

official

MAY 17 1988

Duke Power Company
ATTN: Mr. H. B. Tucker, Vice President
Nuclear Production Department
422 South Church Street
Charlotte, NC 28242

Gentlemen:

SUBJECT: FEMA FINAL REPORT - MCGUIRE NUCLEAR STATION EMERGENCY EXERCISE OF
SEPTEMBER 11-12, 1987

Enclosed is a copy of the report by the Federal Emergency Management Agency (FEMA) on the McGuire Nuclear Station Emergency Exercise of September 11-12, 1987. As indicated in the report, FEMA identified no deficiencies; however, three areas of Lincoln County's response capability were determined to require corrective actions: (1) the Boger City Volunteer Fire Department needs additional training and practice in vehicle decontamination, (2) emergency workers should be provided information on maximum allowable dose, and (3) emergency medical personnel should be provided with self-reading dosimeters. In Section IV of the enclosed report, FEMA also identified 35 areas recommended for improvement.

We encourage you to assist the appropriate organizations in resolving the weaknesses identified by FEMA. Resolution of these items should be completed prior to the next full-scale emergency preparedness exercise.

We also encourage you to work closely with the State and counties in the development of a scenario for the next full-scale exercise that will effectively test the areas in which the above items were identified.

Your cooperation in this matter is appreciated.

Sincerely,

Douglas M. Collins, Chief
Emergency Preparedness and
Radiological Protection Branch
Division of Radiation Safety
and Safeguards

Enclosure:
FEMA Final Report

cc w/encl:
T. L. McConnell, Station Manager

bcc w/encl: (See page 2)

1/1
IE05

bcc w/encl:
NRC Resident Inspector
DRS Technical Assistant
D. Hood, NRR
Document Control Desk
State of North Carolina

RII
a. *[initials]*
JKreh
5/16/88

RII
[initials]
TDecker
5/16/88

RII
[initials]
TPeebles
5/16/88



Federal Emergency Management Agency

Washington, D.C. 20472

APR - 5 1988

MEMORANDUM FOR: J. Philip Stohr
Acting Director
Division of Radiation Protection
and Emergency Preparedness
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission

FROM: *Richard W. Krimm*
Richard W. Krimm
Assistant Associate Director
Office of Natural and Technological
Hazards Programs

SUBJECT: Exercise Report for the September 11 and 12, 1987,
Exercise of Offsite Radiological Emergency Preparedness
(REP) Plans for the McGuire Nuclear Power Station

Attached is a copy of the Exercise Report for the September 11 and 12, 1987, full participation joint exercise of the offsite REP plans for the McGuire Nuclear Power Station. The State of North Carolina and Mecklenburg, Catawba, Gaston, Iredell, and Lincoln Counties, all located in the 10-mile plume emergency planning zone (EPZ), participated during this exercise. This exercise report was prepared by the Region IV office staff of the Federal Emergency Management Agency (FEMA).

There were no deficiencies identified during this exercise. However, there are three areas requiring corrective actions, and several areas recommended for improvement. FEMA Region IV staff will furnish a copy of this exercise report to the State of North Carolina and will obtain a schedule of corrective actions from the State which addresses the areas requiring corrective action. Region IV will assure completion by the State of the necessary corrective actions.

Based upon the results of this exercise, there continues to be reasonable assurance that appropriate protective measures can be implemented by the offsite jurisdictions around the McGuire Nuclear Power Station to protect the health and safety of the public in the event of a radiological emergency. Therefore, the 44 CFR 350 approval granted on June 4, 1981, remains in effect.

If you should have any questions, please contact Dr. Joan Hock at 646-2860.

Attachment
As Stated

~~280129 0165~~

4



Federal Emergency Management Agency

Region IV
1371 Peachtree Street, NE, Suite 700
Atlanta, GA 30309

MCGUIRE NUCLEAR POWER STATION EXERCISE

Conducted on September 11-12, 1987

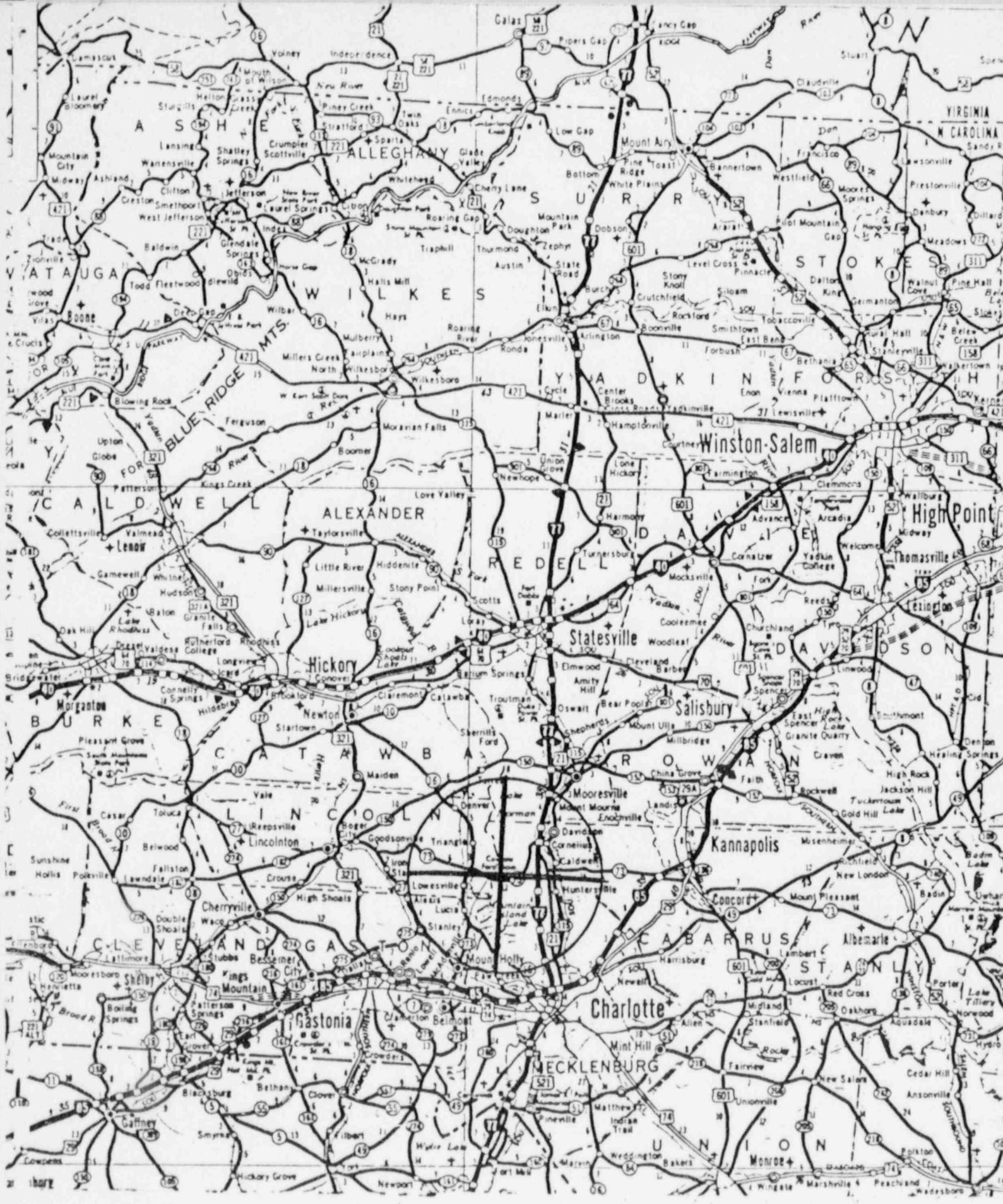
Exercise Report January 4, 1988

Utility: Duke Power Company
Plant Location: Cowans Ford Dam, North Carolina

Participating State and Local Governments:

State of North Carolina
Cabarrus County
Catawba County
Gaston County
Iredell County
Lincoln County
Mecklenburg County

~~280429 0165 79 pp~~



McGLURE VICINITY MAP

SCALE: 1 INCH = 13 MILES

TABLE OF CONTENTS

	<u>Page</u>
I. EXERCISE SUMMARY	1
II. DETAILED DISCUSSION	2
<u>State of North Carolina</u>	2
State Emergency Operations Center (SEOC)	2
State Emergency Response Team (SERT)	3
Joint Information Center	6
Crisis Management Center	8
Mobile Radiological Laboratory	8
Field Monitoring Teams	9
Lake Warning	11
Traffic Impediments	12
Area "E" Office	13
<u>Catawba County</u>	14
Emergency Operations Center (EOC)	14
Other Activities	15
<u>Cabarrus County</u>	16
Emergency Operations Center (EOC)	16
Other Activities	16
<u>Mecklenburg County</u>	18
Emergency Operations Center (EOC)	18
Other Activities	19
<u>Iredell County</u>	20
Emergency Operations Center (EOC)	20
Other Activities	22

TABLE OF CONTENTS
(Continued)

	<u>Page</u>
<u>Gaston County</u>	23
Emergency Operations Center (EOC)	23
Other Activities	24
<u>Lincoln County</u>	25
Emergency Operations Center (EOC)	25
Other Activities	26
<u>Ingestion Pathway Exercise</u>	31
III. SUMMARY LISTING OF INADEQUACIES	32
IV. SUMMARY LISTING OF AREAS RECOMMENDED FOR IMPROVEMENT	33
V. APPENDICES	37
A. Evaluator List and Assignments	
B. Exercise Objectives and Scenario	

I. EXERCISE SUMMARY

The full participation joint exercise of the off-site plans and preparedness for the McGuire Nuclear Power Station was conducted on September 11 and 12, 1987. The exercise was evaluated by a team of 27 Federal evaluators representing four Federal agencies. Upon termination of the Plume Exposure portion of the exercise, the scenario was moved forward in time and a partial Ingestion Pathway exercise was conducted and evaluated. The evaluation was based on 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".

