **Prior ARCAs - Unresolved** - Descriptions of ARCAs assessed during prior exercises which were not resolved in this exercise. Included is the reason the ARCA remains unresolved and recommended corrective actions to be demonstrated before or during the next biennial exercise.

The following are definitions of the two types of exercise issues which are discussed in this report.

- A **Deficiency** is defined in FEMA-REP-14 as "... an observed or identified inadequacy organizational performance in an exercise that could cause a finding that offsite emergency preparedness is not adequate to provide reasonable assurance that appropriate protective measures can be taken in the event of a radiological emergency to protect the health and safety of the public living in the vicinity of a nuclear power plant."

- An ARCA is defined in FEMA-REP-14 as "...an observed or identified inadequacy of organizational performance in an exercise that is not considered, by itself, to adversely impact public health and safety."

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

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

- **Plant Site Identifier** - A two-digit number corresponding to the Utility Billable Plant Site Codes.
- **Exercise Year** - The last two digits of the year the exercise was conducted.
- **Objective Number** - A two-digit number corresponding to the objective numbers in FEMA-REP-14.
- **Issue Classification Identifier** - (D = Deficiency, A = ARCA). Only Deficiencies and ARCAs are included in exercise reports.
- **Exercise Issue Identification Number** - A separate two (or three) digit indexing number assigned to each issue identified in the exercise.

1. STATE OF NORTH CAROLINA

1.1 State Emergency Operations Center

The State Emergency Response Team (SERT) operated from the State Emergency Operations Center (SEOC) in Raleigh, North Carolina. The SEOC staff has been divided by functions titled Logistics, Planning, Public Information and Emergency Service. The various agencies grouped under these functions have been provided with their own rooms.

The Director was proactive in resolving issues before they developed and involved a cooperative staff in the decision making process. The NRC, the McGuire Nuclear Station and the State Radiological Health personnel worked cooperatively. Protective actions included evacuation and sheltering-in-place.

- a. **MET: Objectives 1, 2, 3, 4, 9, 10, 11 and 23**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED:**

Issue No.: 37-97-09-A-01

Description: After taking direction and control at the General Emergency (GE), the State did not verify that the Mecklenburg County Emergency Coordinator was on the Decision Line for obtaining the county's concurrence on sounding the sirens and issuing the EAS message. Hence, concurrence was given by another county employee. The state also issued an agricultural advisory that was not directly transmitted to Catawba County. (NUREG-0654, E.6.)

Corrective Actions Demonstrated: During the General Emergency the State verified that it communicated with the official decision maker in Mecklenburg County when the State took direction and control.

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

1.2 Dose Assessment

The Division of Radiation Protection (DRP) SERT Coordinator and dose assessment staff conducted independent dose projection. The field team coordinator and the radio communicator recorded field team survey meter readings and air sample results. This data was provided to the dose assessment staff for their use and data correlation. Dose projections were consistent with plant projections and field monitoring team data was within a factor of three. The staff used field team data to identify the boundaries of the plume.

- a. **MET: Objectives 7 and 9**
- 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 Joint Information Center

The state, counties, and utility coordinated their public information dissemination activities via the Joint Information Center (JIC) in Charlotte. Public Information Officers (PIOs) from all organizations presented accurate and complete information to the media on the status of the plant and the offsite response, and responded accurately to calls from the public. Responses to public and media inquiries were timely and accurate. State and county staff were well trained.

- a. **MET: Objectives 2, 4, 12 and 13**
- 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 Field Monitoring Teams

The two Field Monitoring Teams (FMTs) had excellent communication equipment. There was no difficulty in communicating with the field team leaders. The capability to monitor and control radiation exposure to Emergency Workers (EWs) was effectively demonstrated. The FMTs demonstrated the appropriate use of equipment for determining the field radiation measurements. The Red FMT failed to follow its Standard Operating Procedures (SOPs) by not enclosing the instrument probes in thin plastic, and not taking open and closed measurements at the beginning and the middle of the air sample collection.

- a. **MET:** Objectives 4, 5, 8 and 14
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:**

Issue No.: 37-99-06-A-01

Description: The Red Field Team did not follow the Division of Radiation Protection SOPs for Radiological Emergency Sampling Monitoring Team Members. The team did not enclose the survey instruments and/or instrument probes in thin plastic as required in Section 2, Item 3. The procedures states: *Survey meters should be placed inside plastic bags to protect the instruments from particulate contamination. It may be appropriate to only cover the probe with protective plastic.* During the air sample collection, the team did not take the open and closed window measurements with the GM survey meter at the beginning and middle of the sample collection. Section 3, Item 5, Emergency Procedures for use of Low Volume Air Samplers, Note 1 (b) states: *open and closed measurements with the GM survey meter should be taken and recorded near the beginning, the middle and the end of the sample collection period to assure constant plume presence during the sampling period.*

Recommendation: Provide additional training to the field monitoring teams to assure that they will follow procedures during radiological monitoring missions.

Schedule of Corrective Action: Red team has been counseled in regard to this ARCA. The team has received instruction in the importance of following procedures. In addition, they were informed as to the technical reasons for those specific steps in both procedures. The SOP "Emergency Procedures for use of Low Volume Air Samplers" has been modified by putting the step "to take open and closed GM survey meter measurements" in the first part of the procedure (instead as a note at the end) and has been highlighted by bolding the sentence. This should alert the team to take the readings before starting the procedure. A modification to the "Sample Data Form" is planned to include spaces to enter the radiation readings

taken while performing the air sample procedure. This will cue the survey team to take and enter the survey meter readings per the procedure.

- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

1.5 Emergency Operations Facility

The McGuire Nuclear Station Emergency Operations Facility (EOF), located in the utility's corporate office, is an excellent facility from which all participating organizations can effectively manage emergency operations. Communications and coordination among the state officials, and the utility operator were exemplary.

All state officials at the EOF were well trained, knowledgeable, followed applicable procedures; and performed their respective responsibilities in an efficient and professional manner.

- a. **MET: Objectives 1, 2, 3 and 4**
- 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

This was an excellent demonstration of a response to a radiological emergency at the McGuire Nuclear Station. The Emergency Operations Center (EOC) equipment and displays supported emergency operations. Direction and control by the Emergency Management Coordinator was outstanding as was staff interaction. All activities identified in the exercise objectives were successfully completed.

- a. **MET: Objectives 1, 2, 3, 4, 9, 10, 11, 14 and 15**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED:**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

2.1.2 Traffic Control Point

The four Catawba Maiden officers who were interviewed were assigned to TCP #8 were knowledgeable of all aspects of Traffic Control Points (TCP) functions, including the use of dosimetry.

- a. **MET: Objectives 5 and 17**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED:**

Issue No.: 37-97-05-A-02

Description: The Catawba Maiden police officer at TCP 7 had dosimeters that were off-scale and had a dosimeter charger that would not charge the dosimeters. This officer stated that the TLD badge was his identification badge and that it indicated where he should be stationed. (NUREG-0654, K.3.a., O.3.d)

Corrective Actions Demonstrated: The Catawba Maiden police officer assigned to TCP 8 was knowledgeable of the use of dosimetry and Potassium Iodide (KI). She zeroed her dosimeter and knew what procedures to follow if she could not zero the dosimetry. She was also knowledgeable of the exposure limit and turn back value.

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

2.1.3 Emergency Worker Decontamination

This was an excellent demonstration of an EW and Vehicle decontamination station which reflected an emphasis on additional training since the 1997 exercise. The vehicle and emergency worker decontamination area was well organized and contamination detection procedures for both were well demonstrated. The Fire and Rescue Squad is to be commended for the substantial improvement since the previous exercise.

- a. **MET: Objectives 5 and 22**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED:**

Issue No.: 37-97-05-A-03

Description: The monitor, aware that the action level was 60 counts per minute, had the instrument on the "times 10" range that would not have permitted 60 counts per minute to be read. In another instance, the monitoring procedures were not sufficient to detect radiological contamination at the level specified in the plan because of the failure to use earphones that were available. (NUREG-0654, O.4.c.)

Corrective Actions Demonstrated: During the demonstration of this objective, the monitor conducted an operational check of the E-520 instrument, set the instrument range to "times one" range and successfully demonstrated the complete survey of one vehicle and its driver. Action levels of background plus 100 counts per minute (CPM), as specified in the plan, would have been detected. The E-520 model used had an audio function negating the need for earphones.

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

2.1.4 Reception Center/Congregate Care

The procedures, facilities, equipment and personnel for radiological monitoring, decontamination and registration of evacuees was demonstrated out of sequence, at Maiden High School. The facility was spacious enough for all critical functions including separate shower facilities for males and females. Parking around the facility provided the necessary space for monitoring and decontamination of vehicles, as well as separate space for clean and contaminated vehicles.

Monitoring and decontamination of personnel and vehicles was demonstrated by volunteers from the Maiden Fire Department. Registration for the reception center is provided by the local Red Cross and Department of Social Services. Registration forms are completed on all persons coming through the center.

- a. **MET: Objectives 5, 18 and 19**
- 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 Gaston County Emergency Management Director provided excellent leadership and guidance to the staff, county participants, and volunteer organizations. The EOC staff was well trained, knowledgeable of their duties and worked as a cohesive team. The County Administrator was present in the EOC and provided guidance as required. The EOC is well equipped to handle all types of emergencies. All participants should be commended for their dedication and accomplishments.

- a. **MET: Objectives 1, 2, 3, 4, 9, 10, 11, 14 and 15**
- 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 Protective Actions For Schools

The interviews for Gaston County schools were conducted at the Mount Holly Middle School. The Assistant Principal of Mount Holly Middle School and the Principals of Pinewood Elementary and Rankin Elementary schools participated. The Lincoln County Emergency Manager and the Director of Operations from the superintendent's office were also present. All of these schools have current evacuation plans and school officials were very knowledgeable of evacuation procedures.

The Director of Operations had a compilation of the number of students at each school, the number of school buses and where school students would be relocated to if an evacuation were ordered. Each private school has an evacuation plan and is notified by the superintendent in the event of an evacuation and is provided transportation by the public schools upon request. Buses are escorted by law enforcement personnel during a school evacuation and appropriate dosimetry is available for law enforcement.

- a. **MET: Objective 16**
- 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 Reception Center/Congregate Care

The procedures, facilities, equipment, supplies and personnel for the monitoring, decontamination and registration of evacuees and the congregate care of evacuees was demonstrated by personnel at the South Point High School in Gaston County. Personnel from the Gaston Fire Department and Belmont Fire Department Station 43 demonstrated radiation exposure control while monitoring and decontaminating evacuees and vehicles. The Gaston County American Red Cross Chapter and the Gaston County Department of Social Services personnel demonstrated procedures for registering evacuees. There are ample facilities and resources for providing mass care for the evacuees.

- a. **MET: Objectives 5, 18 and 19**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**

- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

2.2.4 Traffic Control Points

Law Enforcement Officers from the Gaston County Police Department (GCPD) and from the North Carolina State Highway Patrol (NCSHP) demonstrated the capability and resources necessary to control radiation exposure to themselves, while performing their responsibilities at assigned TCPs and access control points. GCPD officers discussed their duties for manning TCPs GS-31 and GS-33 and NCSHP discussed their responsibilities for staffing TCPs GS-29 and GS-32.

- a. **MET: Objectives 5 and 17**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

2.2.5 Emergency Worker Decontamination

The procedures, facilities, equipment, supplies and personnel for the radiological monitoring and decontamination of EWs were demonstrated by personnel from the Spencer Mountain Road Volunteer Fire Department (SMRFD). SMRFD personnel demonstrated radiation exposure control while monitoring and decontaminating EWs, and their vehicles and equipment.

- a. **MET: Objectives 5 and 22**
- 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 County EOC and the 911 center are co-located in the same building and are under the direction of the Emergency Management Director. The effective utilization of space, furnishings, equipment and personnel allowed for the maximum performance of the EOC staff. Status boards and a major events log were prominently displayed, enhanced the flow of information and assisted in the decision making process. Representatives from the State Department of Emergency Management, Duke Power and the County Manager provided realism and enhanced the EOC operation. Volunteer organizations included the Red Cross, the Iredell County Amateur Radio Society, and the Troutman Volunteer Fire Department.

The entire staff was knowledgeable, committed and worked well as a team. Aggressive leadership by the Emergency Management Director was evident, and there was participation by all of the EOC representatives during briefings and the decision making process.

- a. **MET: Objectives 1, 2, 3, 4, 9, 10, 11, 14 and 15**
- 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 Protective Actions For Schools

The interview for Iredell County schools was conducted at the Mount Mourne Elementary School. The Iredell County Emergency Manager and the Director of School Safety participated in the interview. The County has sufficient plans and buses to evacuate students from Mount Mourne Elementary School. The school buses are escorted by the Iredell County Sheriff's Department personnel. Each school has an evacuation plan and a list of bus drivers. The principals are notified of the school evacuation by the superintendent's office by telephone, back-up tone alert radio, or the electronic mail system at the school.

- a. **MET: Objective 16**
- 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 Reception Center/Congregate Care

Iredell County successfully demonstrated all required aspects of reception center/congregate care activities at Troutman Middle School in Troutman, North Carolina. The Statesville Fire Department performed monitoring and decontamination of evacuees; the Troutman Volunteer Fire Department decontaminated vehicles; The Iredell County Chapter of the American Red Cross registered evacuees and managed the congregate care facility; the Amateur Radio Emergency Service (ARES) provided back-up communications; and the Iredell County Sheriff's Department provided security.

- a. **MET: Objectives 5, 18 and 19**
- 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 Traffic Control Points

Traffic Control Point/Access Control Point (TCP/ACP) activities were demonstrated through interview at the Iredell County EOC with a deputy sheriff and four state patrol officers. All of the personnel interviewed demonstrated a thorough understanding of radiological exposure control, TCP/ACP duties including knowledge of the location of schools and reception centers. Traffic impediment removal was discussed and all staff knew how and where to obtain assistance in removing traffic impediments.

- a. **MET: Objectives 5 and 17**
- 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 LINCOLN COUNTY

2.4.1 Emergency Operations Center

The Lincoln County EOC is a well-equipped and well-staffed emergency management facility. The communications systems are numerous and impressive. There were no delays or communications breakdowns. The Emergency Management Coordinator did a great job of keeping his staff informed of plant conditions. The EOC agency staff did an excellent job of reporting activities to the Emergency Manager (EM) on a regular basis. Protective action decisions were coordinated with all the risk counties and sirens were sounded as required.

- a. **MET: Objectives 1, 2, 3, 4, 9, 10, 11, 14 and 15**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCA - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

2.4.2 Protective Actions For Schools

The three schools that participated in the Lincoln County School interview included Catawba Springs Elementary, East Lincoln High and Rock Springs Elementary Schools. The principal from each of the schools along with the Director of Transportation and the Associate Superintendent were interviewed in the Lincoln County EOC. Each school has an evacuation plan that the principals were very familiar with. The school buses are escorted by the Lincoln County Sheriff's office and they carry appropriate direct and

permanent record dosimetry. Ample transportation resources are available to transport the approximately 2,500 students in these schools.

In the event there is an evacuation, the Superintendent calls the private schools and provides transportation to evacuate schools upon their request. The school officials were professional, knowledgeable of evacuation procedures, and can capably evacuate both public and private schools.

- a. **MET: Objective 16**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

2.4.3 Reception Center/Congregate Care

Reception Center, monitoring, decontamination and congregate care were successfully demonstrated at the West Lincoln Middle School. Monitoring and decontamination of vehicles and evacuees was performed by the Howard's Creek Volunteer Fire Department. Volunteers from the Red Cross and participants from the County Departments of Emergency Management, Social Services, and Mental Health conducted registration and provided all necessary services in the shelter. RACES set up a station to provide communications and information to the shelter manager.

- a. **MET: Objectives 5, 18 and 19**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

2.4.4 Traffic Control Points

The capability and resources necessary to control evacuation flow and access to evacuated areas was demonstrated by the NCSHP, the Lincolnton City Police, and the Lincoln County Sheriff personnel. The officers were knowledgeable about which TCP's to set up and where to direct evacuees for reception, monitoring, decontamination and congregate care. Each officer was properly equipped with dosimetry and was knowledgeable of its use and dose limits.

- a. **MET: Objectives 5 and 17**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCA - RESOLVED:**

Issue No.: 37-95-17-A-03

Description: TCP post L-7 was to be manned by the Lincolnton Police Department. The evaluators went to the traffic control point on two different occasions, but the TCP was unmanned. The Lincolnton squad car was located approximately one-half mile away at the corner of Job Seagle Drive and North Aspen Street. The officer stated he was told to go to this location and he thought it was L-5. (Emergency Management officials did not know of the construction which had moved the TCP from its original location.) This posed the possibility that evacuees would not be given appropriate directions during an emergency. (NUREG-0654, J.10.j.)

Corrective Actions Demonstrated: A Lincolnton police officer manned TCP post L-7 as designated in the county plan and procedures. The officer was knowledgeable about TCPs, where to set them up and where to direct evacuees for reception, monitoring, decontamination, and congregate care.

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

2.4.5 Emergency Worker Decontamination

The North 321 Volunteer Fire Department demonstrated EW Decontamination out-of-sequence at their facility. The volunteers are well trained and conscientious. EW exposure control and decontamination was successfully demonstrated. Without question, the workers performed their mission exceptionally well.

- a. **MET: Objectives 5 and 22**
- 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 Mecklenburg County EOC Director of Emergency Management provided positive direction to the Mecklenburg County EOC staff. There were frequent EOC briefings. The EOC staff coordinated with other 10-mile EPZ counties and the State EOC, and was involved in the decision making process. The EOC was declared operational at 0945. Issuance of Emergency Alert System (EAS) messages was coordinated with the local EAS station. There were sufficient maps, charts, and displays available to support extended emergency operations. Status boards were updated in a timely manner and messages were appropriately distributed to the EOC staff. The State assumed direction and control at 1245.

- a. **MET: Objectives 1, 2, 4, 9, 10, 11, 14 and 15**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION:**

Issue No.: 37-99-10-A-02

Description: Mecklenburg County received the Alert at 0942, followed by the Site Area Emergency (SAE) at 1112. The extent-of-play for objective 10 states that: "Mecklenburg County, as Lead County will do coordination and development of messages and implementation of alert and notification activity." Coordination did not occur following the evacuation of schools in response to the SAE at 1112. This resulted in the failure to issue a coordinated EAS message or news release on the precautionary evacuation of the EPZ schools. In addition, the County failed to institute the clearing of Lake Norman until after the State took direction and control.

Recommendation: Revise Mecklenburg County Procedures, as needed, to assure proper coordination during the development of EAS messages and news releases for all actions that affect more than one county while Mecklenburg County is the Lead County. Provide training to the staff on the implementation of the procedures to assure that the necessary steps are followed to accomplish the timely and coordinated release of emergency instructions and information to the public. The County should warn boaters on Lake Norman to leave the area because of the radiological incident at the McGuire Nuclear Station.

