



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

AUG 18 1992

Report No.: 50-395/92-11

Licensee: South Carolina Electric & Gas Company
Columbia, SC 29218

Docket No.: 50-395

License No.: NPF-12

Facility Name: Summer

Inspection Conducted: July 13-17, 1992

Inspector:

W. M. Sartor, Jr.

Aug 7 '92

Date Signed

Accompanying Personnel: A. Gooden
G. Weale

Approved by:

W. H. Rankin
W. H. Rankin, Chief
Emergency Preparedness Section
Radiological Protection and Emergency
Preparedness Branch

Aug. 10, 1992

Date Signed

SUMMARY

Scope:

This routine, announced inspection included observation and evaluation of the annual emergency response exercise. Emergency organization activities and responses were selectively observed in the Simulator Control Room, Technical Support Center, Operations Support Center, and Emergency Operations Facility. The inspection also included a review of the exercise objectives and scenario details as well as observation of the licensee's post-exercise critique activities. The exercise was an off-hours, licensee only exercise with the state and counties only taking notifications.

Results:

In the areas inspected, one non-cited violation (NCV) and two exercise weaknesses were identified. Overall the exercise was successful and the licensee demonstrated the capability of implementing its Emergency Plan and procedures to provide for the health and safety of the public during a radiological emergency. The NCV was for failing to adequately train emergency communicators in their group page call-in responsibilities. One exercise weakness addressed the failure to request off-site assistance in accordance with procedures and the failure to provide correct follow-up notification information. The other weakness was for delayed flow of information between emergency response personnel resulting in a Site Area Emergency declaration 16 minutes after the emergency action limit (EAL) had been met.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *W. Bacon, Associate Manager, Chemistry
- *K. Beale, Supervisor, Emergency Services
- *L. Blue, Manager, Corporate Health Physics and Environmental Programs
- *R. Clary, Manager, Steam Generator Project
- *C. Counts, Emergency Services Coordinator
- *D. Deardorff, Systems Engineer
- *J. Derrick, Systems Engineering Supervisor
- *J. Dinkins, Environmental Services Operations
- *A. Evans, Health Physics
- *C. Fielch, Operations Assistant
- *S. Fipps, Senior Engineer
- *D. Gentry, Associate Manager, Nuclear Security
- *W. Higgins, Acting Manager, Nuclear Licensing
- *M. Jordon, Health Physics Supervisor
- *D. McGlaufflin, Security Operations Coordinator
- *K. Nettles, General Manager Station Support
- *H. O'Quinn, Manager, Nuclear Plant Services
- *C. Price, Coordinator, Engineering Services
- *M. Quinton, General Manager, Engineering Services
- *J. Schafer, Health Physics Supervisor
- *P. Shultz, Staff Health Physicist
- *J. Skolds, Vice President, Nuclear Operations
- *T. Swift III, Health Physics
- *G. Taylor, General Manager, Nuclear Plant Operations
- *D. Warner, Manager, Core Engineering and Nuclear Computer Services
- *J. Wasieczko, Assistant Security Training Instructor
- *B. Williams, Manager, Operations

Other licensee employees contacted during this inspection included engineers, