

Final Exercise Report

Catawba Nuclear Power Plant

Licensee: Duke Energy

Exercise Date: March 16, 2004

Report Date: June 24, 2004

TABLE OF CONTENTS

	Page
I. EXECUTIVE SUMMARY.....	1
II. INTRODUCTION.....	3
III. EXERCISE OVERVIEW	5
A. Plume Emergency Planning Zone Description	5
B. Exercise Participants	5
C. Exercise Timeline.....	7
IV. EXERCISE EVALUATION AND RESULTS.....	9
A. Summary Results of Exercise Evaluation - Table 2.....	9
B. Status of Jurisdictions Evaluated	11
1. STATE OF SOUTH CAROLINA	13
1.1 State Emergency Operations Center	13
1.2 Department of Health and Environmental Control Liaison	15
1.3 Dose Assessment	16
1.4 Radiological Monitoring Field Teams	16
1.5 State Traffic Control Points	17
1.6 Lake Clearing	17
1.7 EAS Radio Station – LP-1, WFBC	18
2. STATE OF NORTH CAROLINA.....	19
2.1 State Emergency Operations Center	19
2.2 Dose Assessment	20
2.3 Radiological Field Monitoring Teams	20
2.4 Western Branch Office	21
3. JOINT OPERATIONS	21
3.1 Emergency Operations Facility	21
3.2 Joint Information Center	22

4.	RISK JURISDICTIONS	22
4.1	YORK COUNTY, SOUTH CAROLINA.....	22
4.1.1	Emergency Operations Center	22
4.1.2	Protective Actions for Schools	24
4.1.3	Emergency Worker Decontamination	25
4.2	GASTON COUNTY, NORTH CAROLINA	25
4.2.1	Emergency Operations Center	25
4.2.2	Protective Actions for Schools	26
4.2.3	Traffic Control Points	26
4.2.4	Back-up Route Alerting	27
4.2.5	Emergency Worker Decontamination	27
4.2.6	Reception and Temporary Care	28
4.3	MECKLENBERG COUNTY, NORTH CAROLINA	29
4.3.1	Emergency Operations Center	29
4.3.2	Protective Actions for Schools	30
4.3.3	Traffic Control Points	30
4.3.4	Emergency Worker Decontamination	31
4.3.5	Medical Services Drill	31
5.	SUPPORT JURISDICTIONS	32
5.1	CHEROKEE COUNTY, SOUTH CAROLINA	32
5.1.1	Reception and Temporary Care	32
5.2	CHESTER COUNTY, SOUTH CAROLINA	32
5.2.1	Reception and Temporary Care	32
5.3	LANCASTER COUNTY, SOUTH CAROLINA	33
5.3.1	Reception and Temporary Care	33
5.4	UNION COUNTY, SOUTH CAROLINA	33
5.4.1	Reception and Temporary Care	33

5.5	CLEVELAND COUNTY, NORTH CAROLINA	34
5.5.1	Traffic Control Points	34
5.5.2	Reception and Temporary Care	34
5.6	UNION COUNTY, NORTH CAROLINA	35
5.6.1	Emergency Operations Center	35
5.6.2	Traffic Control Points	36
5.6.3	Reception and Temporary Care	36
6.	SUMMARY OF AREAS REQUIRING CORRECTIVE ACTION.....	37
6.1	2004 ARCAs	37
6.1.1	12-04-2.b.2-A-01 State of South Carolina SEOC	36
6.1.2	12-04-5.b.1-A-02 State of South Carolina SEOC (2)	38
6.1.3	12-04-2.b.2-A-03 Risk Jurisdictions York County, South Carolina – Emergency Operations Center	40
6.1.4	12-04-6.a.1-A-04 Gaston County, North Carolina – Reception and Temporary Care.....	42
6.2.	PRIOR ARCA RESOLVED	43
6.2.1	12-02-1.c.1-A-01 State of North Carolina SEOC	43

List of Appendices

APPENDIX 1 - ACRONYMS AND ABBREVIATIONS	44
APPENDIX 2 - EXERCISE EVALUATORS	46
APPENDIX 3 - EXERCISE EVALUATION AREA CRITERIA AND EXTENT-OF-PLAY AGREEMENTS	50
APPENDIX 4 - EXERCISE SCENARIO.....	53

List of Tables

Table 1 - Exercise Timeline.....	8
Table 2 - Summary of Results of Exercise Evaluation.....	10

I. EXECUTIVE SUMMARY

On March 16, 2004, the Federal Emergency Management Agency (FEMA), Region IV, conducted a full participation exercise for the States of North and South Carolina in the plume exposure pathway emergency planning zone (EPZ) around the Catawba Nuclear Station. Some field activities were evaluated in North Carolina Counties during the week of February 23rd. The purpose of the exercise was to assess the level of State and local preparedness during their response to a radiological emergency. This exercise was held in accordance with FEMA's policies and guidance for offsite preparedness exercises in order to reach a determination of reasonable assurance for the State and county governments to protect the health and safety of the public.

The previous exercise at this site was conducted on March 26, 2002. The qualifying emergency preparedness exercise was conducted on February 15-16, 1984.

The States of North Carolina and South Carolina, the risk jurisdictions of York County, South Carolina, and Gaston and Mecklenberg Counties, North Carolina, participated in this exercise. The support jurisdictions of Cherokee, Chester, Lancaster, and Union Counties, South Carolina, and Cleveland and Union Counties, North Carolina, also participated.

NRC field elements and NRC headquarters staff participated in this exercise. NRC did not send liaisons to either State Emergency Operations Center (SEOC). Both the States of North and South Carolina stated that the NRC participation had a negative impact on their operations. Their interaction with the States can be characterized as aggressive information gathering. Corrective action meetings with North and South Carolina were held on April 21-22 to address State concerns.

FEMA wishes to acknowledge the exceptional efforts of the many individuals who planned, prepared for, and participated in this exercise. Protecting the public health and safety is the full-time job of some of the exercise participants and an additional assigned responsibility for others. Still others have willingly sought this responsibility by volunteering to provide vital emergency services to their communities.

The State and local organizations, except where noted in this report, demonstrated knowledge of their emergency response plans and procedures and implemented them. During this exercise FEMA did not identify any Deficiencies, however four Areas Requiring Corrective Action (ARCA) were identified. One ARCA concerned contamination control at a reception center in Gaston County, North Carolina.

FEMA identified three ARCAs within the State of South Carolina concerning the timeliness of decision-making between the State of South Carolina and York County and the issuance of timely and accurate emergency instructions to the public. FEMA does not consider these ARCAs to be indicative of a systemic problem at the State. Over the last nine months FEMA witnessed the State's continuing leadership in decision-making and concern for the health and safety of the public at the V. C. Summer, H. B. Robinson and

Oconee exercises. However, during the Catawba exercise problems arose between the State of South Carolina and York County, which resulted in the delay of notifying the public within the 10-mile EPZ of both States.

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 Title 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 the following:

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

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 Catawba Nuclear Station to FEMA Region IV by the State of South Carolina and involved local jurisdictions occurred on August 31,

1984, and by the State of North Carolina and involved local jurisdictions on September 5, 1984. Formal approval of the South Carolina and North Carolina RERPs was granted by FEMA on October 8, 1985, under 44 CFR 350.

A REP exercise was conducted on March 16, 2004, 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 Catawba Nuclear Station. During the week of February 23rd FEMA evaluated field activities in the State of North Carolina. These activities included protective actions for schools, traffic control points, back-up route alerting, emergency worker decontamination station, reception and temporary care of evacuees, and a medical drill. The State of South Carolina conducted field activities during the exercise week. The purpose of this exercise report is to present the exercise results and findings on the performance of the offsite 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 FEMA Region IV Co-RAC Chairperson and approved by the Regional Director.

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

- NUREG-0654/FEMA-REP-1, Rev. 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980;
- Interim REP Program Manual, August 2002

Section III of this report, entitled "Exercise Overview," presents basic information and data relevant to the exercise. This section of the report contains a description of the plume pathway EPZ, a listing of 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 Criteria at each jurisdiction or functional entity evaluated in a jurisdiction-based, issues-only format. This section also contains descriptions of all ARCAs assessed during this exercise and recommended corrective actions.

III. EXERCISE OVERVIEW

Contained in this section are data and basic information relevant to the March 16, 2004 exercise to test the offsite emergency response capabilities in the area surrounding the Catawba Nuclear Station.

A. Plume Emergency Planning Zone Description

The Catawba Nuclear Station is located on the western shore of Lake Wylie, approximately six miles north of the City of Rock Hill in York County, South Carolina. The Station consists of two Westinghouse Corporation pressurized water reactors. Duke Energy, North Carolina Electric Membership Corporation, Saluda River Electric Cooperative, Inc, South Carolina, North Carolina Municipal Power Agency No. 1 and Piedmont Municipal Power Agency share ownership of the facility. Duke Energy operates and manages the facility.