Schedule of Corrective Action: NCEM personnel are assisting Mecklenburg County with revision of the procedures to assure proper coordination during the development of EAS messages and news releases for all actions that affect more than one county while Mecklenburg County is the Lead County. Following completion of this revision a joint FEMA, NCEM and Mecklenburg County meeting will be held to assure revisions will accomplish the needed coordination prior to the State assuming direction and control.

d. **NOT DEMONSTRATED: NONE**

e. **PRIOR ARCAs - RESOLVED:**

Issue No.: 37-97-09-A-03

Description: The coordination of the evacuation and shelter-in-place decision was not coordinated with the management of the EOC. The MEDIC dispatch staff activated the sirens and transmitted the EAS message selected by the state. Although this message was faxed to the EOC, it was not announced to the EOC staff. The county had taken protective actions based on the utility's Protective Action Recommendation (PAR), which coincided with the state's decision. The drop for the decision line in the EOC was not working properly and the only active drop was in the MEDIC dispatch center. (NUREG-0654, E.6.)

Corrective Action Demonstrated: This was corrected during the 1998 Catawba exercise where a decision line had been installed in the EOC. A decision line has also been installed in the new building where Mecklenburg emergency management has relocated. A work order has been placed to have the decision line run directly to the Emergency Manager's desk.

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

2.5.2 Protective Actions for Schools

An interview was conducted at the Cornelius Elementary School with the Principals of Alexander Middle School, Legette Blythe Elementary School, Cornelius Elementary School, Huntersville Elementary School and North Mecklenburg High School. The

Charlotte-Mecklenburg School Director of Public Safety, the Assistant Director of the Charlotte-Mecklenburg Emergency Management Office and the School Transportation Coordinator participated in the interview. School officials were knowledgeable of school evacuation plans.

Parents are also sent evacuation information annually by the school system and the McGuire Nuclear Station. Procedures are in place to contact bus drivers when they are needed. Private schools have their own transportation resources. However, the county has plans to provide backup bus transportation to each private school if a school evacuation is ordered. The Mecklenburg County has well developed school evacuation plans and procedures.

- a. **MET: Objective 16**
- 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 Traffic Control Points

The NCSHP, Charlotte-Mecklenburg Police Department (CMPD) and the Huntersville Police Department (HPD) demonstrated, through interviews, the capability and resources necessary to control evacuation traffic and access to evacuated areas. Deployment of traffic control personnel was simulated. Personnel were interviewed at the County EOC. The interview included a discussion of personnel roles and responsibilities, personal dosimetry, turn-back value, TLDs and KI procedures.

- a. **MET: Objectives 5 and 17**
- 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 Decontamination

Mecklenburg County EW, equipment and vehicle monitoring and decontamination was demonstrated at the City of Charlotte, Fire Station #27. Monitoring was thorough. The Station #27 staff were proficient and clearly capable of conducting monitoring and decontamination activities. The level of expertise demonstrated that personnel had received excellent training.

- a. **MET: Objectives 5 and 22**
- 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 Lake Warning

The alerting and notification of boaters took place out-of-sequence on Lake Norman and the Catawba River. Those agencies participating included the Charlotte-Mecklenburg Police, the Lincoln County Sheriff's Department, the Iredell County Sheriff's Office, the Catawba Sheriff's Department and the North Carolina Wildlife Resources Commission.

A Command Center was established at the McGuire Nuclear Station where the Charlotte-Mecklenburg Police and the North Carolina Wildlife Resources Commission personnel coordinated the alerting and notification effort. From the Command Center the above agencies were directed to alert and warn the boaters. The North Carolina Wildlife Commission personnel completed their alerting and warning in 31 minutes. Personnel were knowledgeable of their responsibilities. Appropriate dosimetry, monitoring equipment and pre-scripted messages are available. Personnel had a working knowledge of their duties. New bull horns and public address systems are being ordered to enhance the alerting and warning of boaters on the lake.

- a. **MET: Objectives 5 and 10**
- 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 Medical Drill (See Appendix 5 for complete report)

- a. **MET: Objectives 5, 20 and 21**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**

3. HOST JURISDICTION

3.1 CABARRUS COUNTY

3.1.1 Emergency Operations Center

Cabarrus County maximized the opportunity to train and involve its response staff that far exceeded objectives established for this exercise. The use of its new facility by the newly organized emergency management team was a great success. The investment of time and resources to support the exercise were well spent. All host counties could benefit from this level of involvement.

- a. **MET: Objectives 1, 2, 3 and 4**
- 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 Reception Center/Congregate Care

A Reception Center was established at the Northwest Cabarrus Middle School where members from the Kannapolis Fire Department provided monitoring and decontamination support. The American Red Cross, assisted by the Cabarrus County Department of Social Services and Cabarrus County Health Alliance established a congregate care center co-located at the middle school. Six evacuees were monitored and registered. The facility provides adequate space and services to accommodate 560 evacuees.

- a. **MET: Objectives 5, 18 and 19**
- 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 Traffic Control Points

Through interview, law enforcement officers from the NCSHP and Cabarrus County Sheriffs Department demonstrated the knowledge needed to establish TCPs and provide for their own radiation safety. Maps were drawn to show two TCPs. Using these maps, the officers discussed how they would direct evacuating traffic to the reception center located at the North West Cabarrus Middle School. Both knew how to respond to traffic problems. Each officer had the required dosimetry, knew how to zero and read the instruments, record readings on the record keeping cards, and where and when to turn in their dosimeters. In addition, they were knowledgeable about their reporting and turn back levels and the potential need to take potassium iodide.

- a. **MET: Objectives 5 and 17**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED:**

Issue No.: 37-97-05-A-04

Description: According to County SOPs, the local law enforcement should have been issued 0-200 mR and 0-20 R dosimetry. However, Cabarrus County law enforcement only had 0-200 R direct-reading dosimetry. (NUREG-0654, H.10, 3.a.)

Corrective Actions Demonstrated: The Cabarrus County Sheriff's Department officers had a 0-200 mR dosimeter, a simulated TLD, and a record-keeping card.

This dosimetry is required by the Cabarrus County standard operating procedures for TCPs, road blocks, 1999, Section VII, E. This corrects the 1997 ARCA.

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

4. **SUMMARY OF DEFICIENCIES and/or ARCAs**

4.1 **ARCAs Received in 1999**

4.1.1 **37-99-06-A-01**

Description: *Description: The Red Field Team did not follow the Division of Radiation Protection SOPs for Radiological Emergency Sampling Monitoring Team Members. The team did not enclose the survey instruments and/or instrument probes in thin plastic as required in Section 2, Item 3. The procedures states: Survey meters should be placed inside plastic bags to protect the instruments from particulate contamination. It may be appropriate to only cover the probe with protective plastic. During the air sample collection, the team did not take the open and closed window measurements with the GM survey meter at the beginning and middle of the sample collection. Section 3, Item 5, Emergency Procedures for use of Low Volume Air Samplers, Note 1 (b) states: open and closed measurements with the GM survey meter should be taken and recorded near the beginning, the middle and the end of the sample collection period to assure constant plume presence during the sampling period.*

Recommendation: Provide additional training to the field monitoring teams to assure that they will follow procedures during radiological monitoring missions.

Schedule of Corrective Action: Red team has been counseled in regard to this ARCA. The team has received instruction in the importance of following procedures. In addition, they were informed as to the technical reasons for those specific steps in both procedures. The SOP "Emergency Procedures for use of Low Volume Air Samplers" has been modified by putting the step "to take open and closed GM survey meter measurements" in the first part of the procedure (instead as a note at the end) and has been highlighted by bolding the sentence. This should alert

the team to take the readings before starting the procedure. A modification to the "Sample Data Form" is planned to include spaces to enter the radiation readings taken while performing the air sample procedure. This will cue the survey team to take and enter the survey meter readings per the procedure.

**4.1.2 37-99-10-A-02
Mecklenburg County EOC**

Description: Mecklenburg County received the Alert at 0942, followed by the Site Area Emergency (SAE) at 1112. The extent-of-play for objective 10 states that: "Mecklenburg County, as Lead County will do coordination and development of messages and implementation of alert and notification activity." Coordination did not occur following the evacuation of schools in response to the SAE at 1112. This resulted in the failure to issue a coordinated EAS message or news release on the precautionary evacuation of the EPZ schools. In addition, the County failed to institute the clearing of Lake Norman until after the State took direction and control.

Recommendation: Revise Mecklenburg County Procedures, as needed, to assure proper coordination during the development of EAS messages and news releases for all actions that affect more than one county while Mecklenburg County is the Lead County. Provide training to the staff on the implementation of the procedures to assure that the necessary steps are followed to accomplish the timely and coordinated release of emergency instructions and information to the public. The County should warn boaters on Lake Norman to leave the area because of the radiological incident at the McGuire Nuclear Station.

Schedule of Corrective Action: NCEM personnel are assisting Mecklenburg County with revision of the procedures to assure proper coordination during the development of EAS messages and news releases for all actions that affect more than one county while Mecklenburg County is the Lead County. Following completion of this revision a joint FEMA, NCEM and Mecklenburg County meeting will be held to assure

revisions will accomplish the needed coordination prior to the State assuming direction and control.

4.2 Prior ARCAs Resolved

4.2.1 37-97-09-A-01 SEOC

Description: After taking direction and control at the General Emergency, the State did not verify that the Mecklenburg County Emergency Coordinator was on the Decision Line for obtaining the county's concurrence on sounding the sirens and issuing the EAS message. Hence, concurrence was given by another county employee. The state also issued an agricultural advisory that was not directly transmitted to Catawba County. (NUREG-0654, E.6.)

Corrective Actions Demonstrated: During the General Emergency in 1999 exercise, the State verified that it was talking to the official decision maker in Mecklenburg County, when the State took direction and control.