The McGuire Nuclear Station, operated by the Duke Power Company, is located ten miles northwest of Charlotte, North Carolina, in Mecklenburg County. The plant has two pressurized water reactor units, each capable of producing 1,180 megawatts of electricity. The station is located just east of Cowan's Ford Dam on Lake Norman and is surrounded primarily by agricultural and recreational areas.

The State of North Carolina activated both its State Emergency Operations Center and Area "E" Office and deployed its State Emergency Response Team (SERT) to the SERT alternate headquarters in Statesville, North Carolina. Catawba, Gaston, Iredell, Lincoln and Mecklenburg Counties within the Plume Exposure EPZ, and Cabarrus County, a host county, all fully activated their EOCs and emergency response organizations. The Ingestion Pathway EPZ includes those counties listed and Alexander, Anson, Burke, Caldwell, Cleveland, Davidson, Davie, Forsyth, Montgomery, Rutherford, Rowan, Stanly, Union, Wilkes, Yadkin Counties in North Carolina, and Cherokee, Chester, Lancaster, and York Counties in South Carolina.

The exercise included the following major participants:

North Carolina Department of Crime Control and Public Safety,
Division of Emergency Management
North Carolina Department of Human Resources,
Radiation Protection Section

Duke Power Company

All objectives of the exercise were accomplished, and no NUREG-0654-FEMA-REP-1, Rev. 1 deficiencies were identified. There were, however, three areas requiring corrective action identified, and several areas were recommended for improvement. These requirements and recommendations are listed in Sections III and IV of this report.

II. DETAILED DISCUSSION

State of North Carolina

State Emergency Operations Center (SEOC) - Raleigh

An Alert was declared at 12:03 p.m. by the McGuire Nuclear Power Station, and by 12:25 p.m. the Division of Emergency Management members of the State Emergency Response Team (SERT) were mobilized and assembled in the EOC. After a briefing, the team was given instructions to depart at 12:30 p.m. for assignments in Statesville. Notification of other State agency SERT members began by 12:40 p.m. The remaining staff at the State EOC were given their assignments and the EOC was fully operational by 12:40 p.m. The objective to activate and staff the facility was clearly demonstrated. The objective to maintain staffing around the clock was met by presentation of an up-to-date roster and a discussion with the Operations Officer.

A representative from the Radiation Protection Service (RPS) was requested to report to EOC at 1:25 p.m. and reported by 1:59 p.m. During the early hours of the exercise some problems in maintaining communications with the RPS mobile van were encountered but overcome. The Assistant State Director stated these problems should be rectified when the new state-wide radio system is completed.

The staff at the State EOC functioned as a transition team until SERT was established in Statesville. The staff consisted of representatives from the North Carolina Division of Emergency Management, RPS, State Highway Patrol and amateur radio. Other State agency SERT members were sent to Statesville, and others were placed on stand-by in Raleigh.

The State EOC was effectively managed by the Assistant State Director who was assisted by a capable Operations Officer. The objective to demonstrate the ability to make decisions and coordinate decisions with others was met. Periodic briefings were held and appropriate staff were involved in decision-making. The State plan was readily available, as were other written procedures. All messages were logged, reproduced and distributed efficiently.

The State EOC was well organized and was equipped to support extended operations, if necessary.

The emergency classification level was posted and clearly visible as were status boards, which were kept up-to-date. All required maps were available, posted and utilized throughout the exercise. The objective to demonstrate adequacy of facility and displays to support emergency operations was met.

Communications in the EOC were well organized and controlled. While there was no dedicated line from the State EOC to the utility, there were, however, dedicated lines from the utility to the State Area "E" Office and to SERT Headquarters, as well as to the State Warning Point which is manned 24-hours a day. The ability to communicate with all appropriate locations was demonstrated.

The SERT team arrived in Statesville at approximately 3:30 p.m. and took over Direction and Control at approximately 5:00 p.m. The Governor also declared a proclamation of a State of Disaster at 5:00 p.m. All objectives at the State EOC were met.

Superior Items:

1. The dedication and knowledge displayed by the State EOC staff during this exercise.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement:

1. Explore alternate means to maintain radio communications with the RPS van while enroute.

State Emergency Response Team (SERT) - Statesville

The State activated its alternate SERT Headquarters in Statesville for this exercise. The SERT Headquarters was located in the auditorium of the Iredell County EOC and Agriculture Building, which met the requirements for the SERT staff and enabled a successful demonstration by the State to provide adequate facilities. The SERT staff adapted readily to the unfamiliar environment and promptly established operations.

Emergency classification levels were clearly posted, as well as appropriate maps and status boards. Each agency had available to them a State plan, which included an Operations Map. All required information was readily available, such as evacuation routes, relocation centers, access control points, radiological monitoring points, and population by sectors. The State successfully demonstrated the ability to provide adequate facilities and displays.

The North Carolina State Emergency Response Team began to deploy when notified of the Alert emergency classification. Duke Power declared an Alert at 12:03 p.m. and the State Warning Point contacted the State Division of Emergency Management at 12:06 p.m. The State Emergency Response Team Leader and Operations Officer were contacted via cellular phone (both in transit) and upon notification went to the SERT Headquarters in Statesville. Counties within the Plume Exposure Emergency Planning Zone were contacted and requested to activate their EOC's. Six Area Offices were notified and placed on standby. The States of South Carolina, Tennessee, Georgia, and Virginia were notified. The SERT Team Leader and Operations Officer maintained communications with the State EOC via car phone with radio as a back-up.

The SERT Team Leader and Operations Officer, while in transit, received notification from the State Office at 2:25 p.m. that the emergency classification had been escalated to a Site Area Emergency at 2:16 p.m. Other information received by the State Director, in transit, included notification that all county EOC's were fully activated and operational and they were coordinating the activation of the public alert and notification system.

Upon arrival at the SERT Headquarters, the SERT Team Leader received a phone call from the Duke Power Company advising that a company vice president had been in contact with the Governor and that the Nuclear Regulatory Commission (NRC) had arrived in Charlotte, North Carolina, and was being briefed on plant status. In addition to discussing emergency response procedures, they determined that special consideration should be given to public information dissemination in South Carolina because of the Pope's visit in Columbia and to prevent over-reaction by the public and possible impact on South Carolina personnel resources.

A direct communication link with the McGuire Nuclear Power Station was maintained throughout the exercise and was continuously monitored. All messages emanating from the utility to the SERT were verified.

At 5:00 p.m. all agencies except the RPS and the Civil Air Patrol (CAP) were operational. The counties requested that the SERT assume control due to the impact on county resources. The State Leader, however, announced appreciation of the emergency response team's ability to mobilize and set up in an expeditious fashion, but decided to delay assumption of control until RPS was fully operational. At 5:20 p.m. the SERT was fully operational and assumed control.

Twenty State agencies were represented at the SERT Headquarters. A County Commissioner from each of the effected counties was also present. One hundred and sixty individuals reported to the SERT Headquarters in support of emergency response efforts. All

participants were professional and dedicated in fulfilling their responsibilities. All agencies briefed incoming individuals of events and respective agency activities. Agencies coordinated activities and exchanged relevant information.

The SERT successfully demonstrated ability to mobilize staff, activate facilities, and maintain 24-hour staffing.

The SERT Leader was effectively in charge, as designated in the plan. Duke Power declared a General Emergency at the McGuire Nuclear Power Station at 5:20 p.m. The SERT Leader involved appropriate staff in utility briefings and decision-making meetings. The Operations Officer conducted periodic briefings to inform the staff of the current situation. He also involved each agency in the briefings. The Operations Officer was also responsible for coordinating message handling and distribution.

Dose assessment and protective action recommendations were generally excellent. RPS was well staffed with personnel who demonstrated their technical and procedural knowledge to deal with the emergency. The Department of Transportation and State Police demonstrated the knowledge and the availability of sufficient resources to implement an orderly evacuation.

