U. S. NUCLEAR REGULATORY COMMISSION

REGION II

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Licensee:	South Carolina Electric & Gas Company
Facility:	V. C. Summer Nuclear Station
Location:	RR 1 Box 64 Jenkinsville SC 29065
Dates:	July 14-18, 1997
Inspectors:	W. Sartor, Exercise Team Leader K. Clark, Public Affairs Officer J. Kreh, Radiation Specialist D. Jones, Senior Radiation Specialist
Approved by:	K. Barr, Chief, Plant Support Branch Division of Reactor Safety

Enclosure

EXECUTIVE SUMMARY

V. C. SUMMER NUCLEAR STATION
NRC Inspection Report No. 50-395/97-10

This routine, announced inspection involved the observation and evaluation of the biennial emergency preparedness exercise for the V. C. Summer Nuclear Station operated by South Carolina Gas & Electric Company (SCE&G). This plume exposure exercise included offsite partial participation by the State of South Carolina and full participation by the Risk Counties (Fairfield, Lexington, Newberry and Richland). The offsite participation was evaluated by the Federal Emergency Management Agency (FEMA). The exercise was conducted on July 16, 1997. This report summarizes the observations of the four-person NRC team that assessed the adequacy of the licensee's emergency preparedness program as the utility implemented its Emergency Plan and Procedures in response to the simulated accident scenario for the plume exposure exercise. The NRC evaluators concluded that the licensee successfully demonstrated its ability to implement the V.C. Summer Emergency Plan and Procedures in response to a simulated accident. Summarized observations from the key emergency response facilities follow:

Control Room Simulator (CRS)

The Shift Supervisor promptly recognized the emergency conditions, made the emergency classification, and assumed the responsibilities as the Interim Emergency Director (IED). The IED made the required notifications and performed emergency responsibilities until relieved by the Emergency Director in the Technical Support Center (TSC). The on-duty shift was effective in implementing the Emergency Operating Procedures.

Technical Support Center (TSC)

The TSC was staffed promptly and became operational after the IED's turnover briefing to the Emergency Director (ED). The TSC staff appeared to be knowledgeable concerning their emergency responsibilities. The good command and control by the ED in directing his staff provided for effective accident mitigation.

Operations Support Center (OSC)

The OSC was activated in a timely manner and provided in-plant teams as directed by the TSC. The teams were formed promptly, briefed and dispatched efficiently.

Emergency Operations Facility (EOF)

The EOF was adequately equipped and staffed to support the emergency response. The Offsite Emergency Coordinator (OEC) was effective in directing his staff in the interface with the offsite government agencies. Appropriate Protective Action Recommendations (PARs) were formulated and communicated.

News Media Center (NMC)

The NMC operated effectively in managing the coordination of information to the news media personnel with timely and informative press releases and news conferences.

Report Details

Summary of Exercise Events

This biennial emergency preparedness exercise included partial participation by the State of South Carolina and full participation by the associated Risk Counties. This plume exposure exercise was evaluated by an NRC inspection team and was conducted from 8:00 a.m. to 12:42 p.m. on July 16, 1997. Player critiques were conducted by the licensee's emergency response participants in the Emergency Response Facilities (ERFs) following termination of the exercise. The NRC exit meeting was conducted on July 18, 1997, following the licensee's summary to management of exercise results.

VI. Plant Support

P4. Staff Knowledge and Performance in Emergency Preparedness (EP)

P4.1 Exercise Scenario

a. Inspection Scope (82302)

The inspectors reviewed the exercise scenario to determine whether provisions had been made to test the integrated capability and a major portion of the basic elements of the licensee's plan.

b. Observations and Findings

The licensee submitted its scope and objectives for the V. C. Summer Nuclear Station Radiological Emergency Exercise to the NRC with a letter dated April 15, 1997. The completed scenario package was submitted with a letter dated May 15, 1997. A review of the package indicated that the scenario was adequate to exercise the onsite and offsite emergency organizations of the licensee and provided sufficient information to the state and local government agencies for their participation in the exercise.

c. Conclusion

The scenario developed for this exercise was effective for testing the integrated emergency response capability.