4.2.2 37-97-05-A-02 Catawba County TCPs

Description: The Catawba Maiden police officer at TCP 7 had dosimeters that were off-scale and had a dosimeter charger that would not charge the dosimeters. In addition, this officer stated that the TLD badge was his identification badge that indicated where he should be stationed. (NUREG-0654, K.3.a., O.3.d)

Corrective Actions Demonstrated: The Catawba Maiden police officer assigned to TCP 8 was knowledgeable on the use of dosimetry and KI. She zeroed her dosimeter and knew what procedures to follow if she could not zero her dosimetry. She was also knowledgeable of her exposure limit and turn back value.

4.2.3 37-97-22-A-03 Catawba County

Description: The monitor, aware that the action level was 60 counts per minute, had the instrument on the "x10" range that would not have permitted 60 counts per minute to be read. In another instance, the monitoring procedures were not sufficient to detect radiological contamination at the level specified in the plan because of the failure to use earphones that were available. (NUREG-0654, O.4.c.)

Corrective Actions Demonstrated: During the demonstration of this objective, the monitor conducted an operational check of the E-520 instrument, set the instrument range to one times range and successfully demonstrated survey of one vehicle and its driver. Action levels of background plus 100 counts per minute (CPM), as specified in the plan, would have been detected. The E-520 model used had an audio function negating the need for earphones.

**4.2.4 37-97-09-A-04
Mecklenburg County EOC**

Description: The coordination of the evacuation and shelter-in-place decision was not coordinated with the management of the EOC. The MEDIC dispatcher staff activated the sirens and transmitted the EAS message selected by the state. Although this message was faxed to the EOC, it was not announced to the EOC staff. The County had taken protective actions based on the utility's PAR, which coincided with the state's decision. The drop for the decision line in the EOC was not working properly and the only active drop was in the MEDIC dispatch center. (NUREG-0654, E.6.)

Corrective Action Demonstrated: This was corrected during the 1998 Catawba exercise, where a decision line had been installed in the EOC. A decision line has also been installed in the new building to where Mecklenburg emergency management has relocated. A work order has been placed to have the decision line run directly to the Emergency Manger's desk.

**4.2.5 37-97-05-A-05
Cabarrus County TCPs**

Description: According to County SOPs, the local law enforcement should have been issued 0-200 mR and 0-20 R dosimetry. However, Cabarrus County law enforcement only had 0-200 R direct-reading dosimetry. (NUREG-0654, H.10, 3.a.)

Corrective Actions Demonstrated: The Cabarrus County Sheriff's Department officers had a 0-200 mR dosimeter, a simulated TLD, and a record-keeping card. This dosimetry is required by the Cabarrus County standard operating procedures for TCPs, road

blocks, 1999, Section VII, E. This corrects the 1997 ARCA.

**4.2.6 37-95-17-A-03
Lincoln County**

Description: TCP post L-7 was to be manned by the Lincoln Police Department. The evaluators went to the traffic control point on two different occasions, but the TCP was unmanned. The Lincoln squad car was located approximately one-half mile away at the corner of Job Seagle Drive and North Aspen Street. The officer stated he was told to go to this location and he thought it was L-5. (Emergency Management officials did not know of the construction which had moved the TCP from its original location.) This posed the possibility that evacuees would not be given appropriate directions during an emergency. (NUREG-0654, J.10.j.)

Corrective Actions Demonstrated: A Lincoln police officer manned TCP post L-7 as designated in the county plan and procedures. The officer was knowledgeable about TCPs, where to set them up and where to direct evacuees for reception, monitoring, decontamination, and congregate care.

APPENDIX 1

ACRONYMS AND ABBREVIATIONS

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

ACP	Access Control Point
ARC	American Red Cross
ARCA	Area Requiring Corrective Action
CD-V	Civil Defense - Victoreen
CFR	Code of Federal Regulations
CPM	Counts Per Minute
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
EBS	Emergency Broadcast System
EEM	Exercise Evaluation Methodology
EMA	Emergency Management Agency
EMS	Emergency Medical Services
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
EPZ	Emergency Planning Zone
EW	Emergency Worker
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
FEOC	Forward Emergency Operations Center
FMT	Field Monitoring Team
FR	Federal Register
GE	General Emergency
JIC	Joint Information Center
KI	Potassium Iodide
mR	milliroentgen
mR/h	milliroentgen per hour

NCDT	North Carolina Department of Transportation
NCDA	North Carolina Department of Agriculture
NCDRP	North Carolina Division of Radiation Protection
NCHP	North Carolina Highway Patrol
NCWRC	North Carolina Wildlife Resources Commission
NRC	U.S. 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
R	Roentgen
RAC	Regional Assistance Committee
RACES	Radio Amateur Civil Emergency Service
RC	Reception Center
RCA	Radiation Control Agency
REP	Radiological Emergency Preparedness
RERP	Radiological Emergency Response Plan
R/h	Roentgen(s) per hour
SEOC	State Emergency Operations Center
SOP	Standard Operating Procedures
TCP	Traffic Control Point
TLD	Thermoluminescent Dosimeter
USDA	U.S. Department of Agriculture

APPENDIX 2

EXERCISE EVALUATORS

The following is a list of the personnel who evaluated the McGuire Nuclear Station exercise on August 24, 1999. The organization represented by each evaluator is indicated by the following abbreviations:

ANL - Argonne National Laboratory
FEMA - Federal Emergency Management Agency
NRC - Nuclear Regulatory Commission

<u>EVALUATION SITE</u>	<u>EVALUATOR</u>	<u>ORGANIZATION</u>
STATE OF NORTH CAROLINA		
State Emergency Operations Center	Robert Perdue	FEMA
Dose Assessment – EOF	Harry Harrison	ANL
Joint Media Center	Jim Sutch	ANL
	Mike Meshenberg	ANL
Emergency Operations Facility	Robert Trojanowski	NRC
Field Teams	Eddie Fuente	ANL
	George Goforth	ANL
Catawba County		
Emergency Operations Center	Dave Moffet	ANL
Traffic Control Points	Tom Carroll	ANL
Emergency Worker Decontamination	Dave Moffet	ANL
Reception Center/Congregate Care	Tom Carroll	ANL
Gaston County		
Emergency Operations Center	Eddie Hickman	FEMA
Reception Center/Congregate Care	Bill Serrano	ANL
Traffic Control Points	Bill Serrano	ANL

<u>EVALUATION SITE</u>	<u>EVALUATOR</u>	<u>ORGANIZATION</u>
Emergency Worker Decontamination	Bill Serrano	ANL
Iredell County		
Emergency Operations Center	Joseph Canoles	FEMA
Reception Center/Congregate Care	Al Hall	ANL
Traffic Control Points	Al Hall	ANL
Lincoln County		
Emergency Operations Center	Tom Reynolds	FEMA
Reception Center/Congregate Care	Rebecca Thomson	ANL
Traffic Control Points	Rebecca Thomson	ANL
Emergency Worker Decontamination	Tom Reynolds Rebecca Thomson	FEMA ANL
Mecklenburg County		
Emergency Operations Center	Don Cornell	FEMA
Protective Actions for Schools	Robert Perdue	FEMA
Traffic Control Points (Tanner H.S. 10:30 5/26)	Josh Moore	ANL
Emergency Worker Decontamination	Josh Moore	ANL
Lake Warning	Robert Perdue	FEMA
Medical Drill	Robert Perdue	FEMA
Cabarrus County (Host)		
Emergency Operations Center	Conrad Burnside	FEMA
Reception Center/Congregate Care	Sandra Bailey	ANL
Traffic Control Points	Sandra Bailey	ANL

APPENDIX 3

EXERCISE OBJECTIVES AND EXTENT-OF-PLAY AGREEMENT

This appendix lists the exercise objectives which were scheduled for demonstration in the McGuire Nuclear Station exercise on August 24, 1999 and the extent-of-play agreement approved by FEMA Region IV.

A. Exercise Objectives

On the following pages are the specific radiological emergency preparedness objectives scheduled for demonstration during this exercise.

B. Extent-of-Play Agreement

The extent-of-play agreement on the following pages was submitted by the State of North Carolina, and was approved by FEMA Region IV in preparation for the McGuire Nuclear Station exercise on August 24, 1999. The extent-of-play agreement includes any significant modification or change in the level of demonstration of each exercise objective listed in Subsection A of this appendix.



North Carolina Department of Crime Control and Public Safety
Division of Emergency Management

James B. Hunt Jr., Governor

Richard H. Moore, Secretary

May 24, 1999

Dr. Robert E. Perdue
Training, Exercise &
Evaluation Branch
FEMA Region IV
3003 Chamblee-Tucker Road
Atlanta, GA 30341

Dear Dr. Perdue:

The North Carolina Division of Emergency Management, McGuire Nuclear Station officials, and the participating REP counties for the 1999 McGuire Nuclear Station exercise, have met and agreed to the Revised 1999 Extent of Play (EOP) for this exercise, which include your comments. I have also attached a copy of the MS1 scenario for the August drill.

We trust this will be the final copy and ask for your approval.

Should you have questions, please contact me at 919-715-0170.