Field data from McGuire survey teams were not transmitted from the State Mobile Lab to RPS at SERT. The radio used to monitor field teams' activities malfunctioned; however, communications were maintained via telephone.

The SERT Leader discussed operational and procedural problems with key individuals including priorities concerning the use of selective signaling equipment. He identified events, logistics and time factors which had a significant impact on county concurrence of EBS message content. These discussions resulted in positive recommendations for future plan updates addressing each issue.

For example, the Duke Power representatives were in a room separated from SERT activities requiring the SERT Leader to leave the EOC for utility briefings and updates and to coordinate critical information imperative to decision-making. After a briefing with the utility, the NRC, and RPS, the SERT Leader then had to return to the Operations Center to discuss the information with key staff members and the counties. If questions arose, the Leader had to return to the utility area to obtain answers only the utility could provide. The SERT Leader also had to be absent while efforts were being made to obtain concurrence on protective action recommendations with the counties because of the rapidly changing situation at McGuire.

Further delays were caused by uncertainty at Catawba County due to rapidly changing conditions. After final concurrence by the Catawba County Commissioner liaison at the SERT, planning and coordination of EBS and siren activation was initiated. Once concurrence was received, sirens and tone alert radios were activated and an instructional message was broadcast within the FEMA 15-minute requirement.

During the exercise the SERT Leader decided to make changes to the setup of the SERT to improve operations and to amend the plans to provide a reasonable time frame for concurrence by counties.

Superior Items:

1. Management of emergency operations.
2. RPS's technical knowledge and ability.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement:

1. Review and revise procedures on the use of selective signaling equipment and facsimile machines during the protective action recommendation concurrence process.
2. Limit the amount of time for a county to concur in EBS messages. Fifteen minutes is suggested.
3. Provide better communications between the mobile laboratory and field monitoring teams.

Joint Information Center - Charlotte

The Joint Information Center (JIC) was activated when the Duke Power News Director notified the Duke Power State/County Liaison Officer, who then notified the appropriate people. Activation and staffing were accomplished, using up-to-date call lists, following the Alert. The first staff person arrived at 1:15 p.m., and staffing was completed at 3:30 p.m.

Representatives from the North Carolina Division of Emergency Management, Duke Power, and Catawba, Gaston, Lincoln, and Mecklenburg Counties reported promptly. The Iredell County representative reported by 5:00 p.m.

The training and knowledge of all Public Information representatives appeared thorough and professional. The 24-hour staffing capability was demonstrated through presentation of a roster. Staff functions were ably supported by an outstanding clerical staff.

The Media Center facilities were excellent. Both the JIC staff and media representatives had adequate space, furniture, lighting, typewriters, telephones, and supplies. An excess of 200 media personnel could have been accommodated, and private areas were available to both JIC staff and media representatives. Adequate maps and displays were available and the center had back-up power which is tested monthly.

The Media Center used the telephone as the primary communication link to the SERT, county EOCs, Crisis Management Center, the utility, and other points. Back-up communications were provided by amateur radio. The JIC could make facsimile transmissions to the SERT, county EOCs, the Crisis Management Center, and the utility. An avoidable problem arose when the JIC transmitted the lengthy text of a press conference to the counties during the time when the SERT was attempting to obtain concurrence on protective action recommendations.

The JIC staff performed its functions properly. Media kits were available, containing proper background information. Six media briefings were held. They were accurate, complete and technical jargon was absent. Maps and displays were used effectively, and copies of news releases were available for distribution.

JIC Public Information Officers (PIO) did an excellent job of preparing and coordinating news releases. A news monitor section kept track of news the public was receiving and had procedures to correct errors.

The JIC also contained a well-organized rumor control section. Eight staff members, four each from Duke Power and the N.C. Division of Emergency Management, responded to calls and gave appropriate responses. The rumor control telephone number was publicized in press briefings and public information materials.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas For Further Improvement:

1. Review and revise procedures for transmitting hard-copy information to SERT and county EOCs to ensure that non-essential information is not transmitted, and no information is transmitted during protective action decision making periods.

Crisis Management Center

The Crisis Management Center (CMC) was located in a new facility. It housed the Duke Power Crisis Management Group, State liaison representatives and representatives from the U.S. Nuclear Regulatory Commission.

The facility was outstanding in its design, equipment and arrangement. There were sufficient data boards for all to see plant status and field team readings and locations. The State had four representatives at the CMC.

The State used the DEM radio network for primary communication and commercial land line as back up. No problems were observed with this system. All communication objectives were met.

The State Liaison to the Division of Emergency Management reported directly to the SERT Team Leader. The N.C. State Liaison reported to the RPS Director at SERT. He handled all matters that dealt with off-site radiation control matters. The N.C. State Coordinator coordinated field team deployment and information. The utility team captain and State team captain were located in the mobile laboratory.

The new system, designed to facilitate coordination of reports from State and utility field monitoring teams, worked well.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement: None.

Mobile Radiological Laboratory

The State activated and deployed a mobile radiological monitoring laboratory from the Division of Facility Services, Radiation Protection Section, to demonstrate procedures and equipment for field sampling. The laboratory personnel were well organized, trained and knowledgeable in their specific assignments. The five member group included a team leader, communication specialist, instrument specialist, staff support assistant and a health physics TOREV member.

Proper procedures for checking supplies, equipment and communication systems were followed by the team leader before deployment of the field monitoring teams. Radio and phone communication procedures between the field teams, the EOC, and the utility were adequate. Reception was adequate at all field measuring locations. The staff demonstrated procedures for the identification and quantitative measurement of radioisotopes from

gamma ray spectra by using a 10 x 10 cm NaI(Tl) gamma scintillation spectrometer interfaced with an IBM computer which had spectrum stripping capability and data storage and retrieval. The procedures for preparation and measurement of air sample cartridges or filters were demonstrated although no actual measurements were performed.

Calculation of radiation levels at field monitoring locations was discussed and demonstrated by the team leader utilizing theoretical data obtained from the utility via the fax transmitting unit. Performance of the counter was demonstrated by using radioactive standards and check sources. Careful attention was given to overall counter performance. The calibration frequency and procedures were in accordance with those specified in the operating procedures section of the State emergency response plan.

Superior Items:

1. The five member radiological laboratory team was well organized, trained and worked effectively as a unit.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement: None.

Field Monitoring Teams

Field Team #1 - The field monitoring teams were activated and mobilized in a timely fashion. Procedures were in place to activate the field teams at any time. After the Alert declaration, a staff briefing was conducted. Equipment included high- and low-flow air samplers, a gasoline generator, and radiological instruments which had been calibrated recently. The equipment was checked and loaded into new 4-wheel drive vehicles.

The field monitoring teams and mobile laboratory were dispatched from Raleigh and assembled at the Pumpkin Center Fire Station.

The appropriate equipment and procedures for determining ambient radiation levels were demonstrated in a professional manner. Radiological Field Monitoring Team #1 also demonstrated the appropriate equipment and procedures for measurement of airborne radioiodine concentrations. The team also had the equipment to collect samples of soil, vegetation, water or milk. The team was able to follow the map and find the monitoring points, although there was some difficulty in finding roads on the outdated map.

Team #1 effectively communicated with the Mobile Field Laboratory at Pumpkin Center, although some "dead spots" did occur. Team #1 also had to relay some messages from Team #2 to the Mobile Field Laboratory.

Repeaters or a back-up radio were not available. The teams did have walkie-talkies for back-up, but these radios were not of sufficient power to reach the Mobile Field Laboratory.

At one location where the field team was positioned, the radiation level increased from background to 400 mR/hour in 15 minutes. The controller was not sure if he could make an interpolation of the readings to provide a build-up of the radiation levels (from 0-400) and had to inform Team #1, while they were taking an air sample, that their readings were now 400 mR/hr while minutes earlier they only had background radiation levels. The controllers should be allowed to interpolate these radiation levels to allow a gradual increase.

Superior Items:

1. The Radiological Field Monitoring Team #1 performed in a superior and professional manner.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement:

1. Provide more up-to-date maps for the field monitoring teams.
2. Provide repeaters or back-up radios to field teams.

Field Team #2 - Procedures used for radio communications between Field Team #2 and the mobile laboratory were concise and effective. Team #2 had very little difficulty finding it's assigned monitoring points. The team demonstrated correct procedures for measuring and reporting readings in several locations.

The dispatcher at the mobile laboratory kept the teams advised of the status of the plant and meteorological conditions.

Air sampling procedures were demonstrated which could easily detect 10⁻⁷ uc/cc of I-131 in the presence of noble gases. With one exception, instruments, dosimeters and air samplers had been recently calibrated and met ANSI standards and FEMA recommendations.

Exposure control was well demonstrated by this team by frequently checking their dosimeters and recording the readings on a pocket-size card. The card provided instructions concerning the required frequency and maximum mission exposure. Although Team #2 was near the plume centerline, they were able to complete a very important air sample and exit the plume without exceeding a 60 mR reading in a 400 mR/hr field.

