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Final Exercise Report

Oconee Nuclear Station

Licensee: Duke Power Company

Exercise Date: June 13, 2000

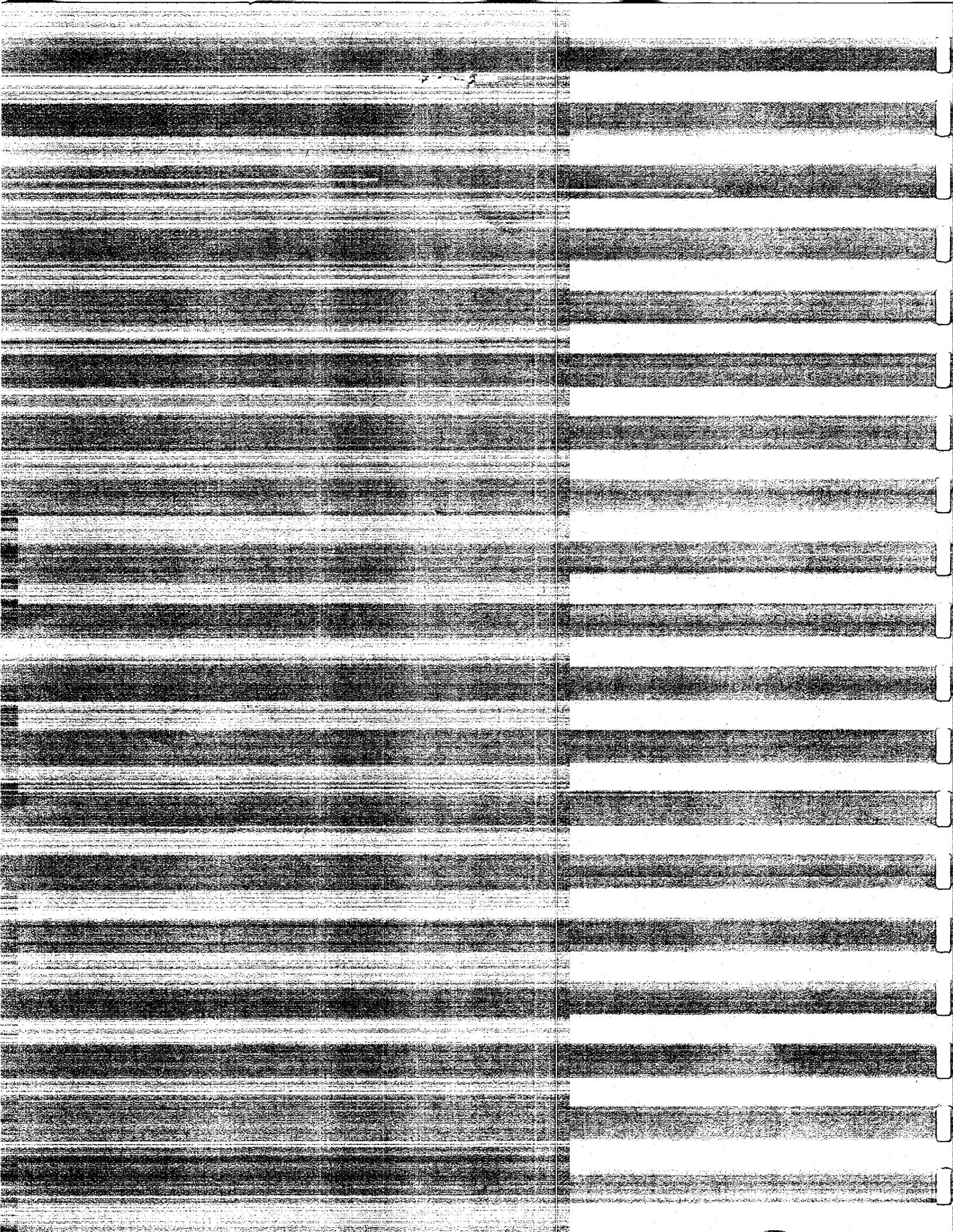
Report Date: August 14, 2000

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

August 14, 2000

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

Dear Mr. ^{Luis} Reyes:

Enclosed is the final report for the Oconee Nuclear Station Exercise that was conducted on June 13, 2000. This was a partial participation, plume exposure pathway exercise designed to evaluate the offsite radiological emergency response plans site-specific to the Oconee Nuclear Station. The report addresses the evaluation of the plans and preparedness for the State of South Carolina and the counties within the 10-mile Emergency Planning Zone. The State of South Carolina, the Risk Counties of Oconee and Pickens, and the Host Counties of Anderson and Greenville participated in the exercise. The final exercise report was prepared by the Federal Emergency Management Agency Region IV staff. Copies of this report will be forwarded to the State of South Carolina, FEMA Headquarters, and NRC Headquarters by my staff.

In addition to the Oconee Nuclear Station, state and county personnel, many volunteers, and several elected officials participated in this exercise. Out-of-sequence activities included lake clearance, state traffic control points, emergency worker decontamination and reception and congregate care centers. Additionally, schools in Oconee and Pickens Counties were evaluated on May 24, 2000, while the schools were still in session. The LP-1 radio station for the site, WFBC in Greenville, participated with the exercise scenario and added realism to the overall exercise. The State conducted operations from their new facility on Fish Hatchery Road in West Columbia, utilizing this new emergency operations center for its first REP exercise.

All agreed upon objectives for the exercise were demonstrated. No Deficiencies or Areas Requiring Corrective Action (ARCA) were identified during this partial participation exercise. One ARCA from the previous exercise in 1998 was corrected during the July 21, 1999 V. C. Summer Exercise.

Based on the results of the June 13, 2000, exercise and FEMA's review of the State's Annual Letter of Certification for 2000, the offsite radiological emergency response plans for the State of South Carolina and the affected local jurisdictions, site-specific to the Oconee Nuclear Station, can be implemented, and are adequate to provide reasonable assurance that appropriate measures can be



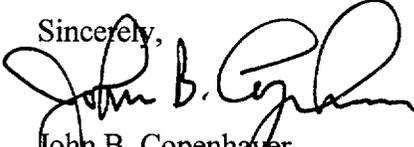
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taken offsite to protect the health and safety of the public in the event of a radiological emergency at the site. The Title 44 CFR, Part 350, approval of the State of South Carolina's offsite radiological emergency response plans and preparedness site-specific to the Oconee Nuclear Station, granted on February 23, 1983, will remain in effect.

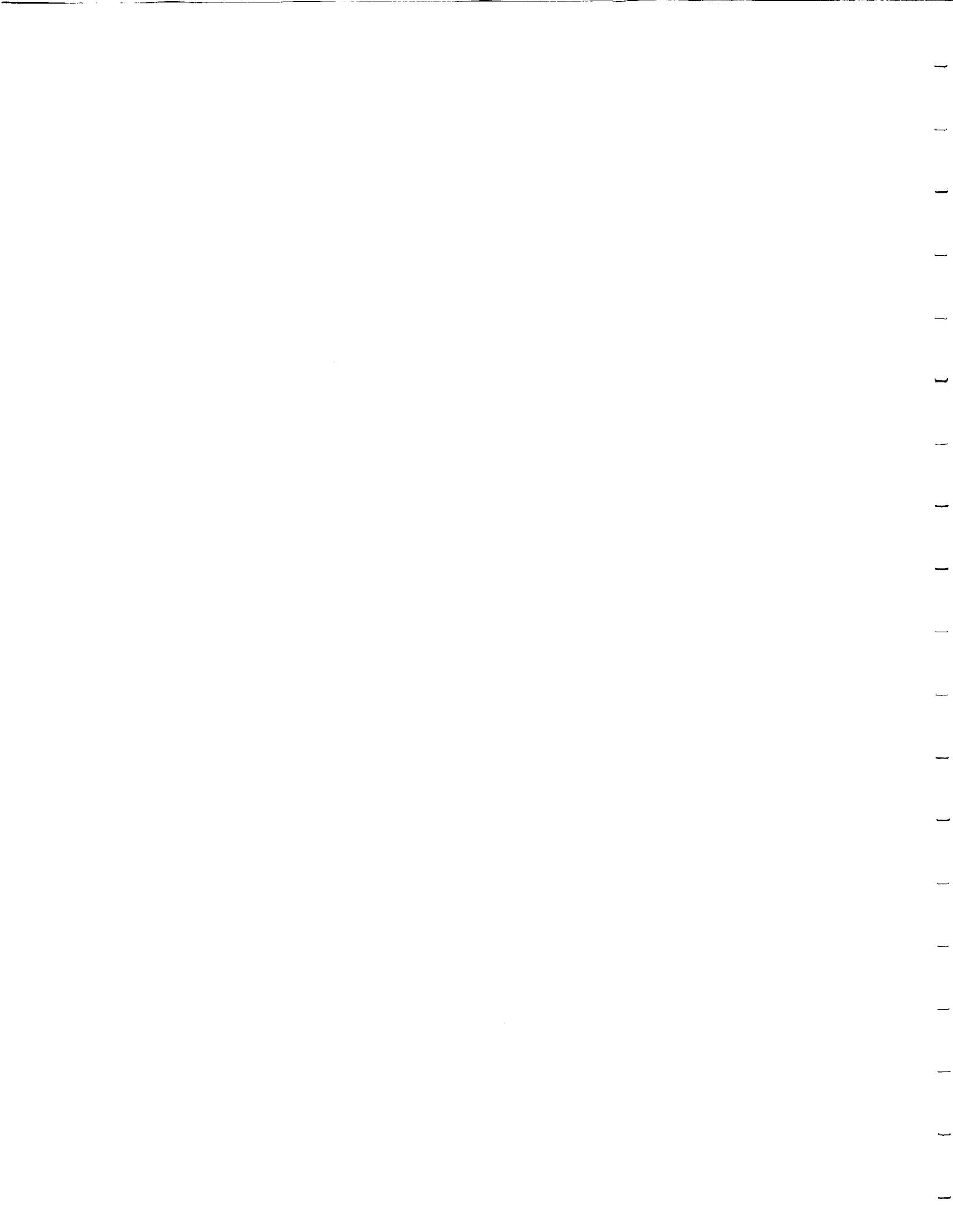
Should you have any questions, please contact Joseph Canoles at 770/220-5453.