P4.2 Onsite Emergency Organization

a. Inspection Scope (82301)

The inspectors observed the functioning of the onsite emergency organization to determine whether the responsibilities for emergency response were defined and whether adequate staffing was available to respond to the simulated emergency.

b. Observations and Findings

The inspectors noted that the responsibilities for emergency response were clearly defined. The licensee used a four-team rotation for many of the emergency response organization (ERO) positions. The Shift Supervisor for the Control Room Simulator (CRS) assumed the responsibilities as the IED and performed designated responsibilities to include the call-out of personnel (the B Team for this exercise) to staff the emergency response facilities (ERFs). The predesignated personnel, most of whom had participated in a training drill the previous month, responded and staffed the ERFs.

c. Conclusion

Predesignated personnel with well-defined responsibilities promptly staffed the ERFs.

P4.3 Emergency Classification System

a. Inspection Scope (82301)

The inspectors observed selected emergency response personnel to determine whether a standard emergency classification and action level scheme was in use by the licensee.

b. Observation and Findings

The Emergency Plan Procedure EPP-001 provided the emergency action levels for the activation and implementation of the Emergency Plan. Table 4-1 of the procedure provided the Reactor Coolant System Initiating Conditions used for the Alert, Site Area Emergency (SAE), and General Emergency (GE) classifications for this exercise. The Alert was declared at 8:17 a.m., based on a major steamline break with significant primary-to-secondary leak rate. At 9:51 a.m., an SAE was declared due to a major steam line break with greater than 50 gpm primary-to-secondary leakage and indication of fuel damage. At 11:24 a.m., a GE was declared due to the loss of two fission product barriers with potential loss of the third barrier.

c. Conclusion

The licensee had a standard system for emergency classifications and used it effectively to classify the off-normal events promptly and correctly.

P4.4 Notification Methods and Procedures

a. Inspection Scope (82301)

The inspectors observed the licensee's notification of State and local governmental organizations and emergency personnel to determine whether timely and substantive emergency information was provided in accordance with procedures.

b. Observations and Findings

The initial emergency notification to the South Carolina State Warning Point and the Risk Counties was made by the IED using the VCS Emergency Information System (EIS). The EIS was a computerized system used to record, transfer and display data generated during an emergency. The remainder of notifications were made from the EOF using the EIS. A problem noted with the notification process was the poor quality of the faxes received by the offsite agencies.

All the notifications following the initial Alert notification were marked as follow-up messages. However, the licensee's notification procedure stated that a message to designated organizations following a change of plant status to a higher emergency classification is an initial notification. The inspector also noted that the communicator for the initial notification for the Alert and General Emergency did not record the name of the person receiving the initial notification. It appeared that the EIS would probably be more effective in the future as the learning curve improves.

c. Conclusion

The licensee demonstrated the ability to make initial and follow-up notifications to the States and counties.

P4.5 Emergency Communications

a. Inspection Scope (82301)

The inspectors observed the flow of communications within the emergency response organization and between the ERFs to determine whether provisions existed for the prompt transmission of emergency information.

b. Observation and Findings

The inspectors observed that the communications between the utility and offsite agencies and among the ERFs were generally effective for the prompt transmission of emergency information. Responsible personnel were kept informed of ongoing events and communicated effectively in performing accident mitigation and initiating protective actions for both onsite and offsite personnel.

c. Conclusion

Provisions existed for the prompt communications among principal response organizations to emergency personnel, and they were effectively used during the exercise to provide timely information and coordinate emergency response.

P4.6 Public Education and Information

a. Inspection Scope (82301)

The inspectors observed how information concerning the simulated emergency was made available to the public.

b. Observations and Findings

SCE&G established its NMC at the Nuclear Training Center. Information concerning the simulated accident was coordinated with the State of South Carolina and Risk Counties in providing information to the news media. The licensee provided timely press releases to the media concerning the simulated accident.

c. Conclusions

The NMC and its staff were activated and organized in a manner that provided for the dissemination of timely and accurate information to the public via the news media.