The Catawba Emergency Planning Zone is divided into eleven Emergency Response Planning Areas in South Carolina and four in North Carolina. Major population centers include: Rock Hill, Fort Mill and Tega Cay. The eastern edge of York County in South Carolina and the portion of Mecklenberg and Gaston Counties in North Carolina are also heavily populated. The EPZ also includes the Corrondo Amusement Park. The population for the 10-mile EPZ is 119,145.

B. Exercise Participants

The following agencies, organizations, and units of government participated in the Catawba Nuclear Station exercise March 16, 2004.

STATE OF SOUTH CAROLINA

Department of Health & Environmental Control Bureau of Land Waste
Management and Health Services
Department of Mental Health
Department of Natural Resources, Law Enforcement
Department of Public Safety, Highway Patrol, and Bureau of Public Safety
Department of Social Services
Office of the Adjutant General, Emergency Management Division
State Law Enforcement Division

STATE OF NORTH CAROLINA

Department of Administration
Department of Agriculture
Department of Crime Control and Public Safety
Department of Environment, Health and Natural Resources
Department of Human Resources
Department of Transportation
Division of Emergency Management
Division of Environmental Health
Division of Environmental Management
Division of Facility Services
Division of Radiation Protection
Division of Social Services
Division of Water Resources
Emergency Medical Services
Governor's Office
Highway Patrol
National Guard

RISK JURISDICTIONS

Gaston County, North Carolina
Mecklenberg County, North Carolina
York County, South Carolina

SUPPORT JURISDICTIONS

Cherokee County, South Carolina
Chester County, South Carolina
Cleveland County, North Carolina
Lancaster County, South Carolina
Union County, North Carolina
Union County, South Carolina

PRIVATE/VOLUNTEER ORGANIZATIONS

Amateur Radio Emergency Services (ARES)
American Red Cross (ARC)
Radio Amateur Civil Emergency Services (RACES)
The Salvation Army

C. Exercise Timeline

Table 1, on the following page, presents the time at which key events and activities occurred during the Catawba Nuclear Station exercise on March 16, 2004. Also included are times notifications were made to the participating jurisdictions/functional entities.

Table 1. Exercise Timeline

DATE AND SITE: Catawba Nuclear Power Plant - March 16, 2004

Emergency Classification Level or Event	Time Utility Declared	Time That Notification Was Received or Action Was Taken									
		SC-SEOC	SC DOSE ASSESSMENT	JIC	YORK COUNTY	NC-SEOC	WESTERN BRANCH OFFICE	GASTON COUNTY	MECKLENBERG COUNTY		
Unusual Event											
Alert	0815	0829	0905	N/A	0830	0820	0855	0819	0830		
Site Area Emergency	0932	1006	1018	0945	1010	0952	1010	1017	1010		
General Emergency	1101	1118	1110	1105	1126	1112	1119	1117	1119		
Simulated Rad. Release Started	0920	1009	0930	1020	1010	0920	1010	1117	1010		
Simulated Rad. Release Terminated	1210										
Facility Declared Operational	0908	0800	0945	0901	0841	0845	0850	0845			
Declaration of State of Emergency South Carolina Local		1009	1027	1105	1033			1115 1040			1115 1115
North Carolina Direction and Control						1115	1115	1115			1115
Exercise Terminated	1240	1236	1300	1315	1255	1242	1225	1225			1247
Early Precautionary Actions: School and Park Evacuations Shelter Livestock Lake and River Clearings Special Needs Evacuations		1025 1026	1050		1018 1018			1030			1010 1010 1010
1st Protective Action Decision Public Warning		1042			1042	1042		1042			1044
1st Siren Activation		1050			1050			1049			1050
1st EAS Message: Stay Tuned		1053			1053	1053	1053	1053			1053
1st National Weather Service Activation – North Carolina Only						1055	1055	1055			1053
2nd Protective Action Decision Evacuate Zones: NC - A0, A1, A2, A3, and F3 SC - A0, B1, C1, B2, C2; York * Shelter Zones: SC - D1, D2, E1, E2, F1, and F2		1142			1151	1142		1140			1142
2nd Siren Activation		1151			1151	1151		1151			1151
2nd EAS Message		1154			1154	1154		1154			1154
2nd National Weather Service Activation						1155		1155			1155
KI Decision Distribute Ingest - Emergency Workers Only		1050				1100		1100			1110

* York County officials decided to add the evacuation of zone F1

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 March 16, 2004, exercise to test the offsite emergency response capabilities of State and local governments in the 10-mile EPZ surrounding the Catawba Nuclear Station.

Each jurisdiction and functional entity was evaluated on the basis of its demonstration of criteria delineated in the exercise evaluation areas published in the Federal Register, September 12, 2001. Detailed information on the exercise Criteria and the extent-of-play agreement used in this exercise are found in Appendix 3 of this report.

A. Summary Results of Exercise Evaluation - Table 2

The matrix presented in Table 2, on the following page(s), presents the status of all exercise Criteria from the exercise evaluation areas which were scheduled for demonstration during this exercise by all participating jurisdictions and functional entities. Exercise Criteria are listed by number and the demonstration status of those Criteria is indicated by the use of the following letters:

- M - Met (No Deficiency or ARCAs assessed and no unresolved ARCAs from prior exercises)
- D - Deficiency assessed
- A - ARCA(s) assessed or unresolved ARCA(s) from prior exercise(s)
- N - Not Demonstrated (Reason explained in Subsection B)

Table 2 - Summary of Results of Exercise Evaluation

DATE AND SITE: March 16, 2004 – Catawba Nuclear Station

ELEMENT/Sub-Element	SC	SC DHEC	York	Lancaster	Chester	Cherokee	Union	NC	NC DRP	Gaston	Mecklenberg	Cleveland	Union
1. EMERGENCY OPERATIONS MANAGEMENT													
1.a.1. Mobilization	M	M	M					M	M	M	M		M
1.b.1. Facilities													
1.c.1. Direction and Control													
1.d.1. Communications Equipment													
1.e.1. Equipment & Supplies to Support Operations	M	M	M					M	M	M	M		M
2. PROTECTIVE ACTION DECISION MAKING													
2.a.1. Emergency Worker Exposure Control	M	M	M						M	M	M		M
2.b.1. Rad. Assessment & PARs & PADs Based on Available Information													
2.b.2. PADs for the General Public	A	M	A					M	M	M	M		
2.c.1. Protective Action Decisions for Special Populations	M		M										
2.d.1. Radiological Assessment & Decision Making for Ingestion Exposure													
2.e.1. Rad Assessment & Decision Making for Relocation, Re-entry & Return	M		M										
3. PROTECTIVE ACTION IMPLEMENTATION													
3.a.1. Implementation of Emergency Worker Control	M	M	M	M	M	M	M		M	M	M	M	M
3.b.1. Implementation of KI Decisions	M	M	M						M	M	M	M	M
3.c.1. Implementation of PADs for Special Populations													
3.e.1. Implementation of PADs for Schools													
3.d.1. Implementation of Traffic and Access Control													
3.d.2. Impediments to Evacuation and Traffic and Access Control	M		M										
3.e.1. Implementation of Ingestion Decisions Using Adequate Information	M		M										
3.e.2. Implementation of IP Decisions Showing Strategies and Instructional Materials													
3.f.1. Implementation of Relocation, Re-entry and Return Decisions													
4. FIELD MEASUREMENT and ANALYSIS													
4.a.1. Plume Phase Field Measurement & Analysis Equipment		M							M				
4.a.2. Plume Phase Field Measurement & Analysis Management		M							M				
4.a.3. Plume Phase Field Measurements & Analysis Procedures		M							M				
4.b.1. Post Plume Field Measurement & Analysis													
4.b.2. Laboratory Operations													
5. EMERGENCY NOTIFICATION & PUBLIC INFORMATION													
5.a.1. Activation of Prompt Alert and Notification	M		M							M	M		
5.a.2. Activation of Prompt Alert and Notification 15 Minute (Fast Breaker)													
5.a.3. Activation of Prompt Alert and Notification Backup Alert and Notification	M		M							M	M		
5.b.1. Emergency Information and Instructions for the Public and the Media	A		M							M	M		
6. SUPPORT OPERATIONS/FACILITIES													
6.a.1. Monitoring and Decon of Evacuees and EWs and Registration of Evacuees			M	M	M	M	M			A	M	M	M
6.b.1. Monitoring and Decontamination of Emergency Worker Equipment			M							M	M		M
6.c.1. Temporary Care of Evacuees				M	M	M	M			M	M	M	M
6.d.1. Transportation and Treatment of Contaminated Injured Individuals											M		M

LEGEND: M = Met A = ARCA D = Deficiency

B. Status of Jurisdictions Evaluated

This subsection provides information on the evaluation of each participating jurisdiction and functional entity, in a 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 Criteria under which no Deficiencies or ARCAs were assessed during this exercise and under which no ARCAs assessed during prior exercises remain unresolved.
- **Deficiency** - Listing of the demonstrated exercise Criteria under which one or more Deficiencies was assessed during this exercise. Included is a description of each Deficiency and recommended corrective actions.
- **Area Requiring Corrective Actions** - Listing of the demonstrated exercise Criteria under which one or more ARCAs were assessed during the current exercise or ARCAs assessed during prior exercises 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 Criteria which were not demonstrated as scheduled during this exercise and the reason they were not demonstrated.
- **Prior ARCAs - Resolved** - Descriptions of ARCAs assessed during previous exercises which were resolved in this exercise and the corrective actions demonstrated.
- **Prior ARCAs - Unresolved** - Descriptions of ARCAs assessed during prior exercises which were not resolved in this exercise. Included is the reason the ARCA remains unresolved and recommended corrective actions to be demonstrated before or during the next biennial exercise.

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

- A **Deficiency** is defined in FEMA REP Interim Program Manual, August 2002 as "...an observed or identified inadequacy of organizational performance in an exercise that could cause a finding that offsite emergency preparedness is not adequate to provide reasonable assurance that appropriate protective measures can be taken in the event of a radiological emergency to protect the health and safety of the public living in the vicinity of a nuclear power plant."
- An **ARCA** is defined in FEMA REP Interim Program Manual, August 2002 "...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 SOUTH CAROLINA

1.1 State Emergency Operations Center

The SEOC was professionally managed. Direction and control was well maintained throughout the exercise. Problems were encountered between the State of South Carolina and York County regarding coordination of decisions their timeliness and support of the York county's actions.

- a. **MET:** Criteria 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1 and 5.a.1
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** 2.b.2

Issue No.: 12-04-2.b.2-A-01

Condition: The South Carolina SEOC and York County were notified of the Site Area Emergency (SAE) at 1006 and 1010 respectively. The notification of the public did not occur until 1053. After the notification of the SAE York, Gaston and Mecklenberg Counties initiated a conference call on the decision line to discuss their decision to relocate the school population and the actions required to implement the decision. While the counties were discussing these actions, the North Carolina SEOC came on the line and requested that they consider working on the notification of the public. York County wanted to finish with the implementation of the protective actions for schools prior to notifying the public.

The South Carolina SEOC is supposed to be the lead in the decision-making process; they did not immediately take a leadership role after they entered the call following their meeting that ended at approximately 1027. The North Carolina SEOC took the leadership role in attempting to reach a consensus decision to alert the public. The South Carolina SEOC communicator did not know enough about the plan and procedures to know that an Emergency Alert System (EAS) message existed to notify parents about the relocation of schools. This fact caused problems during conversations between the South Carolina SEOC and York County officials.

These problems of communicating and coordinating continued during the discussions between the South Carolina SEOC and York County for the evacuation and shelter in place decisions. Although much effort was expended to reach a consensus decision with York County, York County Management, the County Manager and assistant County Manager and the Emergency Management Director, decided to increase the evacuation area to include zone F1. The State of South Carolina did not agree with this decision and refused to include it in the EAS message. These delays also impacted the notification of the residents in North Carolina as they were waiting for South Carolina to reach a decision.

Possible Cause: The initial communicator on the decision was not familiar with South Carolina's EAS messages which caused some initial confusion and led to misunderstandings between the State of South Carolina and York County.

During this exercise communications between the South Carolina SEOC and the York County EOC became strained. The York County EOC Director felt that he was not promptly getting information on plant conditions and state actions. Some state actions may have been communicated over the IRIS system and not communicated by other means to York County, which led to some of the breakdown in the dialogue.

Reference: Evaluation Area 2.b.2; NUREG-0654 J.9

Effect: The public was not promptly informed of protective actions and when protective actions were made they received different information from the State and York County. This could cause confusion and led to the unaffected population evacuating on their own.

Recommendation: Discuss protective action decision-making with York County to reach an understanding regarding the information to be communicated to the county and how county actions approved by the appropriate county officials can be incorporated into State actions and information given to the public.

Schedule of Corrective Action:

Issue No.: 12-04-A-5.b.1-02

Condition: The State prepared 1154 EAS message contained information on the evacuation of zones A1, B1, C1, B2 and C2 in the Catawba Emergency Planning Zone. However, State and York County officials did not agree on the protective action decision (PAD). The appropriate officials at the County decided to evacuate an additional zone, F1, and the State did not agree with their decision. The State message only included the Governor's decision and indicated that sector F1 should shelter in place. However, at the media briefing concerning protective actions, the State provided the information regarding its decision and York County provided the conflicting information regarding its decision to evacuate zone F1.

Possible Cause: Coordination and communication between the SEOC and York County was strained and neither party was able to listen to the reasons why a particular action was contemplated. This led to an impasse and the State's refusal to include any information concerning the action by York County.

Reference: Evaluation Area 5.b.1; NUREG-0654; E.5 and E.7

Effect: Alert and notification of the residents of the 10-mile EPZ was delayed. The introduction of confusion between the decision of the State and York County could lead to an erosion of public trust and cause people to take actions in unaffected areas that could impede to progress of those evacuating from the affected areas.

Recommendation: Ensure that parties on the decision line communicate effectively. Meet with York County officials to discuss the difficulties in the decision-making process and explore ways that the State and County can support one another.

Schedule of Corrective Action:

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

1.2 Department of Health and Environmental Control Liaison

The Department of Health and Environmental Control (DHEC) Emergency Response Coordinator (ERC) provided radiological technical support to the Director of the South Carolina Emergency Management Division (SCEMD), managed field monitoring teams (FMT), and successfully assessed the radiological consequences of the simulated accident at the Catawba Nuclear Station in order to provide protective action recommendations (PAR). The DHEC staff was pre-positioned in the SEOC when notified by the SEOC Warning Point of the Alert at the Catawba Nuclear Station. The DHEC staff continuously evaluated the simulated accident conditions, conducted and utilized technical analyses and judgment in providing PARs to the SCEMD for evacuation, sheltering, use of stored water and feed for livestock, and the distribution and administration of potassium iodide for radiological emergency workers, mobility impaired individuals, and the general population. The DHEC liaison requested federal resources to assist the state response. The DHEC staff was thorough and professional in executing their responsibilities.

- a. **MET: Criteria 1.a.1, 1.d.1, 2.a.1, 2.b.1 and 2.b.2**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**

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

1.3 Dose Assessment

The Director of the DHEC operations at the forward emergency operations center (FEOC) demonstrated good direction and control. Proactive efforts were made to obtain plant data by directly contacting the Catawba Plant dose assessment staff in the emergency operations facility (EOF). The use of the integrated response information system (IRIS) for monitoring events was effectively demonstrated. The dose assessment coordinator competently calculated dose projections using the RASCAL model. Reasonable agreement was obtained with the Catawba's dose model results. This information was provided to the ERC at the SEOC. Field team management and coordination with the North Carolina State field teams was effectively demonstrated. All activities were demonstrated in accordance with the plan, procedures and extent of play agreement.

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

1.4 Radiological Monitoring Field Teams

The Radiological FMTs were equipped with all appropriate instrumentation, documentation, and supplies to perform all assigned tasks. The FMT personnel successfully made all necessary measurements and took all required samples to identify the plume and establish contamination levels. Radiation exposure was conscientiously controlled. The teams expeditiously and accurately communicated all pertinent information to the field team coordinator.

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

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

1.5 State Traffic Control Points

South Carolina Highway Patrol (SCHP) Troopers successfully demonstrated their ability to establish traffic control points (TCP) at two pre-determined locations. The troopers described the process by which they are alerted, briefed, and positioned. They also outlined information they would pass on the evacuees, to include evacuation routes, the locations of reception centers, and the locations of emergency worker decontamination centers. The officers were knowledgeable in the use of personal dosimetry, reporting requirements, turnback limits, and the use of potassium iodide. Both the troopers and their supervisor, located at the York County Emergency Operations Center (EOC) explained the procedures by which officers could secure additional equipment, such as traffic cones or barricades, and how impediments to evacuation would be identified and mitigated. Communications between the troopers and the supervisor at the EOC were reliable and back-up modes of communication were available for use, if necessary.