Sincerely,

John B. Copenhaver
Regional Director

Enclosure

cc: Ms. Vanessa E. Quinn, Acting Chief
FEMA HQ, Radiological and Emergency
Preparedness Branch - PT-CR-RP

Chief
Emergency Preparedness and Health Physics Section
Operator Licensing, Human Performance and Plant Support Branch
Division of Inspection Program Management
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555-0001





Final Exercise Report

Oconee Nuclear Station

Licensee: Duke Power Company

Exercise Date: June 13, 2000

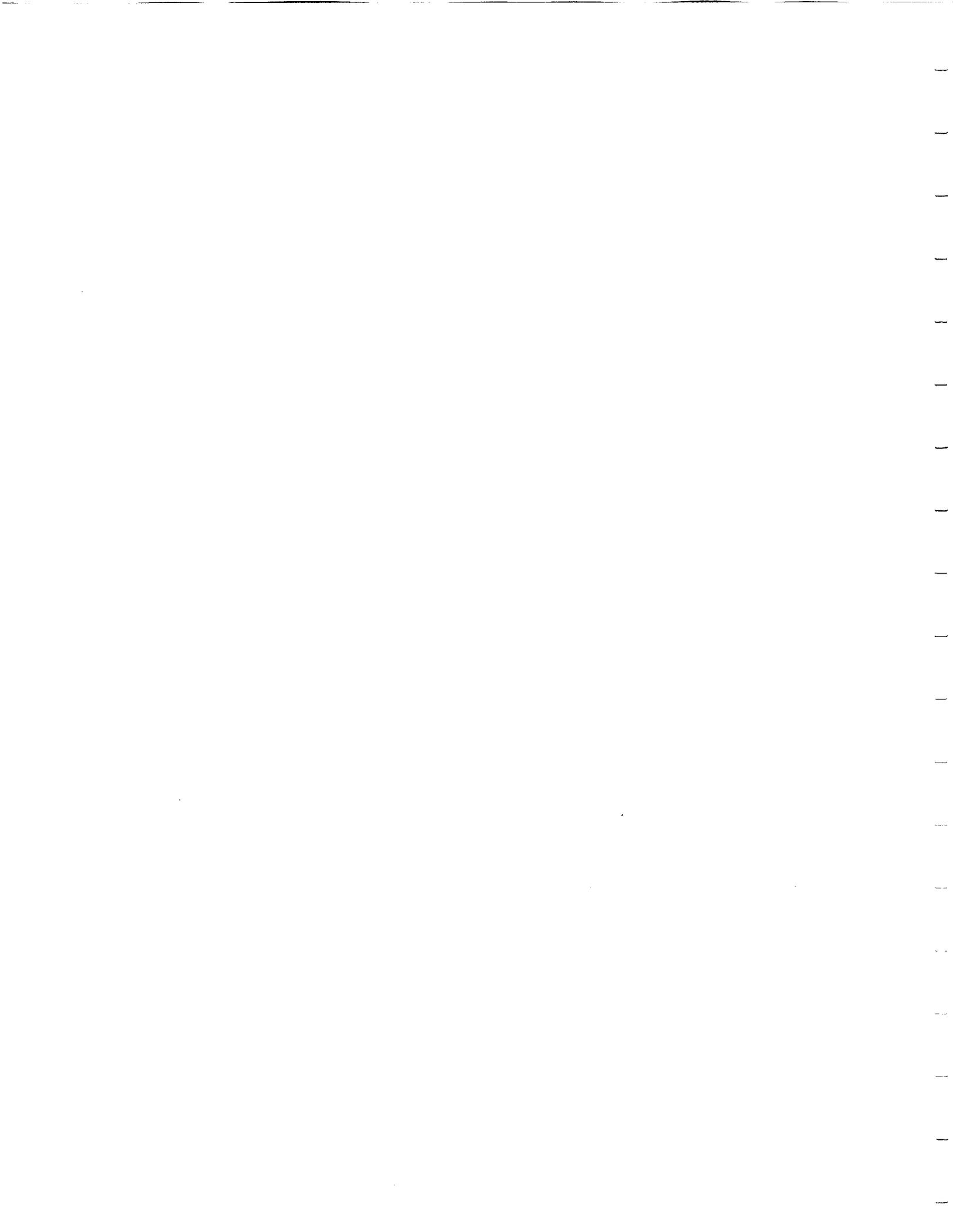
Report Date: August 14, 2000

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



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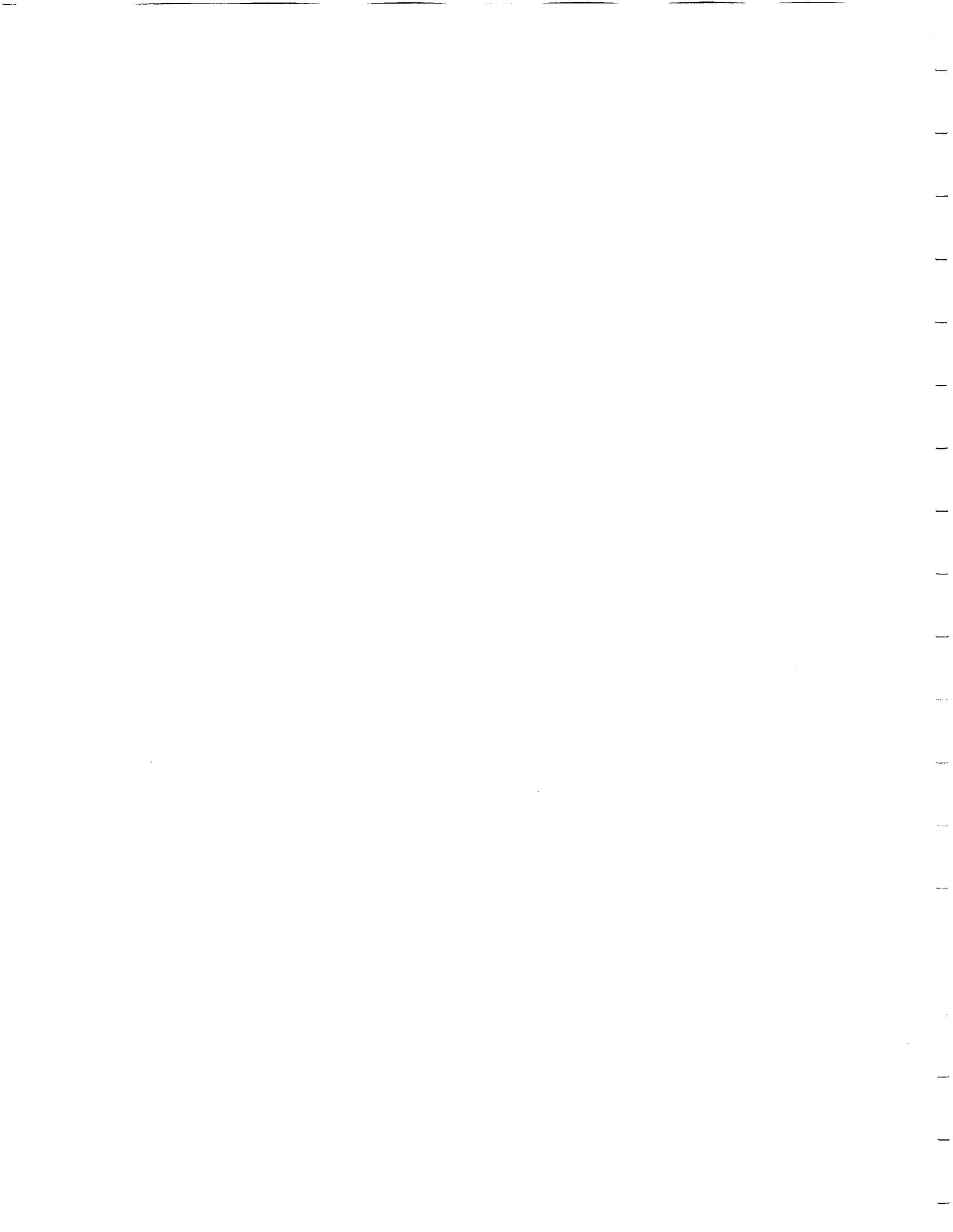
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I. EXECUTIVE SUMMARY

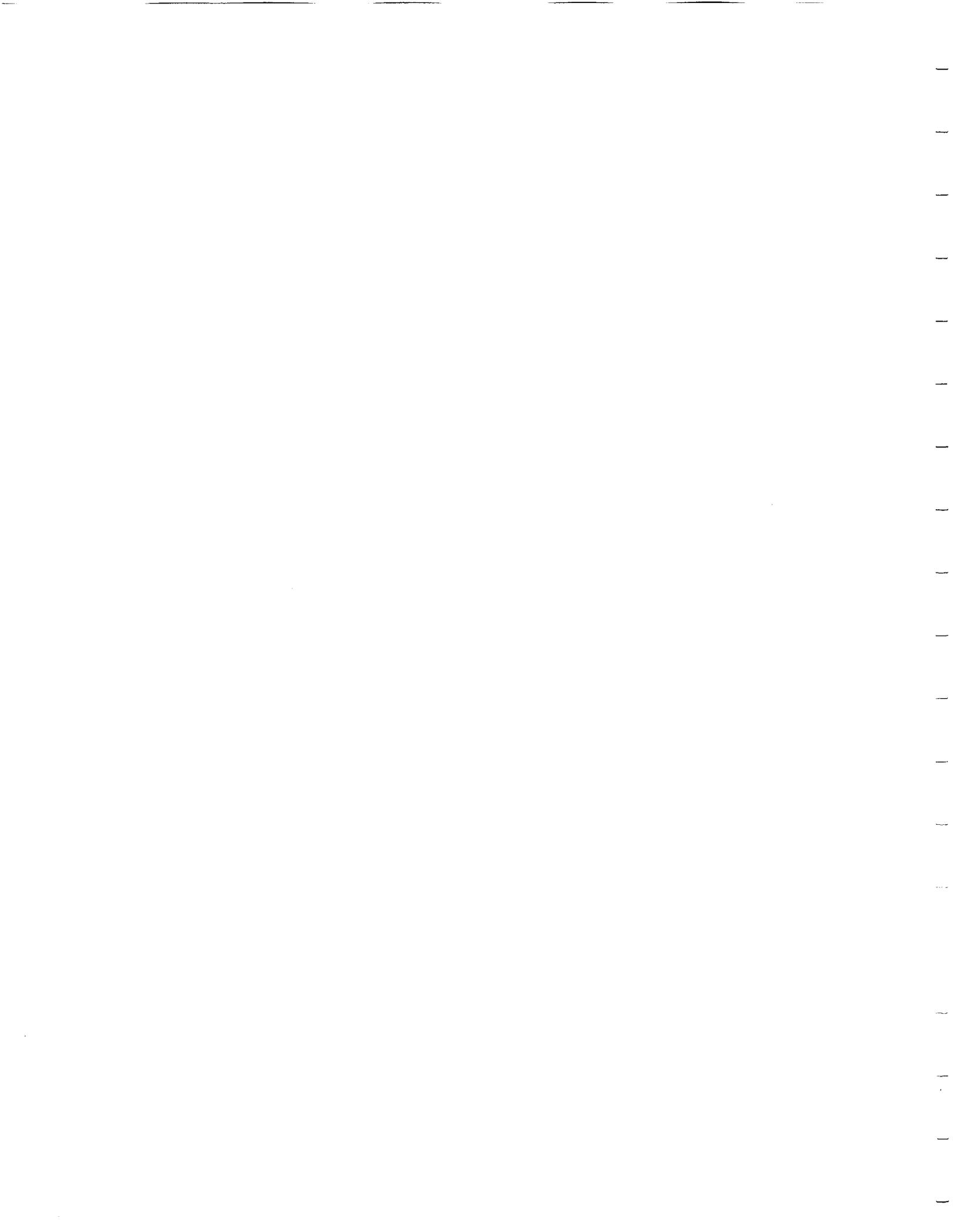
On June 13, 2000, a partial participation exercise was conducted in the plume exposure pathway emergency planning zone (EPZ) around the Oconee Nuclear Station. The purpose of the exercise was to assess the level of State and local preparedness in responding to a radiological emergency. This exercise was held in accordance with FEMA's policies and guidance concerning the exercise of State and local radiological emergency response plans (RERP) and procedures.

The previous exercise at this site was conducted on August 18, 1998. The qualifying emergency preparedness exercise was conducted on March 10 and 11, 1982.

FEMA wishes to acknowledge the efforts of the many individuals in South Carolina, and in Oconee, Pickens, Anderson, and Greenville Counties who 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. Cooperation and teamwork of all the participants were evident during this exercise.

This report contains the evaluation of the biennial exercise and the evaluation of the following out-of-sequence activities: lake clearance, state traffic control points (TCPs); protective actions for schools, emergency worker decontamination, and reception and congregate care centers. Five schools in Oconee County and two in Pickens County were evaluated on May 24, 2000, while the schools were still in session. The LP-1 Radio Station, WFBC in Greenville, participated in-sequence with the exercise scenario and added realism to the overall exercise. The State conducted operations from their new facility on Fish Hatchery Road in West Columbia; utilizing the emergency Operations Center for the first REP exercise.

The State and local organizations demonstrated knowledge of their emergency response plans and procedures and implemented them. A prior area requiring corrective actions (ARCA), reflected in the 1998 Oconee Report (54-97-24-A-03), was corrected at the V. C. Summer exercise held on July 21, 1999. No Deficiencies or ARCAs were identified during this exercise. This is reflective of the preparation and commitment to public safety by Duke Power Company, the State of South Carolina's Emergency Preparedness Division, and the Emergency Managers in Oconee, Pickens, Anderson and Greenville Counties.



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 Rule 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 radiological emergency response plans (RERP) and procedures developed by State and local governments;
- Determining whether such plans and procedures can be implemented on the basis of observation and evaluation of exercises of the plans and procedures conducted by State and local governments;
- Responding to requests by the NRC pursuant to the Memorandum of Understanding between the NRC and FEMA dated June 17, 1993 (Federal Register, Vol. 58, No. 176, September 14, 1993).
- Coordinating the activities of Federal agencies with responsibilities in the radiological emergency planning process:
 - Department of Commerce,
 - Nuclear Regulatory Commission,
 - Environmental Protection Agency,
 - Department of Energy,
 - Department of Health and Human Services,
 - Department of Transportation,
 - Department of Agriculture,
 - Department of the Interior, and
 - Food and Drug Administration.

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

Formal submission of the RERPs for the Oconee Nuclear Station to FEMA Region IV by the State of South Carolina and involved local jurisdictions occurred on May 7, 1982. Formal approval of the RERP was granted by FEMA on February 23, 1983, under 44 CFR 350.

A partial participation plume exposure pathway exercise was conducted on June 13, 2000. FEMA Region IV assessed the capabilities of State and local emergency preparedness organizations in implementing their RERPs and procedures to protect public health and safety during a radiological emergency involving the Oconee Nuclear Station. The purpose of this report is to present the results and findings on the performance of the offsite response organizations (ORO) during a simulated radiological emergency.

The findings presented are based on the evaluations of the Federal evaluator team, with final determinations made by the Chief Evaluator and RAC Chairperson, and approved by the Regional Director.

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

- NUREG-0654/FEMA-REP-1, Rev. 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980;
- FEMA-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. This section also contains: (1) descriptions of ARCAs assessed during a previous exercise, recommended corrective action, and the status of the OROs' efforts to resolve it.

III. EXERCISE OVERVIEW

This section contains data and basic information relevant to the June 13, 2000, exercise to test the offsite emergency response capabilities in the area surrounding the Oconee Nuclear Station.

A. Plume EPZ Description

The Oconee Nuclear Station is located in eastern Oconee County, South Carolina, approximately 8 miles northeast of Seneca, South Carolina, on the eastern shore of Lake Keowee. The Oconee Nuclear Station has three Babcock & Wilcox pressurized water nuclear reactors with a combined electric power generating capacity of approximately 2,658 megawatts. Unit 1 began commercial operation July 15, 1973. Unit 2 began commercial operation September 8, 1974 followed by Unit 3 on December 16, 1974.

The 10-mile plume exposure pathway EPZ encompasses Oconee and Pickens Counties in South Carolina, with the site being physically located in Oconee County. Land use is primarily agriculture and timber, with light industries scattered throughout both counties. The Oconee County Airport is located west of Clemson, South Carolina, inside the 10-mile EPZ. The Norfolk & Southern Railway passes within six miles of the plant. Railways connect the towns of Walhalla, Seneca, Clemson, and Norris.

The major population centers within the 10-mile EPZ include Walhalla, Seneca, and Clemson, including Clemson University. Total population for the 10-mile EPZ is 67,281.

Prevailing winds move generally from west to east over the facility, but due to foothill terrain, may not always follow this pattern. There are 13 emergency response planning areas.

B. Exercise Participants

In addition to the Oconee Nuclear Station, the following agencies, organizations, and units of government participated in the Oconee Nuclear Station exercise on June 13, 2000.