The teams were instructed to take KI after a release was inevitable but were prepared to exercise independent judgment for this protective action. Team #2 was prepared to minimize instrument and personal contamination. Samples of filters were placed carefully in plastic bags while being handled by gloved fingers to avoid contamination.

Superior Items:

1. Field monitoring.
2. Excellent new four wheel drive vehicles have been provided to facilitate State field monitoring and environment sampling.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement: None.

Lake Warning

Initial warning of boaters on Lake Norman is provided by fixed sirens. North Carolina, however, also provides back-up warning. Duke Power Company, the North Carolina Wildlife Resources Commission (NCWRC) and Mecklenburg County all sent out teams to warn boaters on the lake.

Mecklenburg County dispatched a Mobile Command Center to coordinate their lake warning activities. The Command Center staff was knowledgeable and proficiently carried out their duties. While they dispatched one boat, they alerted a total of nine boats and two aircraft for lake warning activities.

Both the Mecklenburg County team and the NCWRC team had appropriate equipment for warning boaters and for radiological exposure control. Proper procedures were followed by both teams.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement: None.

Information/Warning Signs - Six public-access boat ramps near the McGuire Nuclear Station were visited. All six of these boat ramps had prominently displayed information/warning signs. The signs were identical, instructing boaters to leave the lake if they heard sirens or saw red flares. Further instructions listed three radio or T.V. stations to tune in for emergency broadcasts. The signs also indicated where planning brochures for McGuire Nuclear Station could be obtained.

Superior Items:

1. Information/warning signs at public-access boat ramps.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement: None.

Traffic Impediments

The ability of North Carolina to deal with traffic impediments was demonstrated by a simulated accident involving a dump truck and an automobile near SR-73 and SR-27. In the simulated accident a dump truck overturned and spilled several cubic yards of gravel onto a two-lane road, blocking passage. An automobile driver was injured in the traffic accident. It was learned later that he was a McGuire worker who had been contaminated during the plant mishap. At the time of the accident a full-scale evacuation was in progress around McGuire Nuclear Station. This accident blocked one of the main evacuation routes.

The accident was reported by a N.C. Highway Patrolman who was working traffic control in the area. The report was relayed to the Lincoln County EOC by the Highway Patrol Communications Station. Lincoln County dispatched an ambulance and a State DOT front-end loader. The ambulance arrived on the scene 2 minutes after the initial call from the Highway Patrolman on the scene, and the DOT equipment arrived 16 minutes after the ambulance. The Highway Patrolman had determined that radioactive material was present and had secured the area.

After the injured person had been removed from the scene, clearing efforts were simulated. It was estimated that clearing the road would have taken approximately 20 minutes.

The total time required to restore unrestricted traffic flow, based on actual times and estimated cleanup time, was one hour and 20 minutes from the time the reported accident was first called in.

The Highway Patrolman and DOT personnel appeared well qualified to carry out their assignments, and the time required to complete this operation appeared to be realistic.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement: None.

Area "E" Office

The Area "E" Office was located in the Lincoln County Courthouse basement. Office staffing was complete during the exercise and shift change procedures (relief by staff of either Area "D" or Area "F" Office) were described. Procedures and staff notification equipment in place would guarantee rapid activation during non-duty hours, and the facility was co-located with Lincoln County's 24-hour warning point. Communication was the primary function performed by this office.

Both office directors present during different phases of the exercise demonstrated full knowledge of procedures and an ability to coordinate internal operations consistent with the printed Area "E" SOPs, which were frequently consulted. Moreover, outstanding initiative was displayed by the relief manager in utilizing a third-level redundant system (State radio and landline) to maintain important information flow to the plume exposure pathway counties throughout a period in which transmission from SERT HQ was apparently delayed. Utilization of office staff was effective and efficient throughout the exercise.

The Area "E" Office facility was adequate. However, space may not be sufficient for the additional staff person planned.

Two recommendations from the preceding exercise report have been implemented with very positive results: 1. The Selective Signal was available and effectively brought the Area "E" Office into the utility/EOC/State loop during the critical period of the office's most important function, which is the transmittal of information to 10- and 50-mile counties prior to assumption of

control by SERT Headquarters. 2. The rapid hard-copy facsimile device which was added to the office's equipment brought confirmatory copies of material generated at all EOCs into the office within minutes. Other than a protracted period of continuous use by the JIC, no problems were encountered with the hard-copy device.

The Area "E" Office again demonstrated multiple redundancy in communications to all 10- and 50-mile EPZ counties. Primary and back-ups included State radio, Selective Signal, commercial landline, RAPICOM, REACT (amateur radio), and a landline PC-based communications system that enabled both CRT and hard-copy message transmission.

Superior Items:

1. Effective demonstration of multiple redundant means of communication.
2. Outstanding initiative in maintaining information flow to plume exposure EPZ counties.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement: None.

Catawba County

Emergency Operations Center (EOC)

The Catawba County EOC had good facilities and excellent communications resources. Activation and staffing of the EOC were timely. EOC management provided strong direction, good coordination and prompt decisions except for the concurrence on protective action recommendations. The staff was competent and all functional areas appeared to be above the average. More visible display maps, which highlight evacuation routes, traffic and access control points, decontamination and reception centers would enhance operations.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement:

1. Provide more highly visible maps with evacuation routes, TCP's, and other facilities.
2. Establish procedures to ensure prompt concurrence concerning protective actions.

Other Activities

Traffic Control - Traffic control points and road blocks were staffed by N.C. Highway Patrol personnel who were knowledgeable and well prepared. They were well versed in the use of radiological monitoring equipment and were well trained in general operational procedures.

Superior Items:

1. Performance of North Carolina Highway Patrol.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement: None.

Decontamination Points - Personnel observed at both decontamination points appeared to be well motivated and interested. Most knew the proper procedures for decontamination and for monitoring personnel and vehicles. Some of the personnel, however, would benefit from refresher training.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement:

1. Provide refresher training for emergency workers.

Relocation Center - The staffing was adequate. Staff included a Registered Nurse, radiological monitors, transportation and communications personnel, congregate care staff, and others. The facility was large, with extra rooms for shift personnel. Inventory in reserve included blankets, cots and other equipment for use in congregate care. Showers were available. Radios and T.V.'s were available for use in monitoring the emergency. Two

days of school food supplies were on hand and readily available. Proper procedures were demonstrated in radiological monitoring and registration of evacuees. Procedures for the decontamination site away from the facility and for transportation and medical problems were explained.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement: None.

Cabarrus County

Emergency Operations Center (EOC)

Cabarrus County, which serves as a host county for the plume exposure Emergency Planning Zone (EPZ), was responsible for setting up traffic control points, a roadblock and a congregate care center. The EOC staff efficiently coordinated the emergency services involved in this exercise.

The Cabarrus County EOC was activated using a written call list, and staff members efficiently handled their responsibilities. Communications were excellent and amateur radio provided back-up links with the communications center. This corrected an area recommended for improvement identified during the previous exercise. The EOC facility was adequate and had status boards, maps and emergency classification level signs necessary for efficient emergency operations.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement: None.

Other Activities

Monitoring and Decontamination - The facilities for monitoring and decontamination of personnel were located at the Relocation Centers. Procedures were adequately demonstrated by the Wyncoff Volunteer Fire Department. Fire department staff stated that they were notified to report to the center but not told to bring equipment with them. The EOC, after notification by the Red Cross, sent the necessary equipment to the Relocation Center. Despite this confusion, all procedures were adequately demonstrated.

The vehicle monitoring and decontamination facility was located at SR 1449 and SR 1394 in conjunction with a traffic control point. Monitoring and decontamination procedures were adequately demonstrated by the Pitt Volunteer Fire Department. The necessary equipment was demonstrated or displayed. Contaminated water would be held in earthen dams on each side of the road for later disposition. Staff indicated they could handle 35-40 vehicles per hour.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement:

1. Revise procedures to indicate the agency responsible for providing and transporting equipment to the monitoring and decontamination station.

Traffic Control Points - The four traffic control points evaluated were staffed by State Highway Patrolman, all of whom were knowledgeable about evacuation routes, reception centers, and procedures for charging and reading dosimeters. Each had the necessary equipment and a written SOP for the operation of his post.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement: None.

Relocation Center - The congregate care center was co-located with the reception center and included monitoring, decontamination and registration of evacuees.

The facility appeared adequate for the anticipated number of evacuees (approximately 1,100). It was located five miles beyond the EPZ. The primary center is the Northwest Cabarrus Middle School. Two additional facilities are available if needed. The local Red Cross has accepted responsibility for operation of the center for the first time. The staff adequately demonstrated all areas of operation including staffing, supply, feeding, and communications.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement: None.