- a. **MET: Criteria 1.e.1, 3.a.1, 3.b.1, 3.d.1 and 3.d.2**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

1.6 Lake Clearing

State Law Enforcement Division (SLED) officers successfully demonstrated the ability to conduct lake warning and clearing. Three SLED officers were interviewed at the Buster Boyd and Ebenezer Public Boat Landings in York County. The officers provided thorough explanations of their roles in public notification and assistance in evacuation of citizens from Lake Wylie during an emergency at the Catawba plant. They explained how they would evacuate the lake, how they would direct citizens to evacuation routes and reception centers, and how they would respond if any designated boat landings were closed or otherwise unavailable. The officers were also knowledgeable in the use of personal dosimetry, time check requirements, reporting limits, turnback levels, emergency worker decontamination, and the use of potassium iodide. The officers were confident in their abilities to mobilize quickly in the event of an emergency and to successfully perform all required duties.

- a. **MET:** Criteria 3.a.1, 3.b.1 and 5.a.3
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs – RESOLVED:** NONE
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

1.7 EAS Radio Station – LP-1, WFBC

FM Radio Station WFBC (93.7), Greenville, South Carolina, is the LP-1 EAS station for the Catawba Nuclear Station (CNS). The Station Chief Engineer demonstrated the broadcast of a pre-approved exercise message for the Catawba Nuclear Station Exercise upon request from the South Carolina SEOC. The message was broadcast at the time designated by the SEOC. The SEOC and WFBC personnel coordinated their activities and followed established procedures. The Chief Engineer and the Announcer were knowledgeable of the EAS operations. The Chief Engineer stated that all announcers were familiar with the station's EAS system.

- a. **MET:** Criterion 5.a.1
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:** NONE
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

2. STATE OF NORTH CAROLINA

2.1 State Emergency Operations Center

Although the SEOC met the needs of the State Emergency Response Team (SERT), operations could be enhanced by a new facility. The SERT fully demonstrated its capability to respond to an incident at the Catawba Nuclear Station. The SERT Director and Chief of Operations consistently coordinated with Gaston and Mecklenberg Counties, the Western Branch Office, York County, and the State of South Carolina. The SERT staff was professional and cooperative while effectively carrying out their duties. The Radiological Emergency Program manager, the South Carolina Liaison, the Duke Energy representative, and the Radiation Protection personnel provided vital input to this emergency response operation.

- a. **MET:** Criteria 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.b.2, 5.a.1 and 5.b.1
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs – RESOLVED**

Issue No.: 12-02-1.c.1-A-01

Condition: At 1043, a SAE was initially declared. Ten minutes later at 1053, the utility declared a General Emergency. Immediately after this, the State of North Carolina assumed Direction and Control from the counties. At 1105, the State made the decision that all emergency workers should ingest KI because readings taken by the State Field Teams and dose projections indicated that the level of radioactive iodine was high enough to warrant this protective action. Although the State was to communicate the decision to Gaston and Mecklenberg counties through Emergency Services, the decision to ingest KI by Emergency Workers was not communicated. Both Gaston and Mecklenberg County Emergency Management Directors stated that they did not receive the KI ingestion order.

Corrective Action Demonstrated: The correction of this ARCA was demonstrated during the November 2002 Brunswick exercise by the State notifying both risk counties of the decision to administer KI to emergency workers.

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

2.2 Dose Assessment

The State of North Carolina dose assessment function was accomplished by 12 personnel from the Radiation Protection Section (RPS) of the North Carolina Department of Environment and Natural Resources. Sufficient facilities, equipment and communications were provided to support the RPS staff at SEOC. Decision making regarding emergency worker exposure control, including potassium iodide ingestion, was in accordance with plans and procedures. RPS personnel efficiently managed and analyzed information and measurement data provided by the utility and the RPS field teams. After analysis, the RPS director made PARs to the SERT Director.

- a. **MET:** Criteria 1.a.1, 1.b.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.1, 2.b.2 and 4.a.2
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:** NONE
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.3 Radiological Field Monitoring Teams

Two radiological monitoring field teams were deployed from the mobile laboratory located at the North Carolina National Guard Facility at the Douglas International Airport in Charlotte. FMTs were equipped with appropriate and calibrated instruments, briefed, and deployed to fixed monitoring locations identified within the Catawba 10-mile EPZ. The FMTs effectively demonstrated their ability to use their equipment, perform a plume transverse, identify the plume centerline, and collect air samples. They understood the mission and personal protective measures.

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

2.4 Western Branch Office

The Western Branch Office is located in Hickory, North Carolina. The staff functioned well as a highly motivated and professional team. The Branch Manager provided effective direction and control and the staff closely monitored the plant situation. They kept all counties within their territory, including the counties within the 50-mile EPZ, appraised of current information. They tracked requests for assistance from the counties and followed up on the requests as necessary.

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

3. JOINT OPERATIONS

3.1 Emergency Operations Facility

The Catawba EOF, located in the utility operator's general offices, Charlotte, North Carolina, is fully equipped with all of the necessary amenities, and serves as an excellent facility from which all participating response organizations can effectively manage ongoing emergency operations. Communications, coordination and the flow of technical information between and among the State officials deployed to the EOF, with the utility operator, and with the representatives of the US NRC were exemplary. Accurate technical information was readily available from the utility operator, and provided to both SEOCs in a timely fashion. All of the State officials deployed to the EOF were well trained, knowledgeable, followed applicable procedures, and performed their respective responsibilities in an efficient and professional manner.

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

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

3.2 Joint Information Center

Representatives from the States of North and South Carolina, Gaston, Mecklenburg, and York Counties and Duke Energy combined to form an effective team in the Catawba Joint Information Center (JIC). Initially hampered by technical problems and a slowly developing PAD process, the team responded by providing interim updates to the media until data to support full media presentations was available. Coordination between and among the government and utility representatives enabled the flow of accurate and timely information to the public. During two major media presentations and several media updates held by individual representatives, actions being undertaken and supporting rationale were clearly described. Responses to media queries were both professional and comprehensive. Rumors and trends were identified and rapid actions taken to rectify the spread of erroneous information.

- a. **MET: Criteria 1.a.1, 1.c.1, 1.d.1, 1.e.1 and 5.b.1**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

4. RISK JURISDICTIONS

4.1 YORK COUNTY, SOUTH CAROLINA

4.1.1 Emergency Operations Center

The York County EOC, although pre-positioned per the extent-of-play, demonstrated the capability to receive notification of an emergency and to mobilize appropriate personnel. The Emergency Management Director established direction and control of the emergency response and coordinated all decisions with the County Manager and Assistant County Manager as specified in the county plan. The EOC staff was very professional and knowledgeable of their duties and responsibilities. Staff briefings were conducted regularly and EM Tracker, an emergency management tool, was used to manage EOC operational requirements. Back up alert routing and notification of the public was properly demonstrated upon notification of a siren failure.

- a. **MET:** Criteria 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.c.1, 3.b.1, 3.c.1, 3.c.2, 5.a.1, 5.a.3 and 5.b.1
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** 2.b.2

Issue No.: 12-04-2.b.2-A-03

Condition: The South Carolina SEOC and York County were notified of the SAE at 1006 and 1010 respectively. The notification of the public did not occur until 1053. After the notification of the SAE York, Gaston and Mecklenberg Counties initiated a conference call on the decision line to discuss their decision to relocate the school population and the actions required to implement the decision. While the counties were discussing these actions, the North Carolina SEOC came on the line and requested that they consider working on the notification of the public. York County wanted to finish with the implementation of the protective actions for schools prior to notifying the public.

Confusion also existed concerning the EAS messages. The State Plan contains generic pre-scripted EAS messages that included both the "Stay Tuned" message and a message concerning protective action for schools, message number 5. This confusion led to York County wanting a copy of the EAS message prior to agreeing to the alert and notification of the public. Apparently, pre-scripted messages for use during the exercise were provided to York County prior to the exercise, but were not available.

The communication and coordination problems continued during the discussions between the South Carolina SEOC and York County for the evacuation and shelter in place decisions. Although much effort was expended to reach a consensus decision with York County, York County Management, the County Manager and Assistant County Manager and the Emergency Management Director, decided to increase the evacuation area to include zone F-1. The State of South Carolina did not agree with this decision and refused to include it in the EAS message. These delays also impacted the notification of the residents in North Carolina as they were waiting for South Carolina to reach a decision.

Possible Cause: The State's initial communicator on the decision line was not familiar with South Carolina's EAS messages, which caused confusion and led to misunderstandings between the State of South Carolina and York County.

During this exercise communications between the South Carolina SEOC and the York County EOC became strained. The York County EOC Director felt that he was not promptly getting information on plant conditions and state actions. Some state actions may have been communicated over the IRIS system and not communicated by other means to York County officials, which led to some of the breakdown in the dialogue.

Reference: Evaluation Area 2.b.2; NUREG-O654 J.9

Effect: The public was not promptly informed of protective actions and when protective actions were made they received different information from the State and York County. This could cause confusion and lead to the unaffected population evacuating on their own.