STATE OF SOUTH CAROLINA

Office of the Adjutant General, Emergency Preparedness Division
Department of Health & Environmental Control, Bureau of Land Waste
Management
Department of Social Services
Department of Public Safety, Bureau of Protective Services, and Highway
Patrol

Department of Natural Resources, Law Enforcement Division

RISK JURISDICTIONS

Oconee County
Pickens County

HOST JURISDICTIONS

Anderson County
Greenville County

PRIVATE/VOLUNTEER ORGANIZATIONS

American Red Cross
Salvation Army
Radio Amateur Civil Emergency Service

C. Exercise Timeline

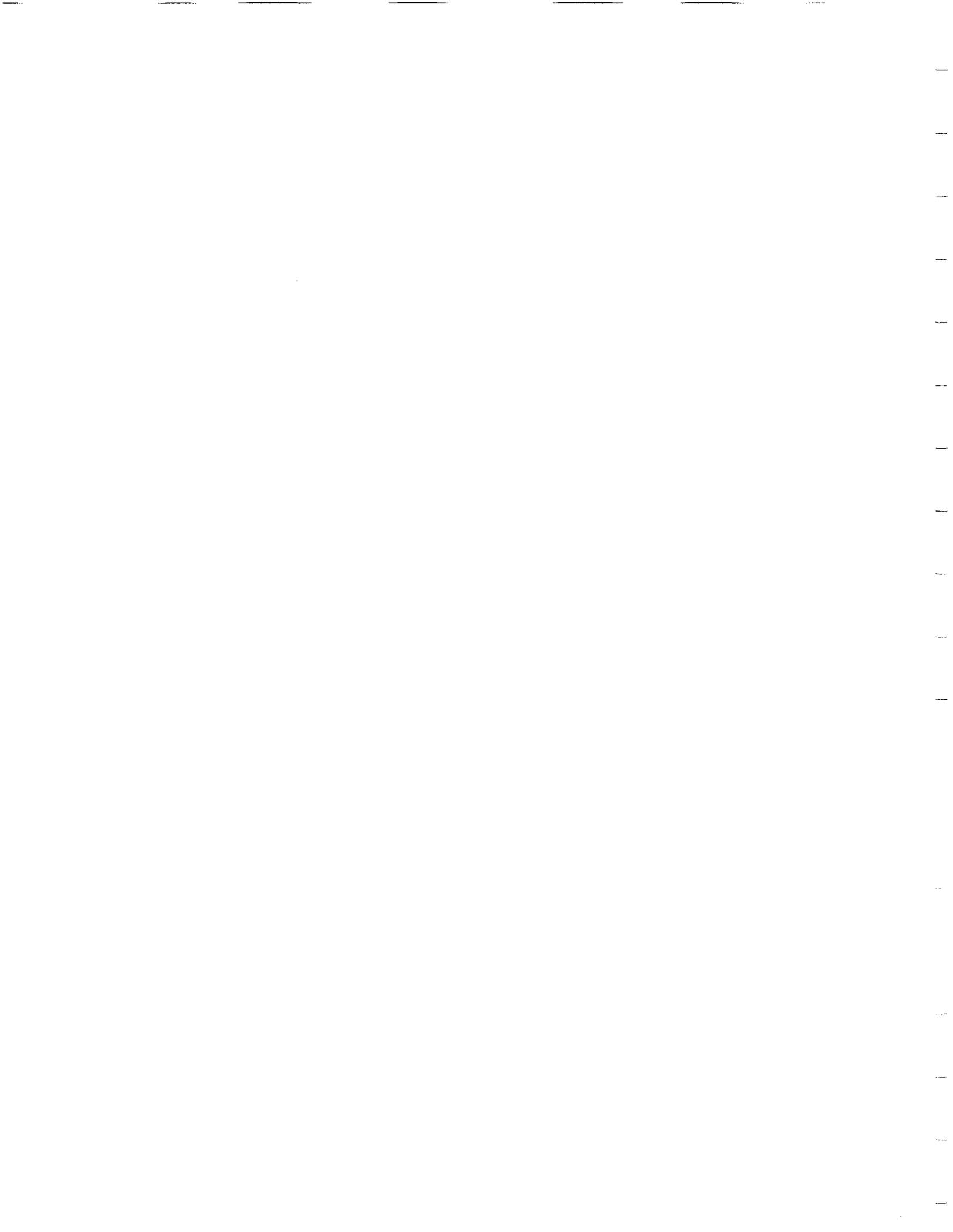
Table 1, on the following page, presents the time of key events and activities during the Oconee Nuclear Station exercise on June 13, 2000.

Table 1. Exercise Timeline

DATE AND SITE: June 13, 2000 - Oconee Nuclear Station

Emergency Classification Level or Event	Time Utility Declared	Time That Notification Was Received or Action Was Taken					
		SEOC	DOSE-FEOC	LP-1 Radio Station	JIC	OCONEE CO	PICKENS CO
Alert	*1930	*1930	*1930			*1930	*1930
Site Area Emergency	0943	0943	0950		1004	1004	1004
General Emergency	1052	1052	1105		1100	1100	1100
Simulated Rad. Release Started	0943	0943	0943			0943	0943
Simulated Rad. Release Terminated	End of Exercise						
Facility Declared Operational		0830	0800		0850	0828	0845
Declaration of State of Emergency		0845	0855		0900	0923	0945
Exercise Terminated		1240	1240		1240	1240	1240
Early Precautionary Actions:						1021 Evacuate schools 1030 Clearing of Lakes Keowee and Hartwell	1030 Clearing of Lake Keowee
1st Protective Action Decision: Notify public, stay tuned		1031		1035 Call received from SEOC		1031 Backup Route Alerting	1031 Backup Route Alerting
1st Siren Activation		1038				1038	1038
1st EAS Message		1041				1041	1041
2nd Protective Action Decision Evacuate Zone(s): All of 10-mile EPZ, Embargo all Corps in 10-mile EPZ		1140	1140			1140	1140
2nd Siren Activation-Simulated		1150	1150			1150	1150
2nd EAS Message-Simulated		1153	1153			1153	1153
KI Administration Decision: DHEC: Recommendation to distribute 1053, Ingest 1240		1053	1012 Distribute 1240 Ingest			Distribute	1115 Distributed

* Alert declared on 6-12-00



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 June 13, 2000 exercise to test the offsite emergency response capabilities of State and local governments in the 10-mile EPZ surrounding the Oconee 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. Exercise objectives and the extent-of-play agreement used in this exercise, are listed 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 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) |