Mecklenburg County

Emergency Operations Center (EOC)

The activation and staffing of the EOC was completed efficiently, within 45 minutes after the Alert was received from the utility. The EOC personnel showed enthusiasm and knowledge in carrying out their responsibilities. They took special care to demonstrate the improvements since the last exercise. Status boards, charts, and maps were effectively used, and periodic briefings were given to the staff. All exercise objectives were demonstrated.

Access to the EOC could have been better controlled. While I.D. badges with photographs were issued to the people in the EOC, no one monitored the people going in and out of the EOC. The main operational post was located too close to the door. Noise levels in the EOC were excessive because of the large number of agency representatives present.

After the SERT assumed control of the exercise, there was considerable delay and confusion in receiving official instructions. However, the EOC personnel took appropriate actions on their own initiative. The EOC was located outside the plume exposure EPZ. Facilities were very good and included facsimile and copy machines and a personal computer. Communication support was outstanding in terms of equipment and operators. The Mobile Command Post and high-power radios were very useful.

Alert and notification of the public was demonstrated by a siren activation and EBS broadcast. The EOC also demonstrated its capability to evacuate disabled people in the EPZ. Personnel demonstrated their knowledge of permanent and self-reading dosimeters and procedures for the issuance of potassium iodine (KI). Procedures for the distribution of dosimeters and record keeping were not demonstrated.

Superior Items:

1. Facilities and communication equipment are outstanding.
2. EOC staff were well trained and enthusiastic.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement:

1. Reduce overcrowding and noise levels in the EOC.
2. Control access to the EOC.
3. Move the operations desk away from the main door to the EOC.

Other Activities

Mecklenburg County field activities were activated and staffed promptly. Communications between field personnel and support agencies were outstanding, due principally to the use of the Mobile Command and Control Post vehicle maintained by the County Police.

Siren activation demonstrated the ability to alert the public on the portion of Lake Norman within the plume exposure EPZ. County Police boats supplemented the Duke Power boats, which provided supplemental warning to all boaters and swimmers to leave the Lake.

Traffic control units were promptly activated at three locations by the State Highway and County Patrol personnel. All officers were radiologically trained and equipped with monitoring equipment. KI procedures were not included in their plans. Communication and back-up support were simulated.

Two of the traffic control points were primarily vehicle decontamination stations. These locations were equipped with fire department water storage vehicles. Vehicle decontamination was demonstrated at one location and simulated at the other. It took from 12 to 14 minutes to decontaminate one vehicle. Should a number of contaminated vehicles enter the evacuation routes, the small wash-down areas would create a traffic bottleneck.

Vehicle and personnel decontamination procedures at the UNCC relocation were excluded from this exercise due to construction on campus which blocked the entrance to the designated decontamination area. Radiological monitoring was demonstrated by the County Fire Department.

The UNCC mass care facility was capable of sheltering 5000 evacuees. Back-up shelter was available in nearby schools for an additional 15,000 people. Food stores and preparation and serving facilities were available for 15,000 meals before restocking is required. Cots and blankets for the sheltered people can be supplied within 24 hours. Separate accommodations

were available for special-needs individuals and mothers with babies. Management, and coordination between shelter participants, was outstanding. A real-life medical problem was encountered and resolved by the American Red Cross nurses and State Troopers.

Listings of mobility-impaired individuals were available.

Superior Items:

1. Mecklenburg Mobile Command and Control Post communications network.
2. Law enforcement coordination and support.
3. Initiation of warning procedures at Lake Norman.
4. Radiological training and availability of monitoring equipment.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement:

1. Develop procedures to expand decontamination locations to alleviate potential traffic bottlenecks.
2. Train emergency workers in the lake area regarding the policy and procedures for the issuance of KI.
3. Install radio equipment on Duke Power and County Police boats to enable them to communicate directly with one another.
4. As appropriate, include procedures for the use of KI for traffic control personnel.

Iredell County

Emergency Operations Center (EOC)

The Iredell County EOC was well suited to support emergency operations and was effectively managed by the Emergency Management Coordinator. The Coordinator held frequent briefings, and discussed actions with appropriate staff. Access to the EOC was controlled by County Sheriff's Deputies. The Board of County Commissioners were represented during the entire exercise and were advised by the Emergency Management Coordinator when important decisions were made.

Communications systems were adequate. They included the Selective Signal telephone to the utility, radios and sufficient commercial telephones. The ring-down telephone, however, was not located in the EOC because the SERT had taken over the space they would normally occupy.

The facility was activated promptly, using an up-to-date call list. The Emergency Management Coordinator decided to minimally activate the EOC at the Alert level; other emergency workers were placed on standby until the situation escalated.

The Iredell County EOC staff demonstrated its ability to deal with impediments to evacuation by planning alternate routes for evacuation traffic in response to a bridge collapse and the closure of the interstate. The staff also planned a response to an accident involving a school bus and a gasoline truck under these conditions.

There was an adequate supply of dosimetry and EOC staff appeared knowledgeable of its use. The dosimetry packages contained standard operating procedures for their use.

The coordination of public alerting and the issuance of an EBS message appeared cumbersome. The draft message was faxed to all the EOC's for concurrence. After concurrence was received, Mecklenburg County gave a countdown for the siren activation and EBS broadcast. The activation of the public alert and notification system was within the required time frame.

Following the declaration of a General Emergency by the utility, the Media Center chose to send a 23-page fax to all local EOC's. At the same time, the SERT was attempting to send a draft EBS message out for concurrence. Iredell County did not receive the draft message until a runner was sent to the SERT to obtain copies of the message.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement:

1. Improve concurrence procedures for EBS messages.
2. Place a drop for the ring-down line in the alternate County EOC.

Other Activities

School Evacuation - Ten school buses, to be driven by school staff, were available to evacuate the Mt. Mulrue Elementary School. The County EOC instructed the school principal by commercial telephone to evacuate students in accordance with existing plans. One bus and one class of students were involved in a token evacuation during this exercise. Each student was appropriately tagged.

All parents were sent a letter from the school principal informing them of the possible need for evacuation in the event of an accident at the McGuire plant and that contingency plans had been developed. The Standard Operating Procedures (SOP) contained detailed instructions for the school staff. Because the buses do not have 2-way radio communications, a maintenance vehicle, which was equipped with a radio, would provide communications for the bus convoy. The principal and the county representative were knowledgeable of their duties in the event of an emergency.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement: None.

Relocation Center - South Iredell High School was recently designated as a reception center and shelter. Its capacity was 3,370. Two radiological monitoring teams were on hand and well-trained. Standard ARC forms were used for registration. Cots, blankets, and food for protracted operations were on hand. However, those in charge stated that procurement of these items was possible from sources only 12 miles away from the shelter.

The Shelter Director and staff were alert and enthusiastic about their emergency assignments and used the written SOP. All were trained in shelter management. Seventy persons were assigned from the County Welfare Office and were available for 24-hour operations. The facilities and staff training were adequate. Emergency medical service was provided by trained emergency medical teams, composed largely of volunteers.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement: None.

Traffic and Access Control Points - Five traffic control points were evaluated. Typically, each point was manned by one county policeman and one State Patrolman. Both State police and county police performed their assigned tasks well. A State Patrol vehicle checked access control points and advised them of the current situation every 30 minutes. Radio communications were effective. Use of radiological instruments was also demonstrated. County police were not equipped with needed dosimetry, but were able to use State Patrol dosimeters.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement:

1. Revise procedures for issuance of dosimetry.

Gaston County

Emergency Operations Center (EOC)

The Gaston County Emergency Operations Center (EOC) was staffed quickly and effectively. It was fully operational at 12:45 p.m. All significant offices and agencies were represented. The staff was well prepared and organized. Most had plans access to them. Even the new people on the staff appeared to understand their responsibilities and performed well.

The staff was lead effectively by the County Emergency Management Director who kept them informed on a continuing basis and encouraged participation in all decision-making. Messages were read to all the participants and copies were available in a convenient location.

Internal county communications systems worked well. Difficulties in communicating with the SERT and the McGuire Plant were encountered. Messages were frequently delayed and difficult to understand. The communications personnel incorrectly transcribed at least two messages from the utility which resulted in misreporting of technical information. The source of the problem was the unfamiliarity of the communications staff with technical terminology used by the utility.

The EOC itself was an excellent facility that met all requirements. The only equipment problem arose in connection with the highway patrol's reliance on "walkie-talkies", which did not have sufficient range.

The staff understood, and was prepared to follow, all coordination requirements effectively; however, delays in the concurrence process with the other counties hindered their activities. An unconfirmed report of General Emergency and a delay in communications prompted a decision to evacuate Zones R and S before recommendations for evacuation were received.

All public alerting activities went smoothly once all counties had concurred with the EBS message.

Superior Items:

1. EOC staff knowledge and skills.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement:

1. Provide additional training in technical terminology.
2. Decisions to take actions should be based upon information received from an authorized source.

Other Activities

Six field activities were evaluated: five traffic control points (TCP's), and one decontamination facility and relocation center. No deficiencies were identified during the exercise.