Recommendation: Discuss protective action decision-making with the South Carolina Emergency Management to reach an understanding regarding the information to be communicated to the county and how county actions approved by the appropriate county officials can be incorporated into State actions and information given to the public.

Schedule of Corrective Action:

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

4.1.2 Protective Actions for Schools

The York County School district demonstrated its ability to safeguard its population in the EPZ through a series of interviews conducted at 11 public schools. The administrators interviewed were knowledgeable of District procedures, had individual school procedures and policies in place, and took actions to maintain staff, faculty, and parental awareness of evacuation policies and procedures. Procedures included actions to ensure that students requiring physical assistance or with other special needs were accommodated. All personnel interviewed were professional and had planned for the well being of their respective students, staff, and faculty in the event of an emergency situation.

- a. **MET: Criteria 3.a.1 and 3.c.2**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs – RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

4.1.3 Emergency Worker Decontamination

Volunteers from York County emergency response organizations demonstrated emergency worker monitoring and decontamination procedures at the Sharon Fire Department in York County, South Carolina. Personnel were knowledgeable of contamination limits, understood their responsibilities, followed plans and procedures, and successfully demonstrated their ability to monitor and effectively decontaminate vehicles and emergency workers. Appropriate records were completed and exercise participants were well equipped, well organized, and displayed a positive attitude throughout the exercise.

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

4.2 GASTON COUNTY, NORTH CAROLINA

4.2.1 Emergency Operations Center

The Gaston County Emergency Management personnel were in place and began the alert and notification of the County's EOC staff and the County Board of Commissioners after they received the Alert. The EOC Director and the Emergency Management Staff conducted frequent status briefings for the EOC members and requested status updates on actions being taken at each Emergency Classification Level (ECL). The Duke Energy representative in the EOC provided exceptional updates to the EOC Staff as the ECL's changed and plant conditions deteriorated. ARES and ARC personnel provided excellent support to the EOC operation. The EOC Director was changed during the exercise to demonstrate a shift change and to provide training to members of the Emergency Management Staff.

- a. **MET:** Criteria 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.2, 2.c1, 3.a.1, 3.d.1, 5.a.1 and 5.b.1
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE

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

4.2.2 Protective Actions for Schools

The Gaston County School Director of Operations and the Assistant Principal of W.A. Bess, and the Assistant Principal of Hunter Huss Senior High School, the host school successfully demonstrated school relocation procedures on February 23, 2004 at the W.A. Bess Elementary School. The staff were professional and very knowledgeable of the plans and procedures concerning protective actions for students and faculty in the event of an accident at the Catawba Nuclear Station. Buses are escorted by local law enforcement officers. Faculty are trained on the school relocation procedures and parents are provided information by the W.A. Bess Elementary School along with the information sent to 10-mile EPZ residents by the Catawba Nuclear Station. The staff was professional and very knowledgeable of their plans. Gaston County has ample resources to relocate students.

- a. **MET: Criterion 3.c.2**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

4.2.3 Traffic Control Points

Representatives from the North Carolina State Highway Patrol, the Gaston County Police Department, and the Gaston County Sheriff Department participated in Traffic and Access Control interview on February 23, 2004. The officers discussed traffic control and access procedures along with road impediment removal. They had a working knowledge of KI, direct-reading and permanent-record dosimetry, turnback values and exposure limits, and radiological exposure control. Packets that law enforcement personnel picked up at staging areas on their way to TCP assignments include information on the evacuation route, the TCP location, and shelter locations. The packets also included required dosimetry and dose record cards.

- a. **MET: Criteria 3.a.1, 3.b.1, 3.d.1 and 3.d.2**
- b. **DEFICIENCY: NONE**

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

4.2.4 Back-up Route Alerting

An interview was conducted with representatives from the Lowell, South Point, New Hope and Union Road Volunteer Fire Departments and the Gaston County Fire Marshal to discuss the sequence of events that would be followed to promptly notify the public if a siren failed. All personnel were knowledgeable of their duties including the message they would read over their vehicle PA system. Each team knew the designated route and could complete the notifications on each route in less than 45 minutes. The firefighters were familiar with the radiological exposure control, use of dosimetry and had a thorough knowledge of their route alerting duties.

- a. **MET: Criteria 1.e.1, 3.a.1, 3.b.1 and 5.a.3**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

4.2.5 Emergency Worker Decontamination

Gaston County successfully demonstrated monitoring and decontamination of Emergency Workers, equipment, and vehicles out of sequence, February 23, 2004 at the Lowell Volunteer Fire Department. The facility lay-out minimized the possibility of cross-contamination of personnel and equipment. Appropriate quantities of personal dosimetry, KI, personal protective clothing, and special equipment for monitoring and decontamination were available. Personnel were very knowledgeable of proper dosimetry (and KI) use; reporting and recording requirements; and contamination control. The training, dedication and proficiency of the Lowell Fire Department volunteers resulted in an excellent demonstration of their capabilities.

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

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

4.2.6 Reception and Temporary Care

The reception and temporary care center was located at the East Gaston High School. Personnel from the Gastonia Volunteer Fire Department, Gastonia Fire Department's Hazardous Materials Response Team, East Gaston Fire Department, Gaston Emergency Medical Services (EMS), Gaston County Sheriff's Department, the Department of Social Services, the Gaston County Chapter of the ARC and ARES displayed a positive attitude as they carried out their emergency response functions. The evacuee radiological monitoring and decontamination stations were operated by the Gastonia Fire Department, the Gastonia Fire Department's Hazardous Materials Team, the East Gaston Fire Department, Gaston EMS. The radiological monitoring staff did not exercise proper controls to prevent the spread of contamination.

The ARC was responsible for shelter management. Support agencies included the Gaston Police Department and the ARES. All members of the reception and temporary care center staff displayed an understanding of their functions.

- a. **MET: Criteria 1.b.1, 1.e.1, 3.a.1 and 6.c.1**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: 6.a.1**

Issue No.: 12-04- -A-04

Condition: The radiological monitor determined that the upper right side of the body was contaminated. The process was repeated three times before the individual was sent to the decontamination area. The monitor's probe frequently touched the potentially contaminated clothing. The Vehicle Monitoring Station, located outside of the facility, did not have proper guidelines for controlling contamination for individuals exiting contaminated vehicles.

Possible Cause: Insufficient information and training on contamination control and monitoring techniques.

Reference: NUREA-0654, J.10.h: K.5.b and Gaston County Standard Operating Guide for Radiation Monitoring, Decontamination, and Exposure control in support of North Carolina Emergency Response Plans for Catawba Nuclear Site.

Effect: Touching a potentially contaminated area with the probe could cause the spread of contamination to other clean areas or individuals. Improper separation of potentially contaminated and clean individuals could cause the spread of contamination.

Recommendation: Provide training on radiological monitoring and contamination control.

Schedule of Corrective Action:

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

4.3 MECKLENBERG COUNTY, NORTH CAROLINA

4.3.1 Emergency Operations Center

Although the EOC was sufficient to support the operation, a permanent EOC would allow for a more rapid activation and enhance operations. The EOC staff and management successfully demonstrated their capability to protect their citizens during an incident at Catawba Nuclear Station. The EM Director gave excellent plant updates and challenged the staff to be proactive and communicate effectively. The presence of the City and County Managers to coordinate and approve PADs, demonstrated their commitment to their citizens and the EM staff. All staff actions were timely and appropriate with great message traffic flow of current in-house activities. A state of the art communications center contributed to the receipt and dissemination of important data.

- a. **MET:** Criteria 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.2, 2.c1, 3.a.1, 3.c.1, 3.d.1, 5.a.1, 5.a.3 and 5.b.1
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**

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

4.3.2 Protective Actions for Schools

The Charlotte-Mecklenberg Director of Safety, a Transportation Specialist and the Assistant Principals of Southwest Middle School, the Lake Wylie Elementary School and the Olymphic High School participated in an interview pertaining to protective actions for schools on February 24, 2004. All participants were knowledgeable of the plans and procedures and the county has the resources to successfully relocate students, teachers and staff.

- a. **MET: Criterion 3.c.2**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

4.3.3 Traffic Control Points

The capability to activate TCPs in Mecklenburg County was successfully demonstrated during an interview on February 24, 2004. Law enforcement personnel from the North Carolina State Highway Patrol, Pineville City Police, and the Charlotte-Mecklenburg Police were knowledgeable of the locations, purpose and requirements of the TCPs. The officers were also knowledgeable of radiological exposure control procedures.