Sincerely,


Stephen Payne, FNF Planner

c: Eric Tolbert
Scott Carpenter
Don Needham
McGuire Task Force

1999 McGUIRE EXERCISE OBJECTIVES

Site: McGuire Nuclear Station State: North Carolina Exercise Date: 08/24/99 Type: Partial Participation	NC SERT	RAD PROTECT	CABARRUS	CATAWBA	GASTON	IREDELL	LINCOLN	MECKLENBURG	CATEGORY
									A,B,C
1. Mobilization of Emergency Personnel	X	X	X	X	X	X	X	X	A EVERY EXERCISE
2. Facilities/Equipment/Displays	X	X	X	X	X	X	X	X	
3. Direction and Control	X	X	X	X	X	X	X	X	
4. Communications	X	X	X	X	X	X	X	X	
5. Emergency Worker Exposure Control	X	X	X	X	X	X	X	X	
6. Equipment/Procedures for Field Monitoring		X							
7. Dose Projection									
8. Field Monitor - Iodine & Particulate		X							
9. Plume Protective Action Decision	X			X	X	X	X	X	
10. Alert and Notification	X		X	X	X	X	X	X	
11. Public Instructions	X			X	X	X	X	X	
12. Emergency Information - Media	X			X	X	X	X	X	
13. Rumor Control	X			X	X	X	X	X	
14. Use of KI	X			X	X	X	X	X	B SCENARIO DEPENDENT
15. Protective Action - Special Population	X			X	X	X	X	X	
16. Protective Action - Schools					X	X	X	X	
17. TCPs and SRBs	X		X	X	X	X	X	X	
18. Reception Centers			X	X	?	X	X		
19. Congregate Care Centers			X	X	?	X	X		
20. Medical Services - Transportation								X	
21. Medical Services - Facilities								X	
22. Emergency Worker Decon Station				X	X	X	X	X	
23. Supplementary Assistance									
24. Post-Emergency Sampling									

Extent of Play Agreement
McGuire Nuclear Power Station Exercise
August 24, 1999
0800 to 1230 hours

OBJECTIVE #1:

Demonstrate the capability to alert and fully mobilize personnel for both emergency facilities and field operations. Demonstrate the capability to activate and staff emergency facilities for emergency operations.

STATE OF NORTH CAROLINA

The Utility will make the initial notification to the State Warning Point. The State Warning Point will then notify the Division of Emergency Management Operations Section and the Division of Radiation Protection. Upon notification of Alert Classification, EM Operations staff will notify SERT agencies and request that they respond to the State EOC. The Utility will be notified when the State EOC is activated and further notifications will come directly to the EOC. (State staffing for the Joint Information Center and Utility Emergency Operations Facility (EOF) will be pre-positioned in the local area due to scenario time constraints.)

DIVISION OF RADIATION PROTECTION

The mobile laboratory and other field activities will be conducted from the Pumpkin Center Volunteer Fire Department, 1394 Amity Church Road near Denver, North Carolina. (Field units and Radiation Protection EOF personnel will be pre-positioned due to scenario time.) Radiation Protection personnel responding to the State EOC will respond from their normal work locations.

CATAWBA, IREDELL, LINCOLN, GASTON & MECKLENBURG COUNTIES

Alert and notification of the County EOC staffs will be made by the county EM staff using Alert lists. Once the county EOC is activated notification will be made to the State EOC and utility. County staff will be pre-positioned as this exercise is being conducted during normal work hours.

CABARRUS COUNTY

The North Carolina Emergency Operations Center will make initial notification to the county Emergency Management Coordinator. Alert and notification of Cabarrus County EOC will be made by the County's EM Office using a call down list. County staff will be pre-positioned since this exercise is being conducted during normal work hours.

OBJECTIVE #2:

Demonstrate the adequacy of facilities, equipment, displays, and other materials to support emergency operations.

STATE OF NORTH CAROLINA

Emergency information and event status information will be displayed at various locations within the EOC. Commercial telephone lines, FAX lines and computer modem lines will be available for use by SERT representatives. Security will be provided by State Capitol Police. A picture ID will be required for entrance to the State Emergency Operation Center.

CABARRUS, CATAWBA, GASTON, IREDELL, LINCOLN & MECKLENBURG COUNTIES

Event information will be displayed as necessary within the operations room. Security for the facilities will be provided by local law enforcement agencies. A picture ID will be required for entrance into the Emergency Operation Centers.

OBJECTIVE #3:

Demonstrate the capability to direct and control emergency operations.

STATE OF NORTH CAROLINA

The SERT Leader will have direction and control of all State resources and personnel throughout the exercise. The counties will be in direction and control with Mecklenburg County being the lead-coordinating county. The State will provide support and technical assistance to the counties. At the request of the counties, the State will assume direction and control (to be accomplished some time between the declaration of Site Area Emergency and General Emergency) The SERT Leader will then be responsible for direction and control of all off-site response activity

CATAWBA, GASTON, IREDELL, LINCOLN & MECKLENBURG COUNTIES

The county commissioners (if not present they will be simulated) will make protective action decisions. The EM Coordinators or designated staff members will conduct periodic briefings. The North Carolina EOC will coordinate protective actions with the counties.

CABARRUS COUNTY

Cabarrus County is a host county to support evacuees from Mecklenburg County. The County Coordinator will be in direction and control from within the County EOC. They will be kept informed of actions taken by Mecklenburg County as these decisions can impact Cabarrus County resources.

OBJECTIVE #4:

Demonstrate the capability to communicate with all appropriate emergency personnel at facilities and in the field.

STATE OF NORTH CAROLINA

Communications will be demonstrated between the State EOC and the Emergency Planning Zone (EPZ) county EOCs, the Utility Emergency Operations Facility (EOF), Joint Information Center (JIC), and the NC State Warning Point. The scenario will not contain any planned communication system failures.

DIVISION OF RADIATION PROTECTION

The Division of Radiation Protection SERT representatives will demonstrate the ability to communicate with the Utility EOF, the Mobile Lab and deployed field survey teams. The scenario will not contain any planned communication system failures.

CABARRUS, CATAWBA, GASTON, IREDELL, LINCOLN & MECKLENBURG COUNTIES

Communications will be demonstrated between the State EOC and the Emergency Planning Zone (EPZ) county EOCs, the Utility Emergency Operations Facility (EOF), Joint Information Center (JIC), and field response units. The scenario will not contain any planned communication system failures.

OBJECTIVE #5:

Demonstrate the capability to continuously monitor and control radiation exposure to emergency workers.

STATE OF NORTH CAROLINA

NC Wildlife Commission personnel performing lake warning, State Highway Patrol personnel staffing traffic control points and security road blocks, and Department of Motor Vehicles at reception centers and decontamination stations, will be provided the following equipment inside the 10 mile EPZ: 0-200 mR Self Reading Dosimetry (SRD), 0-20 R SRD, simulated TLD's (cloths pins) and individual dose cards. Personnel outside the 10-mile EPZ will be provided: 0-200 mR SRD, simulated TLD's (cloths pins) and individual dose cards. The North Carolina turn back value for field operation is 5R. Mission dose for protection of large populations from radiation exposure above PAGs, life saving activity and preventing valuable property loss may exceed the 5R limit.

RADIATION PROTECTION

All field staff will be provided with the following dosimetry: 0-200 mR SRD, 0-20 R SRD, emergency TLD (demonstrated with clothespin). The North Carolina turn back value for field staff is 5R. Mission dose for individuals involved with protection of large populations from radiation exposure, life saving activity or preventing valuable property loss may exceed the 5R limit.

CABARRUS, CATAWBA, GASTON, IREDELL, LINCOLN & MECKLENBURG COUNTIES

Emergency Responders will be provided the following equipment inside the 10 mile EPZ: 0-200 mR Self Reading Dosimetry (SRD), 0-20 R SRD, simulated TLD's (cloths pins) and individual dose cards. Personnel outside the 10-mile EPZ will be provided the following equipment: 0-200 mR SRD, simulated TLD's (cloths pins) and individual dose cards. Exposure records for all responders will be kept by the County EM Coordinator. If exposure limits are reached, responders will call the EOC to receive instructions from the EM Coordinator or Radiological Officer.

The personnel assigned to the following TCP/SRB's will be available at the County EOC to discuss Exposure limit & Turn-back procedures with the evaluator:

CB-5 - NC Hwy 73 & Trinity Church Rd. - NCSHP

CT-8 - East Main Street (US 321) & West Maiden Rd (SR 2007) - Maiden Police Department

L-7 - Jeb Seagle Dr & Skip Lawing Rd - Lincolnton Police Department

MT & MS 5 - Interstate I-77 & NC-73. - NCSHP

OBJECTIVE #6:

Demonstrate the appropriate use of equipment and procedures for determining field radiation measurements.

RADIATION PROTECTION

The mobile laboratory and two other field survey team activity will be conducted from the Pumpkin Center Volunteer Fire Department, 1394 Amity Church Road near Denver, North Carolina for FEMA evaluation. (Field units and Radiation Protection EOF personnel will be pre-positioned due to scenario time.)

OBJECTIVE #7:

Demonstrate the capability to develop dose projections and protective action recommendations regarding evacuation and sheltering.

RADIATION PROTECTION

As a member of SERT, the NC Division of Radiation Protection will establish an independent dose assessment and projection team at the State EOC. The team will communicate with the Utility EOF; the Mobile Lab and deployed field survey teams to obtain data for developing dose projections (either based on plant conditions or source term data). Back-up dose assessment capability will be demonstrated via a battery powered portable computer.

OBJECTIVE #8:

Demonstrate the appropriate use of equipment and procedures for the measurement of airborne radioiodine concentrations as low as 10^{-7} (0.0000001) microcuries per cubic centimeter in the presence of noble gases and obtain samples of particulate activity in the airborne plume.

RADIATION PROTECTION

Each survey team will use charcoal cartridges or out of date Silver Zeolite cartridges when taking air samples during the exercise. Each survey team will demonstrate the capability of determining whether their location is in the plume pathway, by taking open and closed window exposure rate measurements. Survey team procedures do not require air samples to be taken in locations where the exposure rate is 100 millirogens per hour or greater. Air samples will only be taken when indications from portable survey meters indicate a plume is present. Each survey team will demonstrate the capability of collecting at least one air sample.