P4.7 Emergency Facilities and Equipment

a. Inspection Scope (82301)

The inspectors observed the activation, staffing, and operation of selected ERFs to determine whether adequate emergency facilities and equipment were available and maintained to support an emergency response.

b. Observations and Findings

Control Room Simulator - An inspector observed that the on-shift designated crew in the Simulator acted promptly to initiate the emergency response. The facility and equipment supported the crew as they responded to the simulated emergency.

Technical Support Center - The TSC was promptly activated with assigned emergency response personnel. The facility layout provided for the good communication between the ED and his staff. The ED provided periodic, informative briefings via a public-address system to the OSC, EOF, and ancillary areas of the TSC. The licensee's new EIS allowed computer-based activity logs to be shared with the OSC and EOF in real time.

Operations Support Center - The OSC was activated in accordance with procedures and in a timely manner. Congestion and noise were minimized and habitability of the facility was verified on a periodic basis. The facility and equipment supported OSC mission accomplishment. Team formation and briefings were reasonably timely.

Emergency Operations Facility - The EOF was located in the basement of the Nuclear Training Center. The facility was promptly staffed and activated with designated personnel by 9:00 a.m. The facility and equipment supported the staff well as they performed required functions and interacted with offsite officials.

c. Conclusion

The ERFs were organized, equipped, and maintained in a manner that provided for the emergency response.

P4.8 Protective Responses

a. Inspection Scope (82301)

The inspectors observed the protective actions implemented for onsite personnel and the protective action recommendations (PARs) provided by the licensee to the offsite agencies.

b. Observations and Findings

The ED implemented appropriate protective actions for onsite personnel following site accountability by simulating the evacuation of nonessential personnel to the Southern Holding Area. The OEC in the EOF communicated the PARs to the offsite government agencies within 15 minutes of the GE declaration.

c. Conclusion

The licensee demonstrated the ability to implement protective measures for onsite personnel and to make the required PARs for the protection of the public.

P4.9 Exercise Critique

a. Inspection Scope (82301)

The inspectors observed the facility critiques immediately following the exercise and portions of the controller/evaluator organization critique process to determine whether weaknesses noted in the licensee's emergency response organization were formally presented to licensee management.

b. Observations and Findings

The licensee conducted effective player critiques following exercise termination. No substantive issues were identified by the controller/evaluator staff. Improvement items focused on the EIS.

c. Conclusion

The controller/evaluator organization conducted an effective exercise critique.

P4.10 Miscellaneous EP Issues (82301)

(Closed) Inspection Follow-up Item (IFI) 50-395/95011-01: Exercise Weakness: Specific training of the CRS staff on the initiating EAL for the exercise prevented an objective demonstration of their ability to evaluate plant conditions and classify the simulated emergency. The inspectors reviewed the licensee's response, dated

October 5, 1995, to this exercise weakness. Procedure EPP-105, "Conduct of Drills and Exercises", was revised to specify (in Section 5.1.4) that "If the same Operations crew is participating in Training Drills conducted immediately prior to a Biennial Exercise, ensure that the Initiating Conditions are not similar." The inspectors verified that a training drill on June 18, 1997, used a scenario with initiating conditions that were distinct from those of the July 16, 1997, exercise (even though the drill and exercise did not utilize the same Operations crew in the CRS).

V. Management Meetings

X1 Exit Meeting Summary

The team leader presented the inspection summary to members of licensee management at the conclusion of the inspection on July 18, 1997. The summary indicated satisfactory performance. No proprietary information is contained in this report.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

S. Bailey, Systems Engineer Supervisor
L. Blue, Manager, Health Physics and Radwaste
L. Bouknight, Emergency Services Specialist
S. Byrne, General Manager, Nuclear Plant Operations
M. Counts, Emergency Services Specialist
S. Furstenberg, Manager, Maintenance Services
V. Kelley, Coordinator, Emergency Services
D. Lavigne, General Manager, Nuclear Support Services
K. Nettles, General Manager, Strategic Planning and Development
A. Rice, Manager, Licensing and Operator Experience
B. Schwartz, Emergency Services Specialist