- a. **MET: Criteria 1.e.1, 3.a.1, 3.b.1, 3.d.1 and 3.d.2**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

4.3.4 Emergency Worker Decontamination

On February 24, 2004, Mecklenburg County successfully demonstrated monitoring and decontamination of emergency workers, equipment, and vehicles at Charlotte Fire Station 20. Personnel were also knowledgeable of radiological exposure control. Charlotte Fire Department personnel were well trained and worked well as a team. The fire department and County emergency management personnel are to be commended for this excellent operation.

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

4.3.5 Medical Services Drill

The Carolina Medical Center and the Mecklenburg County EMS successfully demonstrated the pickup and decontamination of an injured contaminated person. The EMS staff took appropriate contamination control measures and notified the hospital. The physician and the charge nurse provided good directions to the Emergency Room (ER) staff during the decontamination process.

All medical personnel were cooperative and performed their duties in a commendable fashion.

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

5. SUPPORT JURISDICTIONS

5.1 CHEROKEE COUNTY, SOUTH CAROLINA

5.1.1 Reception and Temporary Care

Volunteers from the Cherokee Emergency Preparedness Department, Cherokee County Chapter of the ARC, Blacksburg Police Department, Department of Health and Human Services, and RACES successfully supported the reception and temporary care of evacuees. Personnel conducting the monitoring of vehicles and evacuees were very knowledgeable of the use of their equipment and the monitoring process. The ARC support personnel operated the temporary care facility in accordance with the plans and procedures. All activities were conducted in a highly professional manner.

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

5.2 CHESTER COUNTY, SOUTH CAROLINA

5.2.1 Reception and Temporary Care

The Chester County Emergency Management Agency, supported by the Chester Fire Service, Chester EMS personnel, Richburg and Lando Fire Departments, and the Chester County Chapter of the ARC, successfully demonstrated the reception and temporary care of evacuees. Contaminated and uncontaminated evacuees and vehicles were carefully controlled in order to keep them separated. Monitors knew and followed radiological exposure control procedures at all times and successfully demonstrated procedures. The ARC operated the temporary care facility with a large and experienced staff. After monitoring, and decontamination if necessary, evacuees were processed into the temporary care center by ARC personnel. The entire staff at this facility was very well trained and knowledgeable about operating this center.

- a. **MET:** Criteria 1.e.1, 3.a.1, 6.a.1 and 6.c.1
- b. **DEFICIENCY:** NONE

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

5.3 LANCASTER COUNTY, SOUTH CAROLINA

5.3.1 Reception and Temporary Care

Full time and volunteer personnel from the Lancaster County Emergency Management Agency, Lancaster City Fire Services, Lancaster County EMS, amateur radio, ARC, and Lancaster County DHEC successfully demonstrated the establishment of the Lancaster County reception and temporary care of evacuees. Two vehicles and six evacuees were monitored and two of the evacuees were decontaminated. All monitoring was performed by trained fire/rescue personnel who were knowledgeable and exhibited very good procedures. The staff understood and closely adhered to individual worker radiological exposure control procedures. Clean evacuees proceeded into the temporary care center where they followed the ARC registration and operating procedures. All staff demonstrated their training, knowledge, and ability to focus on fulfilling their responsibility to provide for the health and safety of evacuees.

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

5.4 UNION COUNTY, SOUTH CAROLINA

5.4.1 Reception and Temporary Care

Union County emergency response volunteer staff successfully demonstrated the set-up and management of the Reception Center and Temporary Care facilities at the Lockhart High School. Volunteers from the 911/Emergency Preparedness Department, ARC, Lockhart Police Department, Department of Social Services, and RACES organized and operated the facility. All activities were in accordance with the Union County Emergency Plan, Standard Operating Procedures, and the extent-of-play agreement.

Fulltime and volunteer personnel staffing the facility understood their roles, and professionally executed them.

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

5.5 CLEVELAND COUNTY, NORTH CAROLINA

5.5.1 Traffic Control Points

On February 25, 2004, the Captain of the Kings Mountain Police Department successfully demonstrated traffic and access control points through an out-of-sequence interview. Traffic control is the responsibility of the Kings Mountain Police Department with support from the Cleveland County Sheriff's Department. The Captain knew the procedures for traffic control, radiological exposure control, the location of the traffic control points, evacuation routes, and the location of the reception and temporary care centers.

- a. **MET:** Criteria 1.e.1, 3.a.1, 3.d.1 and 3.d.2
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:** NONE
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

5.5.2 Reception and Temporary Care

During February 25, 2004 demonstration, Cleveland County representatives successfully monitored, decontaminated, registered and provided temporary care for evacuees. Members of the Cleveland County HazMat and EMS Teams, Kings Mountain, Oak Grove, and Bethlehem Fire Departments, Kings Mountain Police Department, and the Cleveland County Chapter of the ARC properly prepared their respective areas for

accepting evacuees. After monitoring and decontamination, evacuees were directed to the ARC for registration and temporary care. The ARC, Family Services, Mass Care, Health Services, Recreation, and Communications/Feeding volunteers explained the assistance that they provided the evacuees. All individuals were knowledgeable of their duties and very professional.

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

5.6 UNION COUNTY, NORTH CAROLINA

5.6.1 Emergency Operations Center

The full time staff of the Union County EOC, augmented with volunteers and members of various county agencies, demonstrated its ability to effectively manage their response to an incident at the Catawba Nuclear Station. The facility is well laid out with strategically placed situation boards on the walls and two projection screens in front showing, North Carolina's "EM 2000" tracking data, along with maps of the EPZ. The Emergency Management Coordinator demonstrated excellent direction and control. He provided frequent situational updates as conditions changed or addition staff arrived. The coordinator involved the staff by calling on specific EOC members for their expertise during updates or when technical issues arose involving difficult questions. The staff worked well together, were knowledgeable of their role and professional in their approach.

- a. **MET:** Criteria 1.a.1, 1.b.1, 1.c.1, 1.d.1, 1.e.1 and 5.b.1
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:** NONE
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

5.6.2 Traffic Control Points

A deputy sheriff from the Union County Sheriffs Department competently demonstrated the ability to establish and maintain a TCP through an interview. The deputy was knowledgeable in the use of personal dosimetry and radiological exposure control. The deputy carried a resource manual, that displayed all TCPs in the jurisdiction, and discussed and displayed equipment to be used at a TCP.

- a. **MET:** Criteria 1.e.1, 3.a.1, 3.b.1, 3.d.1 and 3.d.2
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:** NONE
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

5.6.3 Reception and Temporary Care

Members of the Wesley Chapel Volunteer Fire Department, Union County Emergency Management Agency, and the Union County Chapter of ARC successfully demonstrated the reception and temporary care of evacuees. The Union County team established an excellent flow of traffic, separating clean vehicles from contaminated vehicles, and clearly marked the route individuals should follow for monitoring. Personnel performing monitoring of incoming evacuees were knowledgeable of their equipment and its operation. Uncontaminated individuals were routed to the reception table, while those requiring decontamination were routed to the decontamination area. Once decontaminated, they were logged in at the reception table and directed to the temporary care facility that was staffed with personnel who were prepared to provide assistance if required. All volunteers and full time staff members participating in the demonstration were professional and dedicated to their role.

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

6. SUMMARY OF AREAS REQUIRING CORRECTIVE ACTION

6.1 2004 ARCAs

6.1.1 12-04-2.b.2 -A-01 State of South Carolina SEOC

Condition: The South Carolina SEOC and York County were notified of the Site Area Emergency (SAE) at 1006 and 1010 respectively. The notification of the public did not occur until 1053. After the notification of the SAE York, Gaston and Mecklenberg Counties initiated a conference call on the decision line to discuss their decision to relocate the school population and the actions required to implement the decision. While the counties were discussing these actions, the North Carolina SEOC came on the line and requested that they consider working on the notification of the public. York County wanted to finish with the implementation of the protective actions for schools prior to notifying the public.

The South Carolina SEOC is supposed to be the lead in the decision-making process; they did not immediately take a leadership role after they entered the call following their meeting that ended at approximately 1027. The North Carolina SEOC took the leadership role in attempting to reach a consensus decision to alert the public. The South Carolina SEOC communicator did not know enough about the plan and procedures to know that an Emergency Alert System (EAS) message existed to notify parents about the relocation of schools. This fact caused problems during conversations between the South Carolina SEOC and York County officials.

These problems of communicating and coordinating continued during the discussions between the South Carolina SEOC and York County for the evacuation and shelter in place decisions. Although much effort was expended to reach a

consensus decision with York County, York County Management, the County Manager and assistant County Manager and the Emergency Management Director, decided to increase the evacuation area to include zone F1. The State of South Carolina did not agree with this decision and refused to include it in the EAS message. These delays also impacted the notification of the residents in North Carolina as they were waiting for South Carolina to reach a decision.

Possible Cause: The initial communicator on the decision was not familiar with South Carolina's EAS messages which caused some initial confusion and led to misunderstandings between the State of South Carolina and York County.