All personnel were extremely knowledgeable of their duties and demonstrated the necessary procedures to perform their responsibilities.

Superior Items:

1. Shelter operations at the South Point High School, and the Public Safety officials.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement: None.

Lincoln County

Emergency Operations Center (EOC)

The Lincoln County EOC staff, consisting of over 20 members, participated on both the 11th and 12th of September. The staff exhibited a thorough knowledge of the county plan and procedures. They were a cooperative team and worked effectively together. The exercise objectives were met and a corrective action from the previous exercise was accomplished.

Two County Commissioners and the County Manager attended the entire exercise. All organizations were represented by responsible officials and displayed back-up rosters.

Lincoln County was fully staffed on the 11th by 12:55 p.m., which was 40 minutes after the Alert and well within the time limit required by their plan. Upon staffing, the County Director gave a briefing of the incident. The EOC staff included two County Commissioners, the Sheriff and other agency chiefs from the various county agencies participating. 24-hour staffing capability was demonstrated by presentation of a roster. The EOC was set up in horse shoe fashion with 15 telephones placed on the work tables, which corrected a problem identified during the previous exercise.

Siren/EBS warnings were coordinated with Mecklenburg County and SERT. Each time the sirens and ERS were activated, emergency vehicles were dispatched to provide back-up notification for the area.

The County Emergency Management Director made recommendations to the Chairman of the County Commissioners and the County Manager who coordinated the recommendations with appropriate organizations and then made the decisions. This method proved to be very effective.

The facility was adequate to support emergency operations. Twelve wall charts were prominently displayed and kept current. Although more space would be an asset, the space was adequate, and noise did not interfere with operations.

A list was available indicating those residents with special evacuation needs. Mental Health and the Council on Aging coordinated activities concerning these individuals.

Emergency workers were furnished permanent record devices (TLD's), as well as pocket dosimeters and chargers. All emergency workers present at the EOC (Highway Troopers, Sheriff's Office, Lincolnton Police Department, and Lincolnton Fire Department personnel) questioned were familiar with the dosimeters and their use.

Superior Items:

1. Attitude, cooperation, spirit of EOC personnel.
2. Interest shown by elected officials.
3. Communications capability, primary and back-up, including RACES.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement:

1. Install an additional facsimile machine to allow for the simultaneous transmission and receipt of messages.
2. Adopt the Phonetic Alphabet for all voice communication regarding sector identification.
3. Ensure that all messages begin and end with, "This Is An Exercise Message".

Other Activities

Traffic Control and Decontamination - Four traffic control points were observed in this exercise. One was a roadblock, two were for direction of traffic to decontamination centers, and the last was for direction of traffic to shelters. All four were staffed by the State Highway Patrol, and two were also staffed by the Lincoln County Sheriff's Department. The State Highway Patrol and the Sheriff's Department at the traffic and access control points demonstrated that they knew the evacuation routes, their assignments, their capabilities for communication with the local and State EOCs, and the source of tow trucks if needed. The State Highway Patrol knew the procedures for allowing the entry of people into controlled areas and presented the forms and equipment they would provide for such entry. The Lincoln County Sheriff's Department knew that they were there to assist the State Highway Patrol.

Two decontamination stations were observed, one operated by the Pumpkin Center V.F.D. and one operated by the Boger City V.F.D. The Pumpkin Center V.F.D. had the proper equipment, demonstrated the procedures for monitoring contaminated vehicles, kept potentially contaminated vehicles isolated, and knew how to dispose of radioactive waste.

The Boger City V.F.D. procedures did not provide for a thorough monitoring of vehicles. The radiological monitors stated that they would not monitor the inside of a vehicle, and if traffic were badly backed-up, they would only monitor the air filter. Proper procedures were not followed to prevent contamination. They did not have a method for isolating contaminated vehicles from uncontaminated people. (O.4.b.)

Each emergency worker in the field had the proper equipment for exposure control and followed proper procedures with respect to recording the readings. However, there was a great variety of opinion with respect to the acceptable maximum dose allowed without authorization. (K.4.)

Deficiencies: None.

Areas Requiring Corrective Actions:

1. O.4.b. - The Boger City V.F.D. needs additional training and practice in vehicle decontamination functions.
2. K.4. - Emergency workers should be provided maximum allowable dose information.

Areas Recommended for Improvement: None.

School Evacuation - The Catawba Springs Elementary School evacuation demonstration involved the loading of school children onto their school buses within five to ten minutes of the notice to evacuate. The principal announced to the school that an evacuation had been ordered and that teachers and children should prepare to evacuate. He then ordered an evacuation on a grade-by-grade basis. The loading of the school children onto buses was orderly. Teachers and children were assigned by grades to specific buses. The demonstration ended when all the buses were full.

The school also demonstrated the ability to communicate with the School Superintendent's Office. However, the message received in the school's office on the tone-alert monitor was unclear; it was difficult to hear. A back-up call by the Superintendent's Office was made to verify the message.

While nothing else was actually demonstrated, the school principal was well aware of the procedures to be followed regarding verification of messages; calling in the regular bus drivers; methods for assuring that all students were accounted for; the location of the shelter to which he would direct th.

drivers; the availability of traffic control at his school; and what information had been provided to parents. Further, the procedures to follow are included in a school emergency response plan.

The bus drivers were not provided with maps to direct them to their shelter. While the buses are to follow each other, and the shelter is apparently within 8 to 10 miles, a map for each driver would provide additional guidance. Although parents had been informed previously by the schools and power company in letters and brochures, after the evacuation of the school it might be desirable to leave a message at the school regarding the shelter location.

Conversations with the School Superintendent and Emergency Management Coordinator at the Lincoln County EOC indicated their knowledge of procedures to be followed in the event of a school evacuation. They stated that sufficient buses were available to take care of the public schools and private schools (day care centers) in the EPZ, as long as high school students who drive to school are permitted to drive their cars to the shelters.

In sum, the organizational ability and necessary resources to effect an orderly evacuation of the schools within the plume EPZ are available in Lincoln County.

Superior Items:

1. The school was very well organized in the loading of the children onto the buses.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement:

1. Provide a better means of notifying schools of protective actions.
2. Provide information regarding protective actions taken to parents calling schools.
3. Provide bus drivers with evacuation route maps.

Reception and Congregate Care - Procedures for registering evacuees at the Lincolnton Jr. High School shelter were efficient. The procedure for checking individuals for contamination was followed very thoroughly in the two instances observed, including checking the soles of shoes. Available

equipment was adequate and probes were covered. Although procedures for personnel decontamination were not demonstrated, except for the repeat monitoring after decontamination, the shelter representative described in detail the process that would be followed in personnel decontamination.

Those organizations listed in the county plan, and others, opened and staffed the shelter. All members of the shelter staff had received shelter management training. A 24-hour staffing capability existed.

The shelter certainly would have been able to provide food for evacuees (they will use the school cafeteria, if need be), health care, and general counseling. There were provisions for keeping the evacuees informed of events in the EPZ. The shelter had adequate communications with the EOC. The Shelter Manager (who is the school principal) was not aware that according to the plan 2,075 evacuees could be accommodated. She indicated that 200 could be comfortably accommodated in the gym and others in the classrooms. School enrollment is 725 and all can be assembled in the gym. If the facility had reached its limit, the Shelter Manager indicated she would inform the EOC.

Finally, this facility was not accessible to handicapped individuals.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement:

1. Reassess the capacity of the shelter with the school principal's participation.
2. Provide access for the handicapped.

Medical Services - The medical services drill began when a Highway Patrolman at the simulated accident scene called in an accident with possible radioactive contamination. The Lincoln County Hospital Emergency Medical team arrived within ten minutes. The team dressed out, approached the accident scene, but then discovered the radiation monitor was left in the vehicle. After retrieving the instrument, the EM personnel monitored the patient and ascertained the location and level of some of the contamination. The team handled the patient as well as could be expected considering they had to remove the patient from the vehicle and place him on a back board. Additional

training is needed for EM personnel on monitoring techniques and contamination control. Upon departure from the site, the EM team notified the Lincoln County Hospital that they would arrive in about ten minutes. The EM personnel did not have self-reading dosimeters. (K.3.a.)

The hospital was not informed that the accident victim was contaminated until the ambulance left the scene. As a result, the hospital was not completely prepared for the patient's arrival. The patient was attended outside by a physician and EMT personnel until preparations were completed. The patient was then moved to the treatment room. The contaminated areas (lantern mantels) were discovered by the staff during monitoring, and clothing was removed. Because of a suspected back injury and need for x-rays and medical treatment, further decontamination was not pursued after removal of the mantels. The exercise controller, however, was not prepared to provide contamination levels to the hospital staff to pursue the decontamination activities.

Superior Items:

1. The hospital staff attitude and approach to the decontamination problem was very professional.

Deficiencies: None.