OBJECTIVE #9:

Demonstrate the capability to make timely and appropriate protective action decisions.

STATE OF NORTH CAROLINA

The Division of Radiation Protection SERT members will analyze technical data provided by the Utility and make protective action recommendations to the SERT Leader and County Emergency Management Coordinators. While the Counties are in direction and control protective action recommendations will be discussed with the SERT Leader using the Decision Line. When the State is in direction and control, the SERT Leader will make the protective action decisions.

CATAWBA, GASTON, IREDELL, LINCOLN & MECKLENBURG COUNTIES

Local EM Coordinators will discuss protective action recommendations from the utility with the SERT Leader and other EPZ counties using technical guidance from the State EOC. This information will be shared with County Commissioners in each county and a final decision reached. After the State has assumed direction and control the county will be advised by the SERT Leader of recommended protective action decisions.

OBJECTIVE #10:

Demonstrate the capability to promptly alert and notify the public within the 10-mile plume pathway emergency planning zone (EPZ) and disseminate instructional messages to the public on the basis of decisions by appropriate State or local officials.

STATE OF NORTH CAROLINA

During Site Area Emergency, the Counties will be in direction and control. The SERT in the State EOC will lend technical support to the Counties. Coordination and development of messages and implementation of alert and notification activity will be done by Mecklenburg County, as "lead County". Message content will be discussed with the EPZ counties and the State EOC using the Decision Line. At General Emergency the State EOC will have direction and control and will select the appropriate pre-scripted message from the McGuire Plant support plan. Upon concurrence with the counties, North Carolina SERT will lead and conduct the countdown. The EAS Coordinator at the State will read the EAS message to the LP-1 station.

CATAWBA, GASTON, IREDELL, LINCOLN & MECKLENBURG COUNTIES

During Site Area Emergency, the Counties will be in direction and control. The SERT in the State EOC will lend technical support to the Counties. Coordination and development of messages and implementation of alert and notification activity will be done by Mecklenburg County, as "lead County". (If no Commissioners are present at the EOC to review the message traffic, this action will be simulated by the County Manager) Message content will be discussed with the EPZ counties and the State EOC using the Decision Line. Upon concurrence with the counties, Mecklenburg County will lead and conduct the countdown for siren activation. There will be an actual activation of the sirens by Gaston, Lincoln, Iredell and Mecklenburg Counties at Site Area Emergency. Mecklenburg will also read the EAS message to the LP1 Station. Actual Back-up Route Alerting will not be conducted in any of the counties. A representative from each county tasked with the Back-up Route Alerting function will be available in each county EOC to discuss back-up Route Alerting procedures with the evaluator. Lake Warning and Boater Notification for Lake Norman and the Catawba River will be accomplished as an Off-Scenario activity prior to the evaluated exercise. At General Emergency the State of North Carolina will be in direction and control. The North Carolina EOC will be the lead for the siren countdown. The State of North Carolina will read the EAS message and activation of sirens will be simulated.

OBJECTIVE #11:

Demonstrate the capability to coordinate the formulation and dissemination of accurate information and instructions to the public.

STATE OF NORTH CAROLINA

The Counties will have direction and control at Site Area Emergency. Coordination and development of messages will be done by Mecklenburg County, as "lead County". The State will assist in development of EAS messages and/or use of pre-scripted messages from the plan. At General Emergency the State will assume direction and control and will select the appropriate pre-scripted message from the McGuire Plant support plan.

CATAWBA, GASTON, IREDELL, LINCOLN & MECKLENBURG COUNTIES

County EOCs will be responsible for emergency public information and instructions. Catawba,

Gaston, Iredell and Lincoln Counties will coordinate with Mecklenburg County and the State on contents of EAS messages. At Site Area Emergency the counties will be in direction and control, Mecklenburg County as "lead County" will draft and/or use prescribed EAS messages from the plan and contact NC LP1 Station. At the General Emergency the State EOC will coordinate and draft EAS messages and contact NC LP1 Station.

OBJECTIVE #12:

Demonstrate the capability to coordinate the development and dissemination of clear, accurate, and timely information to the news media.

STATE OF NORTH CAROLINA

The State of North Carolina Public Information Staff will serve as support staff to the County Public Information Officers during activation of the Joint Information Center (JIC). (State PIO will also represent Cabarrus County at the JIC) State PIO staff at the JIC will assist & coordinate with the County PIO's for development of news releases and participate in media briefings to answer questions concerning State activity and resources. When the State assumes direction and control, the State Lead Public Information Officer will take the lead role for off-site public information.

CABARRUS COUNTY

Cabarrus County will have a Public Information Officer available at the County EOC. State PIO will also represent Cabarrus County at the JIC. (State PIO representing county due to training of new county PIO at county EOC)

CATAWBA, GASTON, IREDELL, LINCOLN & MECKLENBURG COUNTIES

Individual Counties will have Public Information Officers in both the County EOC and the JIC. They will work together to develop news releases, obtain approval from appropriate county officials, and address the mock media during press briefings. Once the JIC is activated all press releases will come from there.

OBJECTIVE #13:

Demonstrate the capability to establish and operate rumor control in a coordinated and timely manner.

STATE OF NORTH CAROLINA

The Public Information Officer in the State EOC will handle Rumor Control until such time as the JIC is activated. At that time, the State will provide Rumor Control Staff at the JIC to answer telephones and handle rumor control calls. If a rumor control call comes in that needs to be clarified or suppressed, the PIO should develop a news release to directly suppress the rumor. The Federal Evaluator will be provided a copy of the news release that was issued to suppress the rumor.

CATAWBA, GASTON, IREDELL, LINCOLN & MECKLENBURG COUNTIES

Rumor Control calls will be handled by the County Public Information Officer in the County EOC until such time as the JIC is activated. All rumor control calls will then be transferred to the JIC. If a rumor control call comes in that needs to be clarified or suppressed, the PIO should develop a news release to directly suppress the rumor. The PIO will prepare at least one News Release to address one rumor. The Federal Evaluator will be provided a copy of the news release that was issued to suppress the rumor.

OBJECTIVE #14

Demonstrate the capability to implement potassium iodide (KI) protective actions for emergency workers, institutionalized individuals, and if the State plan specified, the general public.

STATE OF NORTH CAROLINA

Personnel in the State EOC will discuss the distribution actions and dose administration procedures with the Federal Evaluator.

CATAWBA, GASTON, IREDELL, LINCOLN & MECKLENBURG COUNTIES

Counties will discuss distribution actions and dose administration procedures with the Federal Evaluator at the County EOCs. Inventories can be made available on paper or by inspection.

OBJECTIVE #15

Demonstrate the capability and resources to implement actions for special populations.

CATAWBA, GASTON, IREDELL, LINCOLN & MECKLENBURG COUNTIES

Counties will discuss proper actions and procedures with the Federal Evaluator at the County EOCs.

OBJECTIVE #16:

Demonstrate the capability and resources necessary to implement protective actions for school children within the plume pathway emergency planning zone (EPZ).

GASTON COUNTY

Interviews with the principals or assistant-principals and County School Administration personnel to be done at the schools Off Scenario on July 15, 1999 at 2:00 pm. Requested interviews will be done at the Gaston County EOC to reduce travel time.

Schools to be evaluated for 1999:

Pinewood Elementary School
Mount Holly Junior High School
Rankin Elementary School

IREDELL COUNTY

Interviews with the Principal or Assistant Principal and County School Administration personnel will be conducted at the school Off Scenario on July 13, 1999 at 2:00 pm.

School for 1999:

Mount Mourne Elementary School

LINCOLN COUNTY

Interviews with the principals or assistant principals and County School Administration personnel to be done at the schools Off Scenario on July 15, 1999 at 10:00 am. Requested

interviews will be done at the Lincoln County EOC to reduce travel time.

Schools to be evaluated for 1999:

Catawba Springs Elementary
East Lincoln High School
Rock Springs Elementary School

MECKLENBURG COUNTY

Interviews with the principals or assistant principals and County School Administration personnel to be done at the schools Off Scenario on July 13, 1999 at 10:00 am. Requested interviews will be done at the Charlotte/Mecklenburg County EOC to reduce travel time.

Schools to be evaluated for 1999:

Alexander Middle School
Legette Blythe Elementary School (New School)
Cornelius Elementary School
Huntersville Elementary School
North Mecklenburg High School

OBJECTIVE #17:

Demonstrate the organizational capability and resources necessary to control evacuation traffic flow and to control access to evacuated and sheltered areas.

STATE OF NORTH CAROLINA

The North Carolina State Highway Patrol will provide support to the Counties in the form of manpower to staff designated traffic control points and security roadblocks.

CABARRUS, CATAWBA, GASTON, IREDELL, LINCOLN & MECKLENBURG COUNTIES

Traffic control points will be demonstrated at the Cabarrus, Catawba, Gaston, Iredell, Lincoln & Mecklenburg County EOCs by interview. Law enforcement agency representatives, (State Highway Patrol, County Sheriff & Local Police) will meet with the Federal Evaluator to discuss proper procedures, equipment, turn back values etc. If Federal Evaluators would like to see one or two locations demonstrated then law enforcement will be available to go with the Federal Evaluator to a TCP/SRB between 0900 - 1200 hours during the evaluated exercise. The following TCP/SRB will be available for field demonstration (Personnel assigned to * locations will discuss Exposure limit & Turn-back procedures with the evaluator):

Cabarrus County:

- * CB-5 - NC Hwy 73 & Trinity Church Rd. - NCSHP
- CB-6 - Trinity Church Rd. & Orphanage Rd. - Cabarrus County Sheriff
- CB-7 - Trinity Church Rd. & Northwest Cabarrus Drive. - Cabarrus County Sheriff

Catawba County:

- CT-1 - NC 150 & NC 16. - NCSHP
- CT-3 - NC 16 & Buffalo Shoals Rd (SR 1003) - Catawba Co Sheriff Dept.
- CT-5 - Sherrills Ford (SR 1848) & Bandys Crossroads (SR 1813) - Catawba Co Sheriff

Dept.