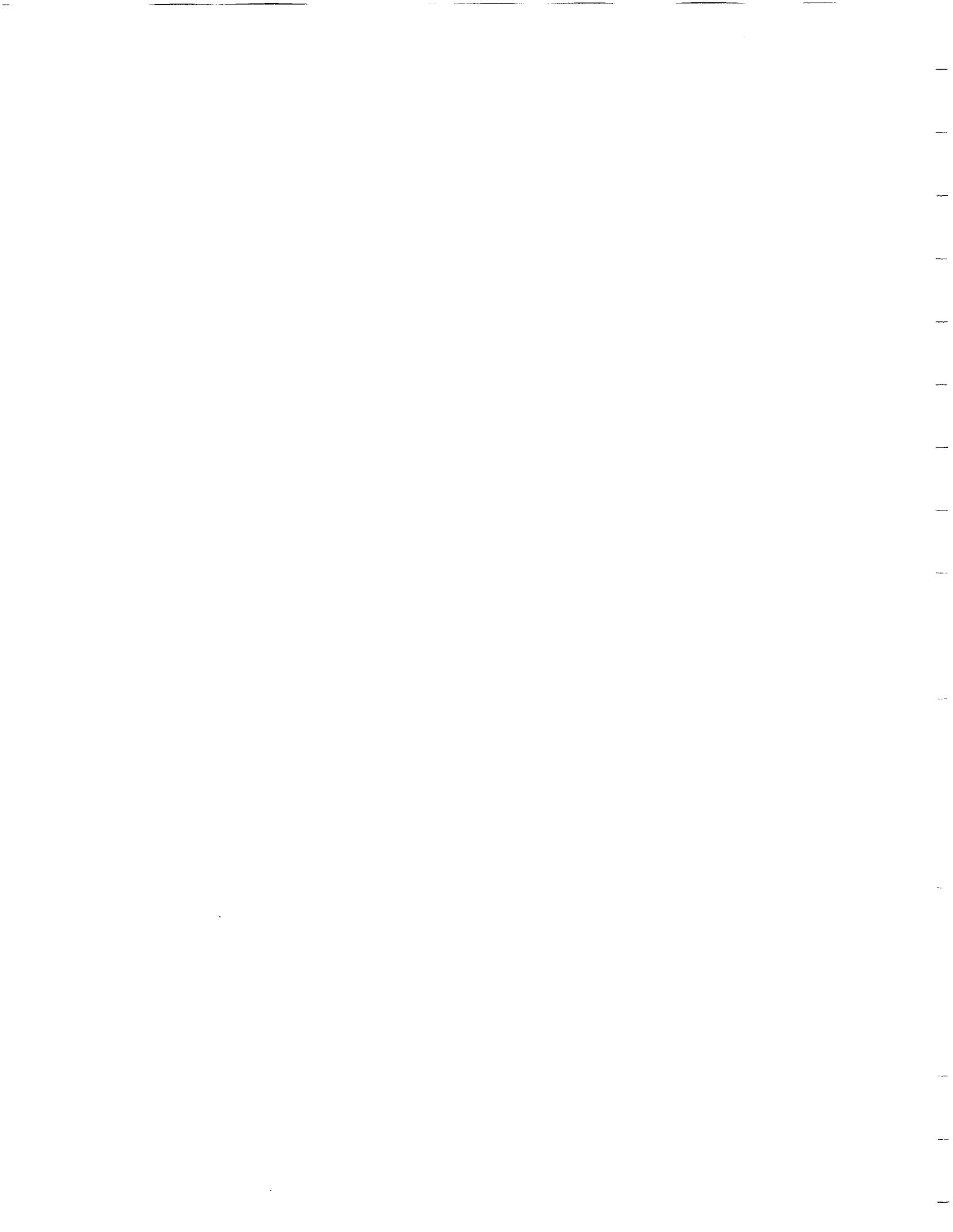


Table 2. Summary of Exercise Evaluation

DATE AND SITE: June 13, 2000 - Oconee Nuclear Station																																		
Jurisdiction or 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 SOUTH CAROLINA																																		
State Emergency Operations Center	M	M	M	M					M	M	M			M																	M		M	M
Dose Assessment - EOC Liaison				M					M																									
Dose Assessment - FEOC	M	M	M	M			M																											
Joint Information Center				M									M	M																				
Lake Clearing					M						M																							
State Traffic Control Point					M													M																
Emergency Operations Facility	M	M	M	M																														
OCONEE COUNTY																																		
Emergency Operations Center	M	M	M	M					M	M	M			M	M	M															M		M	M
Protective Actions for Schools																	M																	
Emergency Worker Decon					M																												M	
PICKENS COUNTY																																		
Emergency Operations Center	M	M	M	M					M	M	M			M	M	M															M		M	M
Protection Actions for Schools																	M																	
Emergency Worker Decon					M																												M	
ANDERSON COUNTY																																		
Reception and Congregate Care					M																											M	M	
GREENVILLE COUNTY																																		
Reception and Congregate Care					M																											M	M	

LEGEND: M = Met D = Deficiency A = ARCA 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 that 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 a previous exercise, which were resolved in this exercise, or during a previous exercise, and the corrective actions demonstrated.
- **Prior ARCAs - Unresolved** - Descriptions of ARCAs assessed during a previous exercise, 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 only two types of exercise issues which may be discussed in an exercise report.

- A **Deficiency** is defined in FEMA-REP-14 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-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 number 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 digit indexing number assigned to each issue identified in the exercise.

1. STATE OF SOUTH CAROLINA

1.1 State Emergency Operations Center

The State began its response to the Oconee Nuclear Station exercise on the evening of June 12, 2000, when the warning point received notification of an Alert at the Oconee Nuclear Station. The warning point immediately paged the appropriate State agencies for response to an off-hours, unannounced exercise. The exercise resumed on June 13th in the Emergency Preparedness Division's (EPD) newly remodeled facility on Fish Hatchery Road in West Columbia. The State Emergency Operations Center (SEOC) is spacious and equipped with state-of-the-art communications and displays. The EPD staff's performance during the exercise was commendable. Early voice and data communication problems were identified and overcome. Briefings were conducted in a timely manner and protective action recommendations (PAR) were coordinated with the Emergency Management Directors in the risk counties. Alert and notification of the public was appropriate and completed within the required time.

- a. **MET:** Objectives 1, 2, 3, 4, 9, 10, 11,14, 30, 32 and 33
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs – RESOLVED:** NONE
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

1.2 Dose Assessment – EOC Liaison

Communication capabilities were demonstrated and included commercial telephone (primary system), cellular phone (backup system), a dedicated decision line, conferencing capability and facsimile machine. The South Carolina Department of Health and Environmental Control (DHEC) dose assessment staff in the SEOC communicated with the DHEC Emergency Response Coordinator in the Forward Emergency Operations Center (FEOC) to formulate PARs. These PARs were provided to the State decision makers in the SEOC. DHEC's dose assessment staff demonstrated technical expertise and provided timely PARs.

- a. **MET:** Objectives 4 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 Dose Assessment – FEOC

The DHEC dose assessment staff was pre-positioned, per the extent-of-play agreement, at the Army National Guard Armory in Clemson, South Carolina. The Armory has sufficient space, furnishings, telephones, etc. for emergency operations. The DHEC Emergency Response Coordinator successfully demonstrated the capability to direct and control the emergency operations. The primary communication systems included the radio used to communicate with the field monitoring teams and commercial telephones used to communicate with the State EOC and the utility; both were successfully demonstrated during the exercise. Using field monitoring team data, the staff was able to identify the boundaries of the plume and demonstrated the capability to develop dose projections and PARs regarding evacuation and sheltering.

- a. **MET:** Objectives 1, 2, 3, 4 and 7
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:**

Issue No.: 54-97-24-A-03

Description: The field teams collected leaves from trees for the vegetation sample. The purpose for vegetation sampling is to obtain representative samples for determining deposition on vegetation. Leaves off trees are not representative since they are shielded from the radioactive fallout by the tree.

The soil sampling procedures requires that soil samples be taken from an area two inches in diameter by one-inch deep. Both field teams used a small trowel to scoop enough soil to fill a 400-ml container, which resulted in unknown surface area, thereby creating an unknown soil sample.

Corrective Action Demonstrated: This issue was corrected at the V.C. Summer exercise on July 21, 1999. The FMTs took their samples following their revised SOP 7.2 and correctly collected vegetation and soil samples.

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

1.4 Joint Information Center

The Joint Information Center (JIC) fully demonstrated their objectives for this exercise. Representatives of South Carolina, Pickens and Oconee Counties and Duke Power Company conducted three media briefings to inform the public about action the government was recommending for protecting the public. Questions from the media and public were answered quickly and accurately. The JIC personnel and rumor control staff were well trained, professional and conducted an outstanding operation. Over 35 rumor calls were received, documented and analyzed.

- a. **MET:** Objectives 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

1.5 Lake Clearing

Clearance on Lake Keowee was demonstrated, out-of-sequence, by an officer of the Department of Natural Resources (DNR). Four boat ramps were visited and all had well maintained signs advising boaters what actions to take if the sirens were sounded. The DNR officer was knowledgeable of dosimetry and potassium iodide (KI). He had been provided with a 0-5R dosimeter, KI and a thermoluminescent dosimeter (TLD). The boat was equipped with County and State radios, public address system, siren, and blue lights. All activities demonstrated for these objectives were in accordance with the local plan and extent-of-play agreement.

- 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

1.6 LP-1 Radio Station - WFBC

The LP-1 radio station for the Oconee Nuclear Station is WFBC (93.7FM) in Greenville, South Carolina. At 1035 hrs. on June 13, 2000, the station received a request from the SEOC to broadcast a pre-approved exercise message for the Oconee Nuclear Station Exercise. This request was followed by a faxed copy of the message, which was broadcast at 1041 hrs. as requested by the SEOC.

1.7 State Traffic Control Points

These objectives were demonstrated through discussion with a State Highway Patrol Officer in the Pickens County EOC. The County Radiological Officer conducted a detailed briefing for the officer prior to his simulated deployment to the State TCP. The Officer was thoroughly familiar with the use of instrumentation, call-in and turn-back values, intervals for reading his dosimeter and the location of emergency facilities.

- 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

1.8 Emergency Operations Facility

The utility operator's Emergency Operations Facility (EOF) is an excellent facility, from which, all participating response organizations can effectively manage ongoing emergency operations. Communication, coordination and the flow of technical information between the utility operator and the applicable State officials were outstanding. All State officials deployed to the EOF were well-trained, followed applicable procedures; and overall, 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 OCONEE COUNTY

2.1.1 Emergency Operations Center

The Oconee County EOC staff successfully demonstrated all objectives for nuclear emergency preparedness, including continuous 24-hour staffing, unannounced, and off-hours exercise. Positions were staffed throughout the exercise by dedicated and knowledgeable personnel. Direction and control was excellent as was support by elected officials. Full and efficient use was made of the equipment and information available. The staff knew their responsibilities and carried out those responsibilities in a timely manner using current plans and procedures consistent with the extent-of-play agreement.

- a. **MET: Objectives 1, 2, 3, 4, 9, 10, 11, 13, 14, 15, 30, 32 and 33**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

2.1.2 Protective Actions for Schools

Five of the County's fifteen schools located inside the 10-mile EPZ were visited and evaluated, out-of-sequence, on May 24, 2000. In addition to the Principals or Assistant Principals interviewed at each school, the School Department's Director of Transportation was interviewed and accompanied evaluators to each of the schools. Numbers of students varied from 48 at the Oconee Alternative School to 941 at Seneca High School. Schools visited had a plan of action and interviewees were familiar with the plan and their responsibilities. Students at each of the schools, except for students driving their own vehicles, would be evacuated by bus to a school outside the EPZ. Staff members would accompany evacuated students. Law enforcement personnel would be utilized to provide escorts for the school buses. Students who drive to school would be

released as soon as an evacuation order was received. After evacuation of the County's schools, buses would be available to assist in the evacuation of students from private schools within the EPZ. The commitment of the County, the Department of Schools, and the utility was obvious during the interviews; and all should be commended for their role in an excellent preparedness program. See Appendix 5 for a listing of the schools evaluated.

- 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

2.1.3 Emergency Worker Decontamination

Seven members of the Wahalla Fire Department successfully demonstrated emergency worker monitoring and decontamination of personnel and vehicles. One emergency worker and one vehicle were monitored. This demonstration was conducted at the Westminister Middle School. One 0-5R dosimeter and one simulated TLD were provided to each staff member. Ludlum model-3 survey instruments were provided for monitoring. Communication was effected using both radio and cellular telephone. All activities described in the demonstration criteria for these objectives were carried out in accordance with the plan and the extent-of-play agreement.