INSPECTION PROCEDURES USED

IP 82301: Evaluation of Exercises for Power Reactors
IP 82302: Review of Exercise Objectives and Scenarios for Power Reactors

ITEMS OPENED, CLOSED, AND DISCUSSED

Closed

50-395/95011-01	IFI	Exercise Weakness: Specific training of the CRS staff on the initiating EAL for the exercise prevented an objective demonstration of their ability to evaluate plant conditions and classify the simulated emergency (Section P4.10)

Attachment (10 pages):
Scope and Objectives, Narrative Summary, and Scenario Timeline

SCOPE AND OBJECTIVES

On July 16, 1997, a Biennial Exercise will be conducted at the Virgil C. Summer Nuclear Station to evaluate the integrated capability of the Emergency Response Organization and a major portion of the Radiation Emergency Plan's basic elements. The simulated emergency will require mobilization and response of onsite and offsite Company personnel to evaluate their capability to respond in an actual emergency.

The exercise will involve partial participation of State and local government emergency personnel. This exercise will satisfy the Radiation Emergency Plan requirements for a semi-annual Health Physics Drill and a portion of the requirements for an annual Medical Drill.

The specific elements of the Virgil C. Summer Nuclear Station Radiation Emergency Plan that will be evaluated are:

- Accident Assessment and Classification
- Managerial Direction and Control
- Technical Support Center Operations
- Operations Support Center Operations
- Emergency Operations Facility Operations
- News Media Area Operations
- Site Evacuation, Personnel Accountability, and Access Control
- Public Alerting and Notification Procedures
- Radiological Monitoring and Dose Assessment

The specific objectives of the exercise are:

GENERAL OBJECTIVES

1. Demonstrate the ability of the staff to classify actual or simulated emergencies through the understanding of Emergency Action Levels (EAL) and Initiating Conditions.

2. Demonstrate the ability of the staff to activate the Radiation Emergency Plan and procedures.

3. Demonstrate the ability of the staff to respond to an emergency, make proper and timely notifications through each applicable emergency classification (Notification of Unusual Event, Alert, Site Area Emergency, General Emergency), and activate the emergency response facilities (ERF) in an efficient and timely manner.

4. Demonstrate the adequacy, effectiveness, and proper utilization of ERFs (Control Room, OSC, TSC, and EOF) and their emergency response equipment.

5. Demonstrate the ability of the staff to formulate and make Protective Action Recommendations (PAR) to protect station personnel and the general public, based on plant parameters, in-plant and out-of-plant surveys, and/or offsite field monitoring information.

6. Demonstrate the ability of the staff to evaluate the source term and make dose projections based on plant parameters and surveys.

7. Demonstrate the ability of the staff to respond to a medical emergency, including initial patient assessment, first aid, and transfer to Fairfield County Emergency Medical Services.

SPECIFIC FACILITY OBJECTIVES

1. Control Room

   a. Demonstrate the capability of the Control Room staff to classify emergencies in accordance with Emergency Action Levels and Initiating Conditions of each applicable emergency classification (Notification of Unusual Event, Alert, Site Area Emergency, or General Emergency).

   b. Demonstrate the capability of shift personnel to notify the State, local, and federal government in accordance with procedures.

   c. Demonstrate the capability of the Control Room staff to activate the Radiation Emergency Plan and make appropriate notifications to activate emergency response personnel during an emergency.

   d. Demonstrate the capability to communicate technical information to the Operations Support Center, Technical Support Center, Emergency Operation Facility, and the NRC, if applicable.

   e. Demonstrate the ability of the Control Room staff to recognize operational symptoms and parameters indicative of degrading plant conditions.

   f. Demonstrate the ability of the Shift Supervisor and/or TSC staff to make timely and effective decisions to mitigate the consequences of the event and clearly demonstrate control of the response effort.

   g. Demonstrate the ability of the Control Room staff to adequately turn over control of the event upon activation of the TSC.

   h. Demonstrate the ability to conduct evacuation and accountability and maintain accountability as necessary.