CT-8 – East Main Street (US 321) & West Maiden Rd (SR 2007) – Maiden Police (To be field demonstrated to correct 1995 ARCA)

Gaston County:

GS-29 - Charles R. Jones Hwy. (NC 27) & Alexis-Lucia Rd. - NCSHP
GS-31 - Sunset Drive & Chestnut St. Extension. - Gaston County Police
GS-32 - Dallas-Stanley Hwy. (NC 275) & Hickory Grove Rd. - NCSHP
GS-33 - Hickory Grove Rd. & Spencer Mountain Rd. - Gaston County Police

Iredell County:

IT-7 - NC 150 & SR1109 Williamson Road. - NCSHP
IT-18 - SR 1100 Brawley School Road & Williamson Rd (SR 1109). - NCSHP
IS-10 - SR 1100 Brawley School Road & Brawley School. - Iredell Co Sheriff Dept.

Lincoln County:

* L-7 – Jeb Seagle Dr & Skip Lawing Rd - Lincolnton Police Department (To be field demonstrated to correct 1995 ARCA)
L-6 - Hwy 27 & SR 1002 - Lincoln Co. Sheriff
L-27 - NC 16 & Mundy Rd (SR 1349). - NCSHP

Mecklenburg County:

* MT & MS 5 - Interstate I-77 & NC-73. - NCSHP
MT & MS 3 - NC-73 & Sam Furr Rd. – Huntersville Police
MT & MS 2 - Gilead Road & Beatties Ford Rd. - Charlotte/Mecklenburg Police
MT & MS 13 - McCoy Rd. & Gilead Rd. – Huntersville Police
MT 14 - NC 16 & Old NC 16. - Charlotte/Mecklenburg Police

OBJECTIVE #18:

Demonstrate the adequacy of procedures, facilities, equipment, and personnel for the radiological monitoring, decontamination, and registration of evacuees.

CABARRUS COUNTY

Reception will be demonstrated at Northwest Cabarrus Middle School. Red Cross and Department of Social Services personnel will discuss the procedures for monitoring, decontamination and registration of evacuees. Reception personnel will have six (6) people to be monitored using Portal monitors and hand held instrumentation. Drill to be conducted off scenario on Aug 24, 1999 at 7:00 pm.

CATAWBA COUNTY

Reception will be demonstrated at Maiden High School. Reception personnel will have six (6) people to be monitored using Portal monitors and hand held instrumentation. This will be done on-scenario on August 24, 1999 at 1:00 pm.

GASTON COUNTY

South Point High school with Gastonia Fire Department's Hazardous Materials Team, Belmont and Southpoint Fire Departments on August 23, 1999 at 7:00 pm.

IREDELL COUNTY

Reception will be demonstrated at Troutman Middle School. Statesville Fire Department personnel will discuss the procedures for monitoring, decontamination and registration of evacuees. Reception personnel will have six (6) people to be monitored using Portal monitors and hand held instrumentation. Drill to be conducted off scenario on August 24, 1999 at 1:00 pm.

LINCOLN COUNTY

Reception will be demonstrated at West Lincoln High School. Red Cross and Department of Social Services Reception personnel will have six (6) people to be monitored using Portal monitors and hand held instrumentation. Drill to be conducted off scenario August 24, 1999 at 7:00 pm..

MECKLENBURG COUNTY

Mecklenburg County has one Reception Center, which was demonstrated during the 1998 Catawba drill, satisfying the six year requirement.

OBJECTIVE #19:

Demonstrate the adequacy of facilities, equipment, supplies, personnel, and procedures for the congregate care of evacuees.

CABARRUS COUNTY

Congregate Care will be demonstrated at Northwest Cabarrus Middle School. Red Cross and Department of Social Services personnel will discuss and demonstrate the procedures for registration of evacuees on six (4) individuals. Drill to be conducted off scenario Aug 24, 1999 at 7:00 pm.

CATAWBA COUNTY

Congregate Care will be demonstrated at Maiden High School. Red Cross and Department of Social Services personnel will discuss and demonstrate the procedures for registration of evacuees on six (6) individuals. Drill to be conducted on August 24, 1999 at 1:00 pm.

GASTON COUNTY

Congregate Care will be demonstrated at South Point High School. Red Cross and Department of Social Services personnel will discuss and demonstrate the procedures for registration of evacuees on six (6) individuals. Drill to be conducted off scenario on August 23, 1999 at 7:00 pm.

IREDELL COUNTY

Congregate Care will be demonstrated at Troutman Middle School. Red Cross personnel will discuss and demonstrate the procedures for registration of evacuees on six (6) individuals. Drill to be conducted off scenario on August 24, 1999 at 1:00 pm.

LINCOLN COUNTY

Congregate Care will be demonstrated at West Lincoln Middle School. Red Cross and Department of Social Services personnel will discuss and demonstrate the procedures for registration of evacuees on six (6) individuals. Drill to be conducted off scenario on August 24, 1999 at 7:00 pm.

OBJECTIVE #20

Demonstrate the adequacy of vehicles, equipment, procedures and personnel for transporting contaminated, injured or exposed individuals.

MECKLENBURG COUNTY

MS-1 field activities will involve Charlotte/Mecklenburg EMS(MEDIC) and University Memorial Hospital. MEDIC will respond to an injured contaminated patient. The response team will perform field radiological survey and medical care of the injured party prior to transport. University Hospital will conduct patient decontamination. Drill is to be conducted Off Scenario on August 23, 1999 at 6:00 am in the University Memorial Hospital parking lot.

OBJECTIVE #21:

Demonstrate the adequacy of equipment, procedures, supplies, and personnel of medical facilities responsible for treatment of contaminated, injured, or exposed individuals.

MECKLENBURG COUNTY

MS-1 field activities will involve Charlotte/Mecklenburg EMS(MEDIC) and University Memorial Hospital. The hospital will prepare the Radiation Control Zone to receive an injured contaminated patient. The hospital will provide a radiological emergency medical team consisting of a doctor, nurse, radiological safety officer and required support staff. Hospital security will maintain access control for the Radiation Control Zone. The medical team will monitor decontaminate and treat the medical needs of the patient in accordance with hospital procedures. The hospital will also monitor the EMS personnel and vehicle. Drill is to be conducted Off Scenario on August 23, 1999 at 6:00 am.

OBJECTIVE: #22:

Demonstrate the adequacy of procedures for the monitoring and decontamination of emergency workers, equipment, and vehicles.

CATAWBA COUNTY

Emergency worker decontamination will be demonstrated at the Sherril's Ford Rescue Squad base. Personnel and equipment decontamination procedures will be discussed using diagrams and unit SOP's. Unit radiation monitor will demonstrate actual monitoring of emergency personnel and equipment. This drill will be conducted Off Scenario on August 23, 1999 at 1700 to correct 1997 ARCA.

GASTON COUNTY

Emergency worker decontamination will be demonstrated at the Spencer Mountain Road Fire Department base. Personnel and equipment decontamination procedures will be discussed using diagrams and unit SOP's. Unit radiation monitor will demonstrate actual monitoring of emergency personnel and equipment. This drill will be conducted Off Scenario on August 24, 1999 at 7:00 pm.

LINCOLN COUNTY

Emergency worker decontamination will be demonstrated by the 321 North Fire Department at Hwy 321 and Hwy 321 Business. Personnel and equipment decontamination procedures will be discussed using diagrams and unit SOP's. Unit radiation monitor will demonstrate actual

monitoring of emergency personnel and equipment. This drill will be conducted Off Scenario on August 24, 1999 at 7:00 pm..

MECKLENBURG COUNTY

Emergency worker decontamination will be demonstrated at the Charlotte Fire Station 27 at 111 Ken Hoffman Road, off NC Hwy 29. Personnel and equipment decontamination procedures will be discussed using diagrams and unit SOP's. Actual monitoring of emergency personnel and equipment will be demonstrated by unit radiation monitor. This drill will be conducted On-Scenario at approximately 10:00 am.

OBJECTIVE #23:

Demonstrate the capability to identify the need for external assistance and to request such assistance from Federal or other support organizations.

STATE OF NORTH CAROLINA

The SERT Leader will make request from the State EOC on any Federal resources that may be required. The State may also request for Federal Disaster Aid. Demonstration of this objective by the Counties may be accomplished through a Mutual Aid request to a neighbor county.

APPENDIX 4

EXERCISE SCENARIO

This appendix contains a summary of the simulated sequence of events, which was used as the basis for invoking emergency response actions by OROs in the McGuire Nuclear Station exercise on August 24, 1999.

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

**McGuire Nuclear Site
Biennial Exercise Scenario
August 24, 1999
Full Participation Exercise
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 Media Center and the Joint Information Center (JIC) will be staffed because the State of North Carolina and Counties of Gaston, Mecklenburg, Lincoln, Cabarrus, Catawba and Iredell are playing in this exercise. The NRC will also fully participate with a limited team dispatched to the site and the EOF.