- 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

2.2 PICKENS COUNTY

2.2.1 Emergency Operations Center

The Pickens County Director and Assistant Director of Emergency Services provided excellent direction and control, conducted frequent EOC briefings, and requested agency updates. The State and plant liaisons and County Administrator were pro-active in providing information and clarifying issues. The staff was enthusiastic and worked well as a team to support this operation. The protective action decisions (PADs) were implemented and the staff coordinated consistently with the State and Oconee County. The Pickens County Emergency Services Director was pro-active in clarifying the impact of hot weather on Pickens County citizens as officials discussed and formulated the implementation of PADs.

- a. **MET:** Objectives 1, 2, 3, 4, 9, 10, 11, 13, 14, 15, 30, 32 and 33
- 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

Two of the County's schools, that are located inside the 10-mile EPZ, were visited out-of-sequence, on May 24, 2000. Interviews with the Principals were conducted at both schools and the Transportation Coordinator was also interviewed. The Principals were very knowledgeable concerning emergency preparedness. Both schools have telephones, two-way radios, facsimile machines and NOAA tone alert radios. Pickens County would evacuate schools using buses traveling in convoy to the evacuation point. Bus drivers have received radiological training and the first and last bus driver would be equipped with appropriate dosimetry. The two private schools within the EPZ would receive emergency notification from the EOC. Notification would be made using the community alert and notification system. All activities described in the demonstration criteria for Pickens County Schools were carried out in accordance with the plan and the extent-of-play agreement. See Appendix 5 for a listing of these 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

2.2.3 Emergency Worker Decontamination

In accordance with the extent-of-play agreement, the demonstration of these objective included the monitoring of a single emergency worker and one emergency response vehicle. The designated area for this procedure is the County Prison Farm, located northwest of the City of Pickens. This is an excellent facility for this type of activity. Hazardous materials responders, comprised of volunteers from various county departments, demonstrated these objectives. All were well trained and all objectives were demonstrated successfully.

- 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

3. HOST JURISDICTIONS

3.1 ANDERSON COUNTY

3.1.1 Reception and Congregate Care

Reception and Congregate Care capabilities in Anderson County were demonstrated out-of-sequence at the Anderson Civic Center. Members of a local Boy Scout Troop served as mock evacuees. The Anderson County Radiological Officer provided strong leadership to the 25 enthusiastic and knowledgeable members of his team. The reception and congregate care manager who was in charge of monitoring evacuees at the Ludlum model 52 portal monitor was particularly knowledgeable and helpful. Anderson County has obviously accomplished a lot of pre-planning, as evidenced by an outstanding printed standard operating procedure. This exercise demonstrated the County's capability to provide reception and congregate care to the population.

- 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**

3.2 GREENVILLE COUNTY

3.2.1 Reception and Congregate Care

Reception and Congregate Care capabilities in Greenville County were demonstrated at the Palmetto Exposition Center where mock evacuees were routed through monitoring, decontamination and registration into the shelter. The Emergency Management Agency and the Greenville Fire Department provided strong leadership to the unusually large number of enthusiastic and knowledgeable participants. Teamwork displayed between participating agencies/organizations was outstanding.

- 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**

4. **SUMMARY OF DEFICIENCIES AND/OR AREAS
REQUIRING CORRECTIVE ACTION**

4.1 **PRIOR ARCAs**

4.1.1 **54-97-24-A-03**

Issue No.: 54-97-24-A-03

Description: The field teams collected leaves from trees for the vegetation sample. The purpose for vegetation sampling is to obtain representative samples for determining deposition on vegetation. Leaves off trees are not representative since they are shielded from the radioactive fallout by the tree.

The soil sampling procedures requires that soil samples be taken from an area two inches in diameter by one-inch deep. Both field teams used a small trowel to scoop enough soil to fill a 400-ml container, which resulted in unknown surface area, thereby creating an unknown soil sample.

Corrective Action Demonstrated: This issue was corrected at the V.C. Summer exercise on July 21, 1999. The FMTs took their samples following their revised SOP 7.2 and correctly collected vegetation and soil sample.



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
ARES	Amateur Radio Emergency Service
CDV	Civil Defense - Victoreen
CFR	Code of Federal Regulations
DHEC	South Carolina Department of Health and Environmental Control
DHHS	Department of Health and Human Services
DOC	Department of Commerce
DOE	Department of Energy
DOI	Department of the Interior
DOT	Department of Transportation
DNR	Department of Natural Resources
DRD	Direct Reading Dosimeter
EAL	Emergency Action Level
EAS	Emergency Alert System
EEM	Exercise Evaluation Methodology
EMS	Emergency Medical Services
ENC	Emergency News Center
ENN	Emergency News Network
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EOP	Extent of Play
EPA	Environmental Protection Agency
EPZ	Emergency Planning Zone
EWD	Emergency Worker Decontamination
FAA	Federal Aviation Administration
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
FEOC	Forward Emergency Operations Center
FTC	Field Team Coordinator
GE	General Emergency
GM	Guidance Memorandum

JIC	Joint Information Center
KI	Potassium Iodide
mR	milliroentgen
mR/h	milliroentgen per hour
NOAA	National Oceanic and Atmospheric Administration
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
PIO	Public Information Officer
R	Roentgen
RAC	Regional Assistance Committee
RACES	Radio Amateur Civil Emergency Service
RC	Reception Center
REM	Roentgen Equivalent Man
REP	Radiological Emergency Preparedness
RERP	Radiological Emergency Response Plan
R/h	Roentgen(s) per hour
RO	Radiological Officer
SAE	Site Area Emergency
SCARNG	South Carolina Army Reserve National Guard
SCEPD	South Carolina Emergency Preparedness Division
SEOC	State Emergency Operations Center
SOP	Standard Operating Procedure
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 Oconee Nuclear Station exercise on June 13, 2000. 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
USDA - U. S. Department of Agriculture

<u>EVALUATION SITE</u>	<u>EVALUATOR</u>	<u>ORGANIZATION</u>
State Emergency Operations Center	Joe Canoles	FEMA
Emergency Operations Facility	Robert Trojanowski	NRC
Joint Information Center	Jim Sutch Al Lookabaugh	ANL ANL
Dose Assessment - FEOC	George Goforth	ANL
Dose Assessment – EOC Liaison	Eddie Fuente	ANL
Lake Clearing	Tom Carroll	ANL
LP-1 Radio Station WFBC - Greenville	Josh Moore	ANL
Oconee County		
Emergency Operations Center	Al Hall	ANL
Protective Actions for Schools (May 24, 2000)	Joseph Canoles Al Hall	FEMA ANL
Emergency Worker Decontamination	Tom Carroll	ANL
Pickens County		
Emergency Operations Center	Robert Perdue Dave Moffet	FEMA ANL

Protective Actions for Schools (May 24, 2000)	Joseph Canoles Al Hall	FEMA ANL
Emergency Worker Decontamination	Dave Moffet	ANL
State Traffic Control Points	Dave Moffet	ANL
Anderson County		
Reception/Congregate Care	Virginia Baker Kathleen Barrett	ANL USDA
Greenville County		
Reception/Congregate Care	Virginia Baker Kathleen Barrett	ANL USDA

APPENDIX 3

EXERCISE OBJECTIVES AND EXTENT-OF-PLAY AGREEMENT

This appendix contains the exercise objectives and the extent-of-play agreement which were scheduled for demonstration in the Oconee Nuclear Station exercise on June 13, 2000.

- A. Exercise Objectives
- B. Extent-of-Play Agreement

The Extent-of-play agreement on the following pages was submitted by the State of South Carolina, and was approved by FEMA Region IV. The extent-of-play agreement includes any significant modification or change in the level of demonstration of each exercise objective listed.



III. OBJECTIVES:

SITE: <u>OCONEE</u>							
STATE: <u>SOUTH CAROLINA</u>							
EX DATE: <u>6/13/00</u>							
TYPE: <u>Partial</u>	STATE	Oconee	Pickens	Anderson	Greenville		
1 Mob Emerg Personnel	✓	✓	✓				A B I E N N I A L L Y
2 Facil. / Equip. / Display	✓	✓	✓				
3 Direction & Control	✓	✓	✓				
4 Communications	✓	✓	✓				
5 Emerg. Work Exposure Control	✓	✓	✓	✓	✓		
6 Fld. Mon - Ambient							
7 Plume Dose Projection	✓						
8 Field Monitoring Iodine							
9 Plume Protective Action	✓	✓	✓				
10 Alert / Notification	✓	✓	✓				
11 Public Instr. / Emerg. Info.	✓	✓	✓				
12 Emerg. Info - Media	✓	✓	✓				
13 Emerg. Info - Rumor Control	✓	✓	✓				
14 KI-Emer Wkr/Gen Population	✓	✓	✓				
15 Special Population		✓	✓				B S C E N A R I O D E P E N D A N T
16 School		✓	✓				
17 Traffic Control	✓						
18 Reception Ctr-Reg/Mon				✓	✓		
19 Congregate Care				✓	✓		
20 Med Services Transport							
21 Med Services Facility							
22 Decon-Emer Wkr/Veh Equip		✓	✓				
23 Supplementary Assistance							
24 Post Emergency Sampling							
25 Post Emergency Lab.							C O N C E R N E R Y
26 IPZ-Dose Projection Prot Act							
27 IPZ-Prot Action Implementation							
28 RRR-Decision Making							
29 RRR-Implementation							
30 24 hr Capability - Shift Change	✓	✓	✓				
31 Evac on-Site Personnel							
32 Unannounced Exercise	✓	✓	✓				
33 Off-Hours Exercise	✓	✓	✓				



**EXTENT OF PLAY AGREEMENT
OCONEE NUCLEAR SITE EXERCISE
June 12/13, 2000**

All selected objectives (see attached matrix) will be demonstrated fully in accordance with respective plans. Exceptions are noted below.