2. Operations Support Center (OSC)

   a. Demonstrate the capability to activate the OSC at the Alert or greater emergency classification.

   b. Demonstrate the capability of the OSC Supervisor to make timely and effective decisions and demonstrate clear control of the OSC and response teams.

   c. Demonstrate the capability of the OSC Supervisor and discipline supervisors to organize, brief, and dispatch repair and corrective action teams expeditiously.

   d. Demonstrate the capability of the health physics organization to maintain appropriate radiological controls throughout the course of the event.

   e. Demonstrate the ability of the OSC staff to communicate technical information with the TSC.

3. Technical Support Center (TSC)

   a. Demonstrate the capability to activate the TSC at the Alert or greater emergency classification.

   b. Demonstrate the ability of the Emergency Director to assume control of the event from the Interim Emergency Director.

   c. Demonstrate the capability of the Emergency Director to make timely and effective decisions and demonstrate clear control of the onsite emergency response effort.

   d. Demonstrate the ability of the TSC staff to communicate technical information with the Control Room, OSC, and EOF.

   e. Demonstrate the ability of the TSC staff to interact effectively with EOF staff.

   f. Demonstrate the ability to conduct evacuation and accountability and maintain accountability as necessary.

   g. Demonstrate that the TSC has adequate telecopying capability to transmit necessary information to the EOF throughout the course of the exercise.

   h. Demonstrate the ability of the TSC staff to formulate and make Protective Action Recommendations (PAR) to protect station personnel and the general public, if applicable, based on plant parameters, in-plant and out-of-plant surveys, and/or offsite field monitoring information.

4. Emergency Operations Facility (EOF)

   a. Demonstrate the capability to activate the EOF at the Site Area Emergency or greater classification.

   b. Demonstrate the ability of the EOF staff to notify the State, local, and federal government in accordance with established procedures.

   c. Demonstrate the ability of the EOF staff to communicate technical information to the TSC, the Joint Information Center, the NRC, and participating offsite agencies.

   d. Demonstrate the ability of the EOF Staff to evaluate the source term and make dose projections based on plant parameters, onsite or offsite field survey information, meteorological data, and other simulated information.

   e. Demonstrate the ability of the EOF staff to formulate and make Protective Action Recommendations (PAR) to protect station personnel and the general public, based on plant parameters, in-plant and out-of-plant surveys, and/or offsite field monitoring information.

5. Security

   a. Demonstrate the ability of the security force to control site and EOF access and site evacuation as directed by the Emergency Director and to assist with accountability of personnel when directed.

6. News Media Center

   a. Demonstrate disseminating timely and accurate information to the public via the News Media.

   b. Demonstrate the ability to respond to rumors that may be received by the public or the media.

   c. Demonstrate the ability to convey information in non-technical terms so that the information is readily understandable by the media.

7. Exercise Control and Evaluation

   a. Demonstrate the ability of exercise controllers to control the exercise in accordance with the prescribed scenario time line. (Note: If player actions will lead to significant deviation from the time line, controllers are authorized to interject contingency messages with approval from the Exercise Coordinator.)

   b. Demonstrate the ability of exercise controllers to provide scenario data and answer questions without prompting exercise players.

   c. Demonstrate the ability of controllers to adequately evaluate and critique exercise performance

Narrative Summary

The plant has been operating at 100% power for 76 days. It is a "B" Train Maintenance Week, meaning "A" Train components are in service. "B" Emergency Diesel Generator is inoperable due to scheduled maintenance. "C" Charging/SI Pump "B" Train breaker is offsite for refurbishment. There is a Tornado Watch in effect for Lexington and Newberry counties until 9:00 A.M.. The Auxiliary Boiler is running and supplying steam to the Auxiliary Building. Operations is preparing to commence a controlled shutdown due to a 100 gpd steam generator tube leak in "A" Steam Generator being detected on the previous shift. Leakage rate is slowly but steadily increasing.