During this exercise communications between the South Carolina SEOC and the York County EOC became strained. The York County EOC Director felt that he was not promptly getting information on plant conditions and state actions. Some state actions may have been communicated over the IRIS system and not communicated by other means to York County, which led to some of the breakdown in the dialogue.

**Reference: Evaluation Area 2.b.2;
NUREG-0654 J.9**

Effect: The public was not promptly informed of protective actions and when protective actions were made they received different information from the State and York County. This could cause confusion and led to the unaffected population evacuating on their own.

Recommendation: Discuss protective action decision-making with York County to reach an understanding regarding the information to be communicated to the

county and how county actions approved by the appropriate county officials can be incorporated into State actions and information given to the public.

Schedule of Corrective Action:

**6.1.2 12-04-5.b.1-A-02
State of South Carolina
SEOC (2)**

Condition: The State prepared 1154 EAS message contained information on the evacuation of zones A1, B1, C1, B2 and C2 in the Catawba Emergency Planning Zone. However, State and York County officials did not agree on the protective action decision (PAD). The appropriate officials at the County decided to evacuate an additional zone, F1, and the State did not agree with their decision. The State message only included the Governor's decision and indicated that sector F1 should shelter in place. However, at the media briefing concerning protective actions, the State provided the information regarding its decision and York County provided the conflicting information regarding its decision to evacuate zone F1.

Possible Cause: Coordination and communication between the SEOC and York County was strained and neither party was able to listen to the reasons why a particular action was contemplated. This led to an impasse and the State's refusal to include any information concerning the action by York County.

Reference: Evaluation Area 5.b.1;
NUREG-0654; E.5 and E.7

Effect: Alert and notification of the residents of the 10-mile EPZ was delayed. The introduction of confusion between the decision of the State and York County could lead to an erosion of public trust and cause people to take actions in unaffected areas that could impede to progress of those evacuating from the affected areas.

Recommendation: Ensure that parties on the decision line communicate effectively. Meet with York County officials to discuss the difficulties in the decision-making process and explore ways that the State and County can support one another.

Schedule of Corrective Action:

**6.1.3 12-04-2.b.2-A-03
Risk Jurisdictions
York County, South
Carolina – Emergency
Operations Center**

Condition: The South Carolina SEOC and York County were notified of the SAE at 1006 and 1010 respectively. The notification of the public did not occur until 1053. After the notification of the SAE York, Gaston and Mecklenberg Counties initiated a conference call on the decision line to discuss their decision to relocate the school population and the actions required to implement the decision. While the counties were discussing these actions, the North Carolina SEOC came on the line and requested that they consider working on the notification of the public. York County wanted to finish with the implementation of the protective actions for schools prior to notifying the public.

Confusion also existed concerning the EAS messages. The State Plan contains generic pre-scripted EAS messages that included both the "Stay Tuned" message and a message concerning protective action for schools, message number 5. This confusion led to York County wanting a copy of the EAS message prior to agreeing to the alert and notification of the public. Apparently, pre-scripted messages for use during the exercise were provided to York County prior to the exercise, but were not available.

The communication and coordination problems continued during the discussions between the South Carolina SEOC and York County for the evacuation and shelter in place decisions. Although much effort was expended to reach a consensus decision with

York County, York County Management, the County Manager and Assistant County Manager and the Emergency Management Director, decided to increase the evacuation area to include zone F-I. The State of South Carolina did not agree with this decision and refused to include it in the EAS message. These delays also impacted the notification of the residents in North Carolina as they were waiting for South Carolina to reach a decision.

Possible Cause: The State's initial communicator on the decision line was not familiar with South Carolina's EAS messages, which caused confusion and led to misunderstandings between the State of South Carolina and York County.

During this exercise communications between the South Carolina SEOC and the York County EOC became strained. The York County EOC Director felt that he was not promptly getting information on plant conditions and state actions. Some state actions may have been communicated over the IRIS system and not communicated by other means to York County officials, which led to some of the breakdown in the dialogue.

**Reference: Evaluation Area 2.b.2;
NUREG-O654 J.9**

Effect: The public was not promptly informed of protective actions and when protective actions were made they received different information from the State and York County. This could cause confusion and lead to the unaffected population evacuating on their own.

Recommendation: Discuss protective action decision-making with the South Carolina Emergency Management to reach an understanding regarding the information to be communicated to the county and how

county actions approved by the appropriate county officials can be incorporated into State actions and information given to the public.

Schedule of Corrective Action:

**6.1.4 12-04-6.a.1-A-04
Gaston County, North
Carolina - Reception and
Temporary Care**

Condition: The radiological monitor determined that the upper right side of the body was contaminated. The process was repeated three times before the individual was sent to the decontamination area. The monitor's probe frequently touched the potentially contaminated clothing. The Vehicle Monitoring Station, located outside of the facility, did not have proper guidelines for controlling contamination for individuals exiting contaminated vehicles.

Possible Cause: Insufficient information and training on contamination control and monitoring techniques.

Reference: NUREA-0654, J.10.h: K.5.b and Gaston County Standard Operating Guide for Radiation Monitoring, Decontamination, and Exposure control in support of North Carolina Emergency Response Plans for Catawba Nuclear Site.

Effect: Touching a potentially contaminated area with the probe could cause the spread of contamination to other clean areas or individuals. Improper separation of potentially contaminated and clean individuals could cause the spread of contamination.

Recommendation: Provide training on radiological monitoring and contamination control.

Schedule of Corrective Action:

6.2. PRIOR ARCA RESOLVED

6.2.1 12-02-1.c.1-A-01 State of North Carolina SEOC

Condition: At 1043, a SAE was initially declared. Ten minutes later at 1053, the utility declared a General Emergency. Immediately after this, the State of North Carolina assumed Direction and Control from the counties. At 1105, the State made the decision that all emergency workers should ingest KI because readings taken by the State Field Teams and dose projections indicated that the level of radioactive iodine was high enough to warrant this protective action. Although the State was to communicate the decision to Gaston and Mecklenberg counties through Emergency Services, the decision to ingest KI by Emergency Workers was not communicated. Both Gaston and Mecklenberg County Emergency Management Directors stated that they did not receive the KI ingestion order.

Corrective Action Demonstrated: The correction of this ARCA was demonstrated during the November 2002 Brunswick exercise by the State notifying both risk counties of the decision to administer KI to emergency workers.

APPENDIX 1

ACRONYMS AND ABBREVIATIONS

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

ACRES	Amateur Civil Radio Emergency Service
ARC	American Red Cross
ARCA	Area Requiring Corrective Action
CDV	Civil Defense - Victoreen
CFR	Code of Federal Regulations
CNS	Catawba Nuclear Station
DHEC	Department of Health and Environmental Control
DHHS	Department of Health and Human Services
DHS	Department of Homeland Security
DNR	Division of Natural Resources
DOC	Department of Commerce
DOE	Department of Energy
DOI	Department of the Interior
DOT	Department of Transportation
DRD	Direct Reading Dosimeter
EAS	Emergency Alert System
ECL	Emergency Classification Level
EIS	Emergency Information System
EM	Emergency Management Center
EMS	Emergency Medical Services
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EPA	Environmental Protection Agency
EPZ	Emergency Planning Zone
ER	Emergency Room
ERC	Emergency Response Coordinator
EWD	Emergency Worker Decontamination
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
FEOC	Forward Emergency Operations Center
FMT	Field Monitoring Teams
GE	General Emergency
IRIS	Internet Routed Information System

JIC	Joint Information Center
KI	Potassium Iodide
mR	milliroentgen
mR/h	milliroentgen per hour
NOUE	Notification of Unusual Event
NRC	Nuclear Regulatory Commission
NUREG-0654	NUREG-0654/FEMA-REP-1, Rev. 1, <i>"Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980</i>
ORO	Offsite Response Organization
PAD	Protective Action Decision
PAG	Protective Action Guide
PAR	Protective Action Recommendation
PD	Police Department
PIO	Public Information Officer
R	Roentgen
RAC	Regional Assistance Committee
RACES	Radio Amateur Civil Emergency Services
REA	Radioactive Emergency Area
REM	Roentgen Equivalent Man
REP	Radiological Emergency Preparedness
RERP	Radiological Emergency Response Plan
R/h	Roentgen(s) per hour
RO	Radiological Officer
RPS	Radiation Protection Section
SAE	Site Area Emergency
SCEPD	South Carolina Emergency Preparedness Division
SCHP	South Carolina Highway Patrol
SEOC	State Emergency Operations Center
SERT	State Emergency Response Team
SLED	State Law Enforcement Division
SOP	Standard Operating Procedure
TCP	Traffic Control Point
TLD	Thermoluminescent Dosimeter
UNCC	University of North Carolina at Charlotte
USDA	U.S. Department of Agriculture
VFD	Volunteer Fire Department