Areas Requiring Corrective Actions:

1. K.3.a. - Provide emergency medical personnel with required self-reading dosimeters.

Areas Recommended for Improvement:

1. Revise procedures to provide for hospital notification of accidents involving possible radioactive contamination at the same time the ambulance is dispatched.
2. Provide additional training for EMT personnel on monitoring techniques and contamination control.
3. Provide additional training for hospital personnel regarding decontamination procedures.

Ingestion Pathway Exercise - Partial Participation

All agencies designated in the State Plan were represented at the Ingestion Pathway tabletop exercise. Initial discussions by participants identified respective roles and responsibilities as outlined in the State Plan.

Critical areas that were discussed included: Land-use evaluations; on-going environmental sampling and analysis; pasture land and dairy animals; public information and instructions for protective actions; water supply; identification of types, locations, and volume of agricultural samples; 24-hour staffing; and communications.

Several areas were not discussed. These included embargos or quarantines of food, treatment of local fruits and vegetables, water concerns, rumor control, legal matters, and types of Federal assistance. When questioned about these areas, the participants responded satisfactorily.

Deficiencies: None.

Areas Requiring Corrective Actions: None.

Areas Recommended for Improvement:

1. Identify Ingestion Pathway Public Information responsibilities in the plan.

III. SUMMARY LISTING OF INADEQUACIES

<u>Facility or Activity</u>	<u>NUREG Item</u>	<u>Corrective Action</u>	<u>Scheduled Date of Completion</u>
-----------------------------	-------------------	--------------------------	-------------------------------------

Deficiencies

None

Areas Requiring Corrective Action

Lincoln
County

- | | |
|--------|--|
| O.4.b. | The Boger City V.F.D. needs additional training and practice in vehicle decontamination functions. |
| K.4. | Emergency workers should be provided maximum allowable dose information. |
| K.3.a. | Provide emergency medical personnel with required self-reading dosimeters. |

IV. SUMMARY LISTING OF AREAS RECOMMENDED
FOR IMPROVEMENT

Facility or
Activity

Areas Recommended for Improvement

SEOC

1. Explore alternate means to maintain radio communications with the RPS van while enroute.

SERT

1. Review and revise procedures on the use of selective signaling equipment and facsimile machines during the protective action recommendation concurrence process.
2. Limit the amount of time for a county to concur in EBS messages. Fifteen minutes is suggested.
3. Provide better communications between the mobile laboratory and field monitoring teams.

Joint
Information
Center

1. Review and revise procedures for transmitting hard-copy information to SERT and county EOCs to ensure that non-essential information is not transmitted, and no information is transmitted during protective action decision making periods.

Field
Monitoring
Team #1

1. Provide more up-to-date maps for the field monitoring teams.
2. Provide repeaters or back-up radios to field teams.

Catawba
County

1. Provide more highly visible maps with evacuation routes, TCP's, and other facilities.

Facility or
Activity

Areas Recommended for Improvement

Catawba
County
(Continued)

2. Establish procedures to ensure prompt concurrence concerning protective actions.
3. Provide refresher training for emergency workers.

Cabarrus
County

1. Revise procedures to indicate the agency responsible for providing and transporting equipment to the monitoring and decontamination station.

Mecklenburg
County

1. Reduce overcrowding and noise levels in the EOC.
2. Control access to the EOC.
3. Move the operations desk away from the main door to the EOC.
4. Develop procedures to expand decontamination locations to alleviate potential traffic bottlenecks.
5. Train emergency workers in the lake area regarding the policy and procedures for the issuance of KI.
6. Install radio equipment on Duke Power and County Police boats to enable them to communicate directly with one another.
7. As appropriate, include procedures for the use of KI for traffic control personnel.

Iredell
County

1. Improve concurrence procedures for EBS messages.
2. Place a drop for the ring-down line in the alternate County EOC.
3. Revise procedures for issuance of dosimetry.

Facility or
Activity

Areas Recommended for Improvement

Gaston
County

1. Provide additional training in technical terminology.
2. Decisions to take actions should be based upon information received from an authorized source.

Lincoln
County

1. Install an additional facsimile machine to allow for the simultaneous transmission and receipt of messages.
2. Adopt the Phonetic Alphabet for all voice communication regarding sector identification.
3. Ensure that all messages begin and end with, "This Is An Exercise Message".
4. Provide a better means of notifying schools of protective actions.
5. Provide information regarding protective actions taken to parents calling schools.
6. Provide bus drivers with evacuation route maps.
7. Reassess the capacity of the shelter with the school principal's participation.
8. Provide access for the handicapped.
9. Revise procedures to provide for hospital notification of accidents involving possible radioactive contamination at the same time the ambulance is dispatched.
10. Provide additional training for EMT personnel on monitoring techniques and contamination control.
11. Provide additional training for hospital personnel regarding decontamination procedures.

Facility or
Activity

Areas Recommended for Improvement

Ingestion
Pathway
Exercise

1. Identify Ingestion Pathway Public Information responsibilities in the plan.

V. APPENDICES

- A. Evaluator List and Assignments
- B. Exercise Objectives and Scenario

FEDERAL EVALUATOR ASSIGNMENTS
MCGUIRE NUCLEAR STATION EXERCISE
September 11-12, 1987

CHIEF EVALUATOR AND RAC CHAIRMAN
Glenn Woodard (FEMA)

STATE EMERGENCY OPERATIONS CENTER (EOC) - (RALEIGH)
Al Lookabaugh (FEMA)

STATE EMERGENCY RESPONSE TEAM (SERT) HEADQUARTERS - (STATESVILLE)
John Heard (FEMA)
Anna Hart (USDA)
Peter K. W. Chin (DOE)

MEDIA CENTER - (CHARLOTTE)
Tom Hawkins (FEMA)
Ed Hakala (FEMA)

CRISIS MANAGEMENT CENTER - (CHARLOTTE)
Frank Wilson (FEMA)

RADIOLOGICAL MOBILE LABORATORY - (PUMPKIN CENTER)
Walt Kisielewski (FEMA)

RADIOLOGICAL FIELD TEAMS - (PUMPKIN CENTER)
Fred Oleson (FEMA)
George Goforth (FEMA)

AREA "E" OFFICE - (LINCOLNTON)
Chris Saricks (FEMA)

MEDICAL ACTIVITIES
Brad Eichorst (DHHS/FDA)

CATAWBA COUNTY - (NEWTON)
Bill Chambers (FEMA)
Bill Leuders ** (FEMA)

GASTON COUNTY - (GASTONIA)
John Eley (FEMA)
Bill Beattie ** (FEMA)

IREDELL COUNTY - (STATESVILLE)
Larry Robertson (FEMA)
* John Devlin ** (FEMA)

LINCOLN COUNTY - (LINCOLNTON)

Josh Moore (FEMA)
* Margaret Singh (FEMA)

MECKLENBURG COUNTY - (CHARLOTTE)

Raj Sekar (FEMA)
Martha Willis ** (FEMA)

CABARRUS COUNTY - (CONCORD)

Bill Small (FEMA)
Tom Carroll (FEMA)

MOBILE EVALUATOR

Al Hall (DOT)

FEDERAL OBSERVERS

Chuck Wakamo (EPA)

- * School Evacuations in Iredell and Lincoln Counties scheduled for 11:00 a.m. on September 11th will be evaluated as listed below:

IREDELL COUNTY

John Devlin
Tim Dowd

LINCOLN COUNTY

Margaret Singh

- ** Lake Warning Activities scheduled for 2:30 p.m. on September 11th will be evaluated as listed below:

Bill Leuders
Bill Beattie
Martha Willis
John Devlin
Tim Dowd

MCGUIRE NUCLEAR STATION
EXERCISE OBJECTIVES
September 11-12, 1987

1. Demonstrate ability to mobilize staff and activate facilities promptly. (All) (1)
2. Demonstrate ability to fully staff facilities and maintain staffing around clock. (All) (2)
3. Demonstrate ability to make decisions and to coordinate those decisions and resulting emergency actions with adjoining counties and support agencies. (All) (3)
4. Demonstrate adequacy of facilities and displays to support emergency operations (All) (4).
5. Demonstrate ability to communicate with all appropriate locations, organizations and field personnel. (All) (5)
6. Demonstrate ability to assess recommendations from the McGuire plant and to determine appropriate protective measures, based on PAG's, evacuation time estimates and all other appropriate factors. (All minus Cabarrus) (10)
7. Demonstrate the ability to implement protective actions for ingestion pathway hazards. (State)(12)
8. Demonstrate ability to alert the public within the 10-mile EPZ and disseminate an initial instructional message within 15 minutes from the time the message is concurred in by all parties necessary. (All minus Cabarrus County) (13)
9. Demonstrate ability to formulate and distribute appropriate instructions to the public in a timely fashion. (All minus Cabarrus) (14).
10. Demonstrate the organizational ability and resources necessary to manage an orderly evacuation of all or part of the plume EPZ, to include the mobility impaired, and to control access to evacuated area(s). (All) (15)
11. Demonstrate the organizational ability and resources necessary to deal with impediments to evacuation, as inclement weather or traffic obstructions. (State)(16)