<u>OBJECTIVES</u>	<u>DEMONSTRATION</u>
1	All night-shift participants will be pre-positioned on June 13, 2000.
3	Direction and control will take place at the SEOC, Oconee County EOC and Pickens County EOC. DHEC direction and control will take place at the Clemson Armory.
5	Exposure rates will be provided by control staff. (Rates of exposure will not be scenario dependant). TLDs will be simulated.
7	Scenario will contain a simulated release to include iodine. Dose Assessment will take place at the Clemson Armory.
10	Sirens will be sounded and EAS activated at SAE. Sirens and EAS activation will be simulated at GE. The initial EAS message needs to comply with the February 2, 1999 memorandum from Kay Goss on <i>Guidance for Providing Emergency Information and Instructions to the Public for Radiological Emergencies Using the New Emergency Alert System</i> . Copies of EAS messages that would be aired in an actual emergency will be provided to FEMA evaluators. Department of Natural Resources, Law Enforcement will demonstrate lake clearing through discussion of procedures at Public Boat Landing 19, South Cove Access, Seneca, SC (boat ride optional). Public Boat Landings to be evaluated are: Stamp Creek (O-16) Cane Creek (O-18) High Falls (O-17) South Cove Access (O-19)

- 11 Copies of public emergency information news releases will be provided to the FEMA evaluator. A FEMA Evaluator will be present at the LP-1 Radio Station, WFBC, Greenville.
- 12 Mock media will be utilized at the JIC.
- 13 Calls to South Carolina county rumor control personnel will be made by controller personnel. At least six (6) calls within one (1) hour will be made to the JIC, and Oconee and Pickens county rumor control staff members. Calls will commence at SAE. County rumor control personnel will provide a log of calls to the FEMA evaluator.
- 14 KI will be simulated by candy or other means (empty envelope marked "KI").
- KI issuance to institutionalized individuals will be simulated.
- KI distribution procedures will be explained at the RAC Briefing.
- 15 Demonstration through discussion of procedures and provision of special population list.
- An available vehicle transport list will be provided to the FEMA Evaluator.
- 16 School evacuations will be simulated.
- Schools will be called as required by the scenario.
- Law enforcement escorts and school bus coordinators will be evaluated on exercise day at the appropriate county EOC.
- 17 Calls to control access to rail and air will be simulated. Department of Transportation barricades and traffic cones will be simulated. Traffic will not be impeded.
- State Traffic Control Point C-1 will be demonstrated on location.

18/19 Reception Centers/Shelters will be opened out of sequence. Monitoring, decontamination and registration will be demonstrated at the shelters.

At least six (6) people will be monitored and registered. Personnel decontamination will be demonstrated via discussion and walk-thru simulation, water will not be used.

Two (2) vehicles will be monitored and decontaminated.

Reception Centers/Shelters to be evaluated are:

Anderson County: Anderson Civic Center
Greenville County: Palmetto Exposition Center

22 Decontamination of emergency workers will be simulated. Decontamination of vehicles will be demonstrated. Water will not be used for personnel. Decontamination points will be opened out of sequence:

Oconee County: Westminster Middle School
Pickens County: County Prison Farm

30 Shift-change briefing will occur at approximately 8:30 A.M. at the SEOC, Oconee County EOC and Pickens County EOC.

32/33 Unannounced Drill and Off-Hours Drill will occur at approximately 7:30 P.M., June 12, 2000 at the SEOC; Oconee County EOC and Pickens County EOC. Alert rosters will be provided to FEMA evaluators and call-down procedures will be demonstrated.

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 Oconee Nuclear Station exercise on June 13, 2000.

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



Oconee Nuclear Site
2000 Evaluated Emergency Response Exercise
Exercise Narrative

The exercise begins with Oconee Unit 1 operating at 100% power (beginning of core life \approx 4 Effective Full Power Days (EFPDs)), Unit 2 shutdown for a refueling outage with core unloading completed, and Unit 3 at 100% power (middle of core life - 254 EFPDs). The site's Standby Shutdown Facility (SSF) is out of service for piping modifications, diesel generator maintenance, and breaker maintenance. Keowee Hydro Unit 1 and 2 are available as emergency power supplies. All three combustion turbines at Lee Steam Station are also available to supply emergency power.

The weather forecast for Monday evening, June 12th, calls for severe thunderstorms with winds from the West (\approx 270°) with a wind speed of 20 - 30 mph. A low temperature of 65° F is expected during the night.

The weather forecast for Tuesday, June 13th, calls for winds from the West (\approx 270°) with a wind speed of 5-10 mph. A low temperature of 67 °F is expected with a high temperature of 86° F. A 75% chance of late evening thunderstorms is expected.

At 1900, Unit 1 is operating with no major problems. A *Technical Specification Limiting Condition For Operation* is in effect due to the SSF being out of service for maintenance, with the SSF due back in service by 06/18/00. Maintenance personnel are in the Unit 1&2 Spent Fuel Pool (SFP) moving fuel that has been unloaded from Unit 2 as part of refueling activities.

At 1915 fuel assembly NJ087J fails at the top while being moved in the Unit 1&2 SFP. The assembly drops in the mast and two fuel pins are damaged. Personnel on the SFP Bridge observe bubbling in the pool as fuel gap gases are released. The portable radiation monitor on the fuel bridge alarms and maintenance personnel evacuate the Unit 1&2 SFP notifying Unit 1 Control Room personnel of conditions/observations in the SFP. Area Radiation Monitor 1RIA-6 (1&2 SFP) and Process Radiation Monitor 1RIA-41 (SFP Building Gas) reach their respective **High** Alarm setpoints of 25 mR/hr and 2.94 E³ ccpm. At this time, the air handling unit supplying inlet air to the Unit 1&2 SFP also fails. 1RIA-6 continues increasing and reaches a maximum reading of 3.8 E⁴ mR/hr in five minutes. 1RIA-41 continues increasing over the next six minutes until it reaches it's maximum range value of 1.0 E⁷ ccpm. Process Radiation Monitor 1RIA-45 (Unit Vent Gas - Normal) begins to increase above it's background reading. A monitored release, Below Normal Operating Limits, is in progress at this time; however, no activity is detected at the site or offsite.

The Control Room Operators respond to the radiation monitor alarm indications and inform the Control Room Senior Reactor Operator (SRO) of the current plant conditions and monitor readings. The Control Room SRO notifies the Operations Shift Manager (OSM). A Non Licensed Operator (NLO) is directed to line up the Spent Fuel Ventilation Filters; however, both SFP Filter Ventilation fans fail - F1 due to fan problems and F2 due to a breaker fault. Dose rates in the area of the SFP prevent the NLO from further troubleshooting of this problem.

Oconee Nuclear Site
2000 Evaluated Emergency Response Exercise
Exercise Narrative

After notification from the Control Room SRO, the OSM reviews the Emergency Classification procedure and declares an **Alert** at approximately 1930 based on **Major Damage To Irradiated Fuel Or Loss Of Water Level That Has Or Will Result In The Uncovering Of Irradiated Fuel Outside The Reactor Vessel - Valid RIA 3, 6, 41, OR 49 HIGH Alarm**. Procedure actions are initiated to: notify offsite agencies (SC State Warning Point (SWP), Oconee County, Pickens County, and NRC); activate ERDS; activate the site's Emergency Response Organization (ERO); and, recall emergency response personnel to the site. Site Assembly is initiated and site personnel are warned of the radiation hazard near the SFP. The SWP, Oconee County LEC, and Pickens County LEC are notified of the Alert at 1945 (or within 15 minutes after the declaration) via Emergency Notification Form (Green Sheet) and the Selective Signaling telephone system.

The SWP notifies Department of Health and Environmental Control (DHEC) and verifies notification of Oconee and Pickens counties. DHEC assesses the situation with ONS, confirms with SCEPD, and recommends response required.

SCEPD notifies the Office of the Governor, Office of the Adjutant General (OTAG), North Carolina, Georgia and FEMA (simulated).

SWP alerts key emergency response personnel to stand-by status.

SCEPD staff activate SEOC (simulated) and consider activating FEOC and Dosimetry Redistribution SOP.

Site Assembly is completed by 2000 (or within 30 minutes after initiation). Duty ERO personnel are enroute to the site and EOF. Staffing of the TSC and OSC is being provided by on-shift resources. At approximately 2045 (within 75 minutes of the Alert declaration), after the TSC Emergency Coordinator has completed turnover with the OSM, the TSC is *Activated*. The TSC is now responsible for Emergency Classification, Offsite Communications, and Protective Action Recommendations. Site personnel are monitoring plant conditions and implementing appropriate response actions. Field Monitoring Teams are surveying the site and downwind environs to determine the impact of this event. No increase in activity is detected.

Minimum staffing at the EOF is also completed at 2045 and the EOF is declared *Operational* at this time.