APPENDIX 2

EXERCISE EVALUATORS

The following is a list of the personnel who evaluated the Catawba Nuclear Station exercise on March 26, 2002. The organization which each evaluator represents is indicated by the following abbreviations:

DHS-FEMA - Department of Homeland Security
- Federal Emergency Management Agency
ICF - ICF Consulting Incorporated
NRC - Nuclear Regulatory Commission
USDA - United States Department of Agriculture

Lawrence A. Robertson
Thomas E. Reynolds

Co-RAC Chairman
Co-RAC Chairman

<u>EVALUATION SITE</u>	<u>EVALUATOR</u>	<u>ORGANIZATION</u>
STATE OF SOUTH CAROLINA		
State Emergency Operations Center	Helen Wilgus Rosemary Samsel Beth Massey	DHS/FEMA ICF DHS/FEMA
DHEC Liaison	Gary Goldberg	ICF
Dose Assessment	Reggie Rogers	ICF
Radiological Field Monitoring Teams	Keith Earnshaw Kevin Flynn	ICF ICF
Emergency Operations Facility	Robert Trojanowski	NRC
Joint Information Center	Bill Larrabee Wanda Gaudet	ICF DHS/FEMA
State TCP	Seth Kelly	ICF
Lake Waring	Seth Kelly	ICF
LP-1 Radio Station WFBC-Greenville	Josh Moore	ICF

YORK COUNTY

Emergency Operations Center	Stanley Copeland Nancy Johnson	DHS/FEMA ICF
Protective Actions for Schools 3-17-04 @0800	Nancy Johnson William McCance	ICF ICF
Emergency Worker Decon 3-15-04 @ 1830	Keith Earnshaw	ICF

CHEROKEE COUNTY

Reception/Congregate Care 1000	William McCance	ICF
-----------------------------------	-----------------	-----

CHESTER COUNTY

Reception/Congregate Care 1300	Jerry Staroba	ICF
-----------------------------------	---------------	-----

LANCASTER COUNTY

Reception/Congregate Care 1700	Jerry Staroba	ICF
-----------------------------------	---------------	-----

UNION COUNTY

Reception/Congregate Care 1400	William McCance	ICF
-----------------------------------	-----------------	-----

STATE OF NORTH CAROLINA

SEOC	Robert Perdue David Goldbloom-Helzner	DHS/FEMA ICF
Dose Assessment	James Hickey	ICF
Radiological Field Monitoring Teams	Thomas Brown Deborah Blunt	ICF ICF
Western Branch Office	Norman Valentine	DHS/FEMA

GASTON COUNTY

Emergency Operations Center	Joseph Canoles Pat Tenario	DHS/FEMA DHS/FEMA
Schools February 23, 2004	Robert Perdue	DHS/FEMA
Traffic Control Points February 23, 2004	Robert Perdue	DHS/FEMA
Back-up Route Alerting February 23, 2004	Roy Smith	ICF
Emergency Worker Decon February 23, 2004	Roy Smith	ICF
Reception/Congregate Care 3-15-04 @ 1800	Pat Tenario	DHS/FEMA

MECKLENBERG COUNTY

Emergency Operations Center Dee Mauldin	Tom Reynolds DHS/FEMA HQ	DHS/FEMA
Schools February 24, 2004	Roy Smith	ICF
Traffic Control Points February 24, 2004	Roy Smith	ICF
Emergency Worker Decon February 24, 2004	Robert Perdue	DHS/FEMA
Medical Drill February 25, 2004	Robert Perdue Roy Smith	DHS/FEMA ICF

CLEVELAND COUNTY

Traffic Control Points February 25, 2004	Robert Perdue	DHS/FEMA
Reception/Congregate Care February 25, 2004	Robert Perdue	DHS/FEMA

UNION COUNTY

Emergency Operations Center	Glenn Kinnear	ICF
Traffic Control Points 3-15-04 @ 1900	Glenn Kinnear	ICF
Reception/Congregate Care 3-15-04 @ 1900	Glenn Kinnear	ICF

APPENDIX 3

EXERCISE EVALUATION AREA CRITERIA AND EXTENT-OF-PLAY AGREEMENTS

This appendix contains the exercise Criteria which were scheduled for demonstration in the Catawba Nuclear Station exercise on March 16, 2004 and the extent-of-play agreement approved by FEMA Region IV.

A. Exercise Evaluation Area Criteria

Following are the specific radiological emergency preparedness Criteria scheduled for demonstration during this exercise.

SOUTH CAROLINA

NORTH CAROLINA

APPENDIX 4

EXERCISE SCENARIO

This appendix contains a summary of the simulated sequence of events, Exercise Scenario, which was used as the basis for invoking emergency response actions by OROs in the Catawba Nuclear Station exercise on March 16, 2004. This scenario was submitted by the States of South Carolina, North Carolina, Duke Power Company and Carolina Power and Light Company and was approved by FEMA Region IV.

SEQUENCE OF EVENTS

Time

0715 Controllers and Operations players on station
 Players walk down boards / Turnover

0730 Simulator out of freeze
 Operations Performing Monthly Operation PT/1/A/4350/2A
 On "1 A DG"

0745 "1 A DG" Lube oil FIRE
 CO2 discharges / operator leaves / no one hurt

 Fire Brigade Leader or NLO Response

 Lockout of "1 ETA" Bus (DG breaker welded/melted shut)

 Security Response as Per procedure

0800 Declare "**Alert**" (EAL 4. 6. A.1) Fire or Explosion Affecting the
 Operability of Plant Safety Systems Required to Establish or
 Maintain Safe Shutdown.

 Conduct Site Assembly; activate TSC, OSG, EOF, and J1C

 Expected Response

 Operators and/or ERO should Implement the following procedures:

AP/O7 Case II	Loss of Essential Bus
RP/O/A/5000/001	Classification of Events
RP/O/A/5000/003	Alert
RP/O/A/5000/006	Notification to States and Counties
RP/O/A/5000/010	Conducting a Site Assembly or Evacuation
RP/O/A/5000/013	NRC Notification Requirements
RP/O/A/5000/020	Technical Support Center Activation Procedure
RP/O/A/5000/024	Operation Support Center Activation Procedure
SR/O/B/2000/003	Activation of Emergency Operations Facility

0845 TSC and OSC operational (required activated 75min after Alert
 declared)

0915 EOF Activated (or operational)

- 0900 Letdown line pipe failure inside containment "1 NV 15B" stuck open, small NC leak to containment
- Pipe failure causes penetration failure through containment to the annulus, small release to annulus starts
- 0930 Loss of 1 TA Bus (shared fault with 1 ETA)
1 "A" NCP Motor Coastdown
Manual Rx Trip from out side control room (ATWS)
- 0940 PORV "NC 34 A" auto opens and 'fails in open position'
Block valve NC 33 will not shut
PRT rupture disk fails
- Annulus pressure increasing
- Minor Fuel Damage results from Rx transient
- Expected Response
- EMF39
 - EMF 53A & B increasing
 - Operators may request NC samples
- 0945 SAE Declared - EAL 4.4.S.1, Failure of Reactor Protection System Instrumentation to Complete or Initiate an Automatic Reactor Trip Once a Reactor Protection System Setpoint has been Exceeded and Manual Trip WAS NOT Successful. (ATWS)
- Expected Response
- ERO should implement the following procedures:
- RP/O/A/5000/004 Site Area Emergency
- Simulate sound sirens and activate EBS
(Siren silent test conducted by counties)
- 0950 "Auto Safety Injection"
- EMF53A and 53B increasing

Suspected fuel damage (pin holes)

Containment pressure > 1 psi

- 1045 Fuel damage shows up >117 R/hr on EMF53A and EMF53B
- 1100 Declare **General Emergency**, EAL 4.1.G.1), Loss of 3 F P barriers
- A. Loss Fuel C1 adding - (4.1.F.3) EMF53A or 53B > 117 R/hr
- B. Loss NC System - (4.1.F. 3) PORV. 1NC34 A / PRT / Cont.
- C. Loss of Containment - (4.1.C.3) Breach at 1NV15 B penetration to annulus

Expected Response

ERO should implement the following procedures:

RP/0/A/5000/005	General Emergency
RP/0/A/5000/015	Core Damage Assessment
HP/0/B/1009/019	Off-Site Dose Projections

- 1100 Simulated Siren and ERO
- FMT dose readings indicate fuel damage (plume contains iodine).
PAG - Evacuate to five miles based on plant conditions (GE procedure RP/0/A/5000/005 evacuates two miles around and five miles downwind)
- 1100- Plant cooldown in progress -
- 1230 Terminate Exercise after all objectives met
Conduct Player Critique in EOF and TSC