12. Demonstrate the organizational ability and resources necessary to effect an orderly evacuation of schools within the plume EPZ. (Lincoln, Iredell) (19)
13. Demonstrate the ability to continuously monitor and control emergency worker exposure. (All) (20)
14. Demonstrate the ability to make decisions, based on the situation; when or whether to distribute and issue KI to emergency workers and/or institutionalized persons. (All) (21)
15. Demonstrate the ability to provide advanced coordination of information to be released, to effect rumor control and be prepared to brief the media in a clear, accurate and timely manner. (All) (24,25,26)
16. Demonstrate adequacy of procedures for registration and radiological monitoring of evacuees. (All minus State) (27)
17. Demonstrate adequacy of facilities for mass care of evacuees. (All minus state) (28)
18. Demonstrate adequate equipment and procedures for vehicle decontamination stations. (All minus State) (29)
19. Demonstrate the ability to augment on-site medical and fire personnel and adequacy of ambulance facilities' and hospitals' procedures for handling contaminated injured individuals. (Mecklenburg on-site, Lincoln off-site) (30,31)
20. Demonstrate ability to estimate total population exposure. (State) (34)
21. To retest those response actions found deficient or inadequate during the last scheduled exercise. These items to be listed within the exercise instructions as special emphasis items. (Iredell, Mecklenburg)



North Carolina Department of Crime Control and Public Safety

James G. Martin, Governor
Joseph W. Dean, Secretary

Division of Emergency Management
116 W. Jones St., Raleigh, N. C. 27611
(919) 733-3867

June 26, 1987

Mr. Glenn C. Woodard, Chief
Natural and Technological Hazards Division
Federal Emergency Management Agency
Region IV
1371 Peachtree Street, NE
Atlanta, Georgia 30309

Dear Glenn:

Reference is made to letter from this Agency dated June 1, 1987 transmitting the exercise objectives for the September 11-12, 1987 McGuire Nuclear Station exercise.

Request the objectives listed below be added to the twenty-one submitted on June 1, 1987. The additional objectives are necessary because of expanded play by the State of North Carolina. These objectives also correspond to FEMA's August 5, 1983 memorandum titled "Procedural Policy in Radiological Emergency Preparedness Plan Reviews, Exercise Observations and Evaluations and Interim Findings".

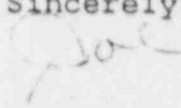
22. Demonstrate ability to mobilize and display field monitoring teams in a timely fashion (State) (6).
23. Demonstrate appropriate equipment and procedures for determining ambient radiation levels (State) (7).
24. Demonstrate appropriate equipment and procedures for measurement of airborne radioiodine concentrations as low as 10^{-7} uCi/cc in the presence of noble gases (State) (8).
25. Demonstrate the organizational ability and resources necessary to control access to an evacuated area (State) (17).
26. Demonstrate the organizational ability and resources necessary to effect an orderly evacuation of mobility-impaired individuals within the plume EPZ (All minus State and Cabarrus) (18).

Mr. Glenn C. Woodard
June 26, 1987
Page 2

27. Demonstrate ability to identify need for, request and obtain Federal Assistance (State) (32).

This agency continues to be appreciative of you and your staff's cooperation in making each of our exercises the very best.

Sincerely,


Joseph F. Myers,
Director

JFM/jgm

* LIMITED ACCESS *
 EXERCISE INSTRUCTIONS
 MCGUIRE NUCLEAR STATION
 SEPTEMBER 11-12, 1987

Annex F - Exercise Scenario and Schedule of Events

<u>DATE/TIME (EDST)</u> (Real	<u>Scenario)</u>	<u>(ITEM)</u>	<u>EVENTS</u>
Sept. 11 (Day 1) 1100		Non-Scenario	Lincoln and Iredell Counties execute school evacuation plan (Ref: FEMA Guidance Memo EV-2) Note: Controller injected scenario
1200	1200	1	Seismic alarm activates indicating a small earthquake at 0.09g acceleration of 10 second duration. Note: SERT Controller to provide earthquake report from National Earthquake Information Center listing intensity after receipt of ALERT.
1215	12:15	2	ALERT DECLARED Notification to offsite authorities. Alert and Notification plans to responding agencies implemented. Minimum staffing of State and County EOCs begins. Area E Office initiates State support interface between Mecklenburg, Gaston, Lincoln, Iredell, Catawba and Cabarrus Counties and the State EOC. SERT element deploys to alternate SERT Headquarters in Statesville, N. C.

LIMITED ACCESS

* This is a controlled access document distributed only on a need to know basis. It is generally limited to the Exercise Director, Controllers and Evaluators for control and evaluation of the exercise.

<u>DATE/TIME (EDST)</u> (Real	<u>(EDST)</u> Scenario)	<u>(ITEM)</u>	<u>EVENTS</u>
1330	1330	3	Seismic alarm activates again indicating an aftershock at 0.13 g acceleration. Note: SERT Controller to provide earthquake report at 1400 hours.
1345	1345	4	Leak from undetermined sources discovered in Unit 2 auxiliary feedwater pump room. Approximately 3 feet of water on floor.
1400	1400	5	Complete loss of Auxiliary feedwater (CA), Volume Control (NV), Component Cooling (KC) and Decay Heat Removal (ND) pumps and Power Operated Relief Valves (PORV).
1430	1430	6	SITE AREA EMERGENCY DECLARED Notification to offsite authorities. County EOCs fully staffed and in control. State support continues through Area E office. SERT element in route. Sirens, EBS and Lake Warning activated. Note: Simulate backup route alerting.
1600	1600	7	SERT Advance element on site. Counties petition the Governor to assume direction and control. Note: County Controllers to ensure message injection.
1630	1630	8	State assumes direction and control.

* 1700 SUSPEND EXERCISE UNTIL 0730 SEPTEMBER 12, 1987.

- Chief Controller will ensure SERT has assumed direction and control prior to suspension of exercise.

<u>DATE/TIME (EDST)</u>		<u>(ITEM)</u>	<u>EVENTS</u>
<u>(Real</u>	<u>Scenario)</u>		
(Sept. 12)	(Sept. 11)		
Day 2	Day 1		
0730	1700		Exercise continues. Time is adjusted to reflect 1700 hours Day 1. RPS field teams deploy along downwind zone measure background radiatic levels. Mobile lab in place.
0744	1714	9	Seismic alarm activates again indicating an aftershock at 0.13 g acceleration. NOTE: SERT Controller to provide earthquake report at 1744 hours.
0745	1715	10	Unit 2 experiences a complete loss of main feedwater (CF).
0815	1745	11	GENERAL EMERGENCY DECLARED. Notification to offsite authorities. Recommendation to offsite authorities is to evacuate zones A,B,C,M,N & L and to shelter zones D,E,F,G, H,I,J,K,O,P,Q,R,S. Note: This only requires Mecklenburg and Lincoln Counties to execute evacuation. Chief Controller will inject supplemental exercises at this time to maintain acceptable EOC activity for Gaston, Iredell, Catawba and Cabarrus Counties. SIMULATE: Siren and EBS activation, Lake Warning and route alerting.
0900	1830	12	Vehicle accident on N.C. Highway 73 blocks main evacuation route for Lincoln County. Involves Dept. of Transportation truck loaded with gravel and a private automobile. Note: Lincoln County Controller to inject message to State Highway Patrol EOC Representative of accident

DATE/TIME (EDST) (ITEM)
 (Real Scenario)

EVENTS

			to include an injured person in the automobile appearing to have radiological contamination. Dept. of Transportation and Lincoln County Emergency Medical Service to respond.
			Contaminated injured person transported to Lincoln County Hospital (Ref. FEMA Guidance Memo MS-1).
0930	1900	13	Steam generators boil dry. Primary system (NC) pressure begins to increase.
1000	1930	14	Containment Purge (VQ) valve fails to isolate on containment isolation alarm.
1030	2000	15	Reactor Core uncovers.
1045	2015	16	Plant updates its protective action recommendation to include zones D,G,H,I,J,K,O, P and R for evacuation and continue sheltering in zones E, F,Q and S. Sirens, EBS and backup route alerting activated. Simulate: Lake Warning.
1215	2145	17	Airborne radiological release made through stack vent. RPS field assessment teams deploy along projected plume path and verifies plume.
1245	2215	18	Containment Purge Valve (VQ) closed terminating release.
1300			Chief Controller may terminate State and County EOC play whenever evacuation, evaluations and exercise objectives have been completed. Exception: RPS will require additional time to complete plume tracking and formulation of radiological data to meet their objectives.

<u>DATE/TIME (EDST)</u> (Real	<u>(ITEM)</u> Scenario)	<u>EVENTS</u>
1300 -	1400	In-place agency critiques conducted.
1430 -	1600	Table Top Exercise (Partial Ingestion Pathway Exercise. See Annex E)