If not provided earlier, Follow-Up Notifications are provided to the SEOC, Oconee County EOC, and Pickens County EOC at 2045 (or at least 1 hour after the initial emergency notification). The site remains in an **Alert** classification.

The EOF completes turnover with the TSC and is *Activated* at approximately 2115. The EOF is now responsible for Emergency Classification, Offsite Communications, and Protective Action Recommendations. The EOF Director notifies the SWP, Oconee

Oconee Nuclear Site
2000 Evaluated Emergency Response Exercise
Exercise Narrative

County Warning Point, and Pickens County Warning Point that the EOF is activated and provides additional information concerning current plant conditions.

At 2130, objectives related to after hours activation of the ERO have been adequately demonstrated and the Exercise is **Suspended**. The ERO is instructed to return back to their respective Emergency Response Facility by 0730 on June 13th. A Follow-Up Notification is provided to the SWP, Oconee County EOC, and Pickens County EOC. For the purposes of this exercise, offsite agencies request that the next Follow-Up Notification be provided by 0845 on June 13th.

At 0730 on June 13th, ERO personnel report to their respective facilities and are briefed on current plant conditions. Overnight, plant personnel were able to return one of the Spent Fuel Filtered Ventilation Fans to service. This has reduced the area radiation readings in the SFP, enabling OSC personnel to enter the room to assess the condition of the damaged fuel element. Elevated dose rates have been observed in the Purge Rooms and SFP Cooler and Filter rooms. No releases are occurring at this time.

At approximately 0800, the exercise resumes. SCEPD, Oconee County and Pickens County personnel (minimum staffing) pre-position. Unit 1 remains at 100% Power. **Alert** conditions still exist and emergency response personnel are implementing appropriate response actions. An OSC team enters the SFP to assess the condition of the damaged fuel element. At 0815, one of the OSC team members in the SFP slips and falls, resulting in a medical injury. Due to the location of the fall, the individual is radioactively contaminated. At 0820, the OSC receives a call on the site's emergency response line concerning this event. The site's medical emergency response team (MERT) is activated and dispatched to the SFP. MERT identifies the need for an ambulance to transport the individual for further treatment (this activity will be simulated; i.e., Oconee EMS will not be notified to transport the injured person to the hospital).

At 0830, 1B Low Pressure Service Water (LPSW) Pump fails due to a breaker problem. This loss requires entry into a *Selected Licensee Commitment Action Statement*. Operations and OSC personnel initiate actions to recover the pump. SEOC, Oconee and Pickens county EOCs are activated and emergency personnel are brought to full status (pre-positioned). A shift change and briefing takes place. The pump is restored to service by 0915.

At 0845 a Follow-Up Notification is provided to SCEPD, Oconee County EOC, and Pickens County EOC.

At 0900, high vibrations are indicated on Unit 1's 1B2 Reactor Coolant Pump (RCP). *Sustained Low Magnitude Noise* can be heard on the Loose Parts Monitor. Control Room personnel initiate a power reduction to less than 70% power. Low Oil Level alarms are received in the control room. Some fuel damage results from RCP debris; however, it is less than 1% at this time.

Oconee Nuclear Site
2000 Evaluated Emergency Response Exercise
Exercise Narrative

Once Unit 1 is < 70% power, the 1B2 RCP is secured. TSC and OSC personnel are evaluating the Loose Parts Monitor noise.

At 0925, a steam generator tube rupture (SGTR) occurs on 1B Steam Generator. This results in an RCS leak of \approx 200-210 gallons per minute (gpm). Control Room operators initiate applicable procedures and initiate a shutdown of unit 1. Plant conditions require the site to remain at an **Alert** classification due to a *Potential Loss of the RCS Barrier* resulting from the SGTR.

At 0930, a Turbine Trip occurs that results in a Unit 1 Reactor Trip (shutdown). The Main Steam Relief Valves (MSRVs) lift in response to the Reactor Trip; however, two MSRVs on the 1B Main Steam Line remain open and will not reseal. This results in a *Loss of the Containment Barrier* and a radiological release pathway. Conditions exist at this time for a **Site Area Emergency** classification due to the failed MSRVs (*Loss of the Containment Barrier*) and the SGTR (*Potential Loss of the RCS Barrier*).

At 0935, the EOF Director declares a **Site Area Emergency** based on *Loss of the Containment Barrier and the Potential Loss of the RCS Barrier*. No Protective Action Recommendations are required at this time. Notification of the **Site Area Emergency** classification is provided to SCEPD, Oconee County EOC, and Pickens County EOC by 0950 (or within 15 minutes after the event is classified). SCEPD verifies county notification. DHEC assesses the situation with ONS and confirms with SCEPD. DHEC/SCEPD recommend protective actions to the Office of the Governor. SCEPD relays protective actions decision to Oconee and Pickens counties and coordinates the activation of sirens with Oconee County, Pickens County and ONS. EAS and Sirens are activated at 1005 (or within 15 minutes of the decision by State officials and County Emergency Preparedness Directors to activate the Alert and Notification System).

SCEPD prepares to activate shelters as needed, notifies state response forces to send representatives to SEOC (pre-positioned). SCEPD notifies the Office of the Governor, North Carolina and Georgia and FEMA (simulated). SCEPD dispatches county Liaison Officers and Public Information group (pre-positioned). SCEPD places other emergency personnel on stand-by status. DHEC/SCEPD recommend of KI should be distributed to emergency workers. Two-mile roadblocks are established.

At 1015, fuel failures increase to approximately 1%. This increase results in an increase in radiation levels as indicated on various area radiation monitors. Due to plant conditions, the TSC Emergency Coordinator may evacuate non-essential personnel. RP personnel prepare an evacuation plan that sends personnel to Keowee Elementary School due to the fact that a radiological release is in progress. With the radiological release in progress, vehicles located in the parking lots East of the plant would be unavailable for use. The OSC would arrange for transportation of affected personnel. The TSC Offsite Communicator (or EOF State/County Communicator) should request Oconee County to provide assistance as needed.

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From 0930 to 1045, plant personnel initiate actions to minimize the release from the ruptured steam generator. OSC personnel attempt to close the MSRVs without success. The offsite radiological release continues.

At 1045, RCP seals begin to leak on the damaged 1B2 RCP. A small RCS leak of approximately 6-8 gpm begins into containment. Fuel failures increase as indicated by an increase in plant area radiation monitors. High Radiation Containment Monitors, 1RIA-57 and 1RIA-58 indicate > 1.0 R/Hr in containment. The site remains in a **Site Area Emergency** classification.

Follow-Up Notifications are provided to the SEOC, Oconee County EOC, and Pickens County EOC at approximately 1050 (or at least 1 hour after the initial notification).

At 1100, 1RIA-57 indicates > 80 R/hr and 1RIA-58 indicates > 40 R/hr. Conditions exist at this time for a **General Emergency** classification.

After reviewing the Emergency Classification procedure, the EOF Director declares a **General Emergency** at 1115 based on a *Loss of any two barriers (Containment and Fuel Clad) and Potential Loss of the third barrier*. A Protective Action Recommendation to evacuate a two mile radius, evacuate five miles down wind, and shelter the remaining sectors is provided to SCEPD by the EOF Director. SCEPD, Oconee County EOC, and Pickens County EOC are notified of the **General Emergency** classification and Protective Action Recommendations at 1130 (or within 15 minutes after the event declaration). After reviewing the site's Protective Action Recommendations and current plant conditions, DHEC/SCEPD along with Oconee and Pickens Counties determine the Protective Action Recommendations that will be recommended to the Office of the Governor. SCEPD obtains Governor's order for evacuation and/or sheltering. SCEPD relays Governor's order to Oconee County and Pickens County. Within 15 minutes of this determination state and county personnel begin to implement the agreed on Protective Actions. The Alert and Notification System is activated (simulated at this time; however, actual activation may occur if required due to system problems during the Site Area Emergency).

SCEPD notifies North Carolina, Georgia and FEMA (simulated).

SCEPD coordinates evacuation, sheltering, and radiological monitoring; provides periodic press updates; coordinates and allocates state support resources; and simulates requesting Federal support as needed.

Site Evacuation of non-essential personnel is initiated by 1130 if it was not performed earlier. RP personnel prepare an evacuation plan that sends personnel to Keowee Elementary School due to the fact that a radiological release is in progress. With the radiological release in progress, vehicles located in the parking lots East of the plant would be unavailable for use. The OSC would arrange for transportation of affected personnel.

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TSC personnel may direct steaming the isolated 1B steam generator to the condenser to minimize the consequences of the offsite release; however, regulatory action would be required (implementation of the provisions of 10CFR50.54(x)). This action would route the majority of the steam being released to the condenser and provide OSC personnel with an opportunity to close the stuck MSRVs. Once the MSRVs are closed, the unmonitored radiological release would be stopped. The exercise is terminated by 1400 once the state and counties complete demonstration of applicable objectives.

APPENDIX 5

EVALUATED SCHOOLS

On May 24, 2000 evaluations were done, for objective 16, in Oconee and Pickens Counties.

The following is a complete listing of the evaluated schools:

OCONEE COUNTY SCHOOLS:

Seneca High School

Oconee Alternative School

Fred P. Hamilton Career Center

Tamassee Salem Elementary School

Walhalla High School

PICKENS COUNTY SCHOOLS:

Central Elementary School

Morrison Elementary School and Annex