This exercise scenario begins at about 8:00 A.M. with "A" Main Steam Isolation Valve closing inadvertently. This results in a **Reactor Trip** and Safety Injection (SI). The transient causes an unisolable steam leak to occur from "A" Steam Generator inside containment. **The Interim Emergency Director (IED) should declare an Alert classification due to a Major Steam Line Break with Significant Primary to Secondary Leakage**. The radiopagers are activated and emergency response personnel report to emergency response facilities.

The following equipment problems will complicate the reactor trip recovery and plant cooldown. "A" Charging/SI Pump trips due to over current. "B" Charging/SI Pump has abnormally high amps, caused by an impending bearing failure.
"C" Charging/SI Pump breaker cannot be racked up on "A" Train due to breaker misalignment. This should lead to a repair effort for Electrical Maintenance. There is an existing but initially unknown failure of Steam Dump System relay card IUY/00778-L, resulting in the inability to control Steam Dumps in the "STEAM PRESS" mode. At the time of the reactor trip, NSA Summing Amp TY-408M fails high, resulting in all Steam Dump valves going to full open. The Control Room should direct I&C Maintenance to troubleshoot and repair the Steam Dump Control while continuing the plant cooldown using the Steamline Power Operated Relief valves or manual operation of Steam Dump valves. A valid Loose Parts Monitor alarm for the Reactor Vessel Lower Plenum is received. A loose part will eventually lead to fuel failure.

The rupture disc for the Pressurizer Relief Tank (PRT) inside containment may rupture during this scenario, depending on the time it takes to terminate Safety Injection. This condition would normally require escalating to a Site Area Emergency classification. Controllers may inject a contingency message to stay in an Alert classification to allow for the State and local governments to exercise objectives for the Alert classification.

A second Loose Parts Monitor alarm is received followed by indication of fuel damage on RM-L1, Letdown Radiation Monitor, if available, and in chemistry samples. "A" Steam Generator has boiled dry resulting in a large differential pressure across the steam generator tubes. At approximately 9:30 A.M., tube leakage in "A" Steam Generator increases to 600 gpm. **The Emergency Director (ED) should declare a Site Area Emergency due to a Major Steam Line Break with Greater Than 50 gpm Primary to Secondary Leakage and Indication of Fuel Damage**. A recommendation is made to the State to activate the Early Warning Siren System (EWSS). Activation of the EWSS for this exercise will be simulated. The State and local governments are contacted to check road conditions and non-essential personnel are evacuated from the site. For this exercise, only non-essential personnel from the Protected Area will be evacuated to the parking lot. Evacuation of non-essential personnel outside the Protected Area will be simulated. Accountability of essential personnel remaining in the Protected Area is performed. Non-essential personnel evacuated to the parking lot are permitted to re-enter the Protected Area after accountability is completed.

The accountability process identifies a missing person. The OSC dispatches a Search and Rescue Team and Security checks the Security Computer System to locate the missing person. The person is found in the Diesel Generator Building. The person has suffered a heart attack. The Search and Rescue Team renders first aid and requests offsite assistance. Fairfield County EMS responds to the plant. Transport of the patient to Richland Memorial Hospital will be simulated.

"A" Steam Generator has been partially repressurized due to the steam generator tube leakage. At approximately 11:00 A.M., due to thermal and hydraulic stresses, an unisolable steam leak develops outside containment. This results in an unmonitored, unfiltered release of radioactive material to the environment from the Intermediate Building. **The ED should declare a General Emergency based on Loss of Two of Three Fission Product Barriers**. The EOF should make a Protective Action Recommendation to the State and recommend activating the EWSS.

The drill is terminated when utility, State and local government objectives are met.

Scenario Timeline

Initial Conditions:

- The plant has been operating at 100% power for 76 days.
- It is a "B" Train Maintenance Week.
- "B" Emergency Diesel Generator is inoperable due to scheduled maintenance.
- "C" Charging/SI Pump "B" Train breaker is offsite for refurbishment.
- The Auxiliary Boiler is running and supplying steam to the Auxiliary Building.
- A Tornado Watch is in effect for Lexington and Newberry counties until 9:00 A.M.
- Operations is making preparations to start a controlled shutdown due to "A" Steam Generator (S/G) developing a 100 gpd tube leak on the previous shift. The leakage rate is slowly but steadily increasing.