Time Event

- 0900 The plant is operating at full power with all redundant equipment available.
- 0905 A steam break develops between the 1D S/G PORV isolation valve and the 1D S/G PORV, equivalent to ~0.625% steam flow. The motor operator for the 1D S/G PORV isolation valve fails in the full open position when an attempt is made to close it. The physical environment created in the area by the steam break does not permit manual closure of the 1D S/G PORV isolation valve to stop the steam leak.
- 0910 A steam generator tube leak of ~30gpm develops in the 1D S/G (>10gpm but <50gpm).
- 0915 The operating crew diagnoses the unisolable secondary line break outside Containment with a S/G tube leak greater than 10gpm, but less than 50gpm in 1D S/G. These events should result in the declaration of an ALERT Emergency Action Level (EAL).
- 0920 The operating crew commences a controlled unit shutdown.
- 0930 ALERT declaration is implemented. Off-site authorities are notified. Alert and notification of responders is implemented. Minimum staffing of state and county Emergency Operations Centers (EOCs) begins. Site Assembly is conducted on-site.

Time Event

- 1040 The size of the S/G tube leak starts to increase in 1D S/G.
- 1045 The primary to secondary leak rate in 1D S/G has exceeded 50gpm and stabilizes at 60-70gpm. The steam leak cannot be isolated. This should result in the declaration of a SITE AREA EMERGENCY Emergency Action Level (EAL).
- 1100 SITE AREA EMERGENCY declaration is implemented. Off-site authorities are notified. Coordination of public notification should take place, with notification occurring via sirens, public address systems, and the Emergency Action System (EAS). Activity at this time should also include the establishment of relocation centers, traffic control and personnel/vehicle monitoring/decontamination stations.

NOTE: There will be an actual activation of the sirens and the EAS at Site Area Emergency.

- 1230 1C Reactor Coolant (NC) pump impeller mechanically fails and sends loose parts into the Reactor Vessel. Fuel damage commences due to flow from the remaining three Reactor Coolant pumps. The radiological release rate at the steam leak begins to increase.
- 1245 The Emergency Response Organization (ERO) diagnoses fuel damage with 1EMF 51A and 1EMF 51B valid readings greater than 117 R/hr (equates to 5% fuel gap activity released). This loss of all three fission product barriers should result in the declaration of a GENERAL EMERGENCY Emergency Action Level (EAL).
- 1300 GENERAL EMERGENCY declaration is implemented. Off-site authorities are notified. Recommendations concerning protective actions should be made to the off-site authorities. They, in turn, will coordinate public notification among themselves, with actual notifications occurring via sirens and the Emergency Action System (EAS).

NOTE: There will not be an activation of the sirens, or of EAS unless there was a problem with these activities at the earlier activation.

- 1500 - 1600 Termination of the exercise when all required objectives have been demonstrated.

DRILL

**McGUIRE NUCLEAR SITE
BIENNIAL EXERCISE
AUGUST 24, 1999**

0900 Simulator run starts.

0905 A steam break develops between the 1D S/G PORV isolation valve and the 1D S/G PORV, equivalent to -0.625% steam flow (~100,000 lbs mass per hour). The motor operator for the 1D S/G PORV isolation valve fails in the full open position when an attempt is made to close it. The physical environment created in the area by the steam leak does not permit manual closure of the 1D S/G PORV isolation valve to stop the steam leak. The leak is therefore unisolable for the duration of the exercise. Due to a critical power demand on the electrical system, a controlled shutdown should be commenced at no greater than 25% per hour.

EXPECTED RESPONSE

- Go to AP/1/A/5500/001 "Steam Leak"
- Shutdown the unit per OP/1/A/6100/003 "Controlling Procedure for Unit Operation", Enclosure 4.2 "Power Reduction".

0910 A steam generator tube leak of ~30gpm develops in the 1D S/G (>10gpm but <50gpm).

0915 The operating crew diagnoses the unisolable secondary line break outside containment with S/G tube leak greater than 10gpm, but less than 50gpm in 1D S/G. This meets the conditions for an ALERT declaration. Shutdown is now required per Tech Specs and it continues at 25% per hour.

EXPECTED RESPONSE

- Go to AP/1/A/5500/010 "NC System Leakage Within The Capacity of Both NV Pumps", Case I "Steam Generator Tube Leakage".
- Refer to RP/0/A/5700/000 "Classification of Emergency" and declare ALERT, event # 4.1.3 (1) bullet #1.
- Implement RP/0/A/5700/002 "Alert".
- Implement RP/0/A/5700/011 "Conducting a Site Assembly, Site Evacuation or Containment Evacuation".

THIS IS AN EXERCISE. THESE EVENTS HAVE NOT TAKEN PLACE THESE EVENTS ARE BEING SIMULATED FOR EXERCISE PURPOSES ONLY.

DRILL

McGUIRE NUCLEAR SITE BIENNIAL EXERCISE AUGUST 24, 1999

- 0930 ALERT declaration communicated to Offsite authorities.
- 1040 The size of the S/G tube leak in 1D S/G starts to increase.
- 1045 The primary to secondary leak rate in 1D S/G has exceeded 50gpm and stabilizes at 60-70gpm. The steam leak cannot be isolated. This meets the conditions for a SITE AREA EMERGENCY declaration.

EXPECTED RESPONSE

- Refer to RP/0/A/5700/000 "Classification of Emergency" and declare a SITE AREA EMERGENCY, event # 4.1.3 (1) bullet #1.
 - Implement RP/0/A/5700/003 "Site Area Emergency".
 - If desired, implement RP/0/A/5700/011 "Conducting a Site Assembly, Site Evacuation or Containment Evacuation" and simulate evacuation of non-essential personnel.
- 1100 SITE AREA EMERGENCY declaration communicated to off-site authorities.
- 1230 1C Reactor Coolant (NC) pump impeller mechanically fails and sends loose parts into the Reactor Vessel. Fuel damage commences due to flow from the remaining three Reactor Coolant Pumps. The radiological release rate at the steam leak begins to increase.

EXPECTED RESPONSE

- Following manual reactor trip, go to EP/1/A/5000/E-0 "Reactor Trip or Safety Injection".
- Implement EP/1/A/5000/F-0 "Critical Safety Function Status Trees".
- Go to EP/1/A/5000/ES-0.1 "Reactor Trip Response".
- Following manual SI due to uncontrolled low Pressurizer level go to EP/1/A/5000/E-0 "Reactor Trip or Safety Injection".
- Go to EP/1/A/5000/E-2 "Faulted Steam Generator Isolation".
- Go to EP/1/A/5000/E-3 "Steam Generator Tube Rupture".

THIS IS AN EXERCISE. THESE EVENTS HAVE NOT TAKEN PLACE THESE EVENTS ARE BEING SIMULATED FOR EXERCISE PURPOSES ONLY.

DRILL

McGUIRE NUCLEAR SITE BIENNIAL EXERCISE AUGUST 24, 1999

- If desired, go to EP/1/A/5000/ECA-3.1 "SGTR with loss of Reactor Coolant" - Subcooled Recovery Desired.

1245

The Emergency Response Organization (ERO) diagnoses fuel damage with 1EMF 51A and 1EMF 51B valid readings greater than 117 R/hr (equates to 5% fuel gap activity released). This meets the conditions for a GENERAL EMERGENCY declaration due to loss of all three fission product barriers.

EXPECTED RESPONSE

- Refer to RP/0/A/5700/000 "Classification of Emergency" and declare a GENERAL EMERGENCY, event # 4.1.2 (1), loss of all three fission product barriers.
- Implement RP/0/A/5700/004 "General Emergency).
- Implement RP/0/A/5700/011 "Conducting a Site Assembly, Site Evacuation or Containment Evacuation" and simulate evacuation of all non-essential personnel.

1300

GENERAL EMERGENCY declaration communicated to offsite authorities with Protective Action Recommendations (PARs).

1500-1600 Termination of the exercise when all required objectives have been demonstrated.

THIS IS AN EXERCISE. THESE EVENTS HAVE NOT TAKEN PLACE THESE EVENTS ARE BEING SIMULATED FOR EXERCISE PURPOSES ONLY.

APPENDIX 5
MEDICAL DRILL

McGuire Nuclear Station

Medical Drill

August 23, 1999

University Hospital, (Charlotte, North Carolina)

The McGuire Nuclear Station Medical Drill was conducted on August 23, 1999, and included the Mecklenburg County Emergency Medical Services (MEDIC) and the University Hospital. The accident within the 10-mile EPZ occurred on I-77 at exit 18, where a van operated by Rad Med, Inc. was involved in an accident.

The Mecklenburg EMS personnel arrived at the accident site fully dressed in protective clothing and appropriate dosimetry. EMS contamination control procedures were acceptable. University Hospital staff used acceptable monitoring, contamination control and decontamination procedures. The EMS personnel and vehicle were appropriately surveyed and released.

At the accident site the EMS monitored the patient, but touched the patient continuously. They placed plastic on the ground and medical supplies were placed on the plastic. The patient's clothing was cut and removed to minimize the spread of contamination. The patient was carefully wrapped in a sheet by the EMS personnel and during the second survey of the patient, the EMS personnel were careful not to touch the patient. EMS personnel knew how to make an operability check on his survey instrument. The EMS dropped a sheet in an uncontaminated area but picked up the sheet and placed it on the patient. To minimize the spread of contamination another sheet should have been used. The ambulance was well insulated and the University Hospital had well prepared for the arrival of the patient.

While ER staff contamination control and decontamination procedures were acceptable, the patient was not surveyed thoroughly before she was carried into the ER or during the exit of the patient. The wound on the left arm was not dried before it was surveyed; this posed the spread of contamination. The ER room needed a drainage table that would allow contaminated solutions to be disposed of. The absorbent water drape was not removed after the decontamination and it should have been. Although ER staff talked about taking nasal, eye and wound samples, they never did and dosimetry was not read frequently enough.

All objectives were accomplished and generally, monitoring, contamination control and decontamination procedures were acceptable. There is some refinement in these procedures that the staff could accomplish with additional training.

- a. **MET: Objective**
- b. **DEFICIENCY: NONE**

- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**