Sequence of Events:

0800	"A" MSIV closes inadvertently, resulting in **Reactor Trip** and Safety Injection (SI). An unisolable steam leak in containment from "A" S/G occurs. "A" Charging/SI Pump trips. Investigation reveals the Over Current Relay on the 1DA breaker cubicle is tripped. Electrical Maintenance should call (simulated) the Relay Department to come to the Station to investigate. "B" Charging/SI Pump has abnormally high amps, caused by an impending bearing failure. An Operator should be dispatched to investigate. The "C" Charging/SI Pump breaker is unable to be racked up on "A" Train due to breaker misalignment. Electricians should be dispatched to investigate. Steam Dump System Relay Card IUY/00778-L has failed, resulting in the inability to shift from the "T_{avg}" mode to the "STEAM PRESS" mode of Steam Dump control. NSA Summing Amp TY-408M fails high resulting in all Steam Dump valves fully opening. I&C should be dispatched to investigate.
~0805	**Emergency Declaration: The Interim Emergency Director (IED) should declare an Alert based on a Major Steam Line Break with Significant Primary to Secondary Leak Rate.**
~0810	Radiopagers are activated.
~0815	State and local governments are notified.
~0830	"A" Steam Generator boils dry.
0835	Loose Parts Monitor alarm on the Reactor Vessel Lower Plenum.

~0840 NRC is notified.

~0845 TSC and OSC are activated. ERDS is activated (simulated). EOF is staffed and may be activated.

0900 Loose Parts Monitor alarm on the Reactor Vessel Lower Plenum. A loose part enters the fuel and causes fuel damage. Letdown Radiation Monitor, RM-L1 alarms, if available. Containment radiation monitors begin to increase. Chemistry samples of reactor coolant, if taken, confirm fuel damage with 300 µCi/ml Dose Equivalent I-131 activity.

0930 The large pressure differential across the steam generator tubes causes a 600 gpm S/G tube leak. Readings on containment radiation monitors continue to increase.

~0935 **Emergency Declaration: ED should declare a Site Area Emergency based on a Major Steam Line Break with Greater Than 50 gpm Primary to Secondary Leakage and Indication of Fuel Damage.**

~0940 State and local governments are notified. A recommendation to activate the Early Warning Siren System (EWSS) is made. Activation of the EWSS during this exercise will be simulated.

~0945 After contacting the State and local governments to request the status of road conditions, non-essential personnel are evacuated from the site. For exercise purposes, only non-essential personnel in the Protected Area will be evacuated. They will be evacuated to the parking lot until accountability is completed.

The EOF is activated, if not already activated.

~1000 Accountability is completed and the process identifies a missing person. The OSC dispatches a Search and Rescue Team and Security checks the Security Computer System to attempt to locate the missing person.

Restoration of "STEAM PRESS" mode of Steam Dump control.

~1015 The person is found in the Diesel Generator Building. The person has suffered a heart attack. The Search and Rescue Team renders first aid and requests offsite assistance.

~1030 Fairfield County EMS responds to the p'

"C" Charging/SI Pump "A" Train breaker is repaired.

~1045 The ambulance leaves the Protected Area. Transport of the patient to Richland Memorial Hospital will be simulated.

1100 "A" S/G repressurizes due to the S/G tube rupture. Due to thermal and hydraulic stresses, an unisolable steam leak develops outside containment, upstream of steam trap isolation valve XVT002843A-MS. This results in an unmonitored, unfiltered release of radioactive material to the environment from the Intermediate Building.

~1105 **Emergency Declaration: ED should declare a General Emergency based on Loss of Two of Three Fission Product Barriers.**

~1110 The EOF notifies the State and local governments. The EOF should make a Protective Action Recommendation to evacuate the 2 mile radius and 5 miles downwind and shelter the remaining zones and to activate EWSS.

~1400 Drill Termination (could occur earlier if utility, State, and county objectives have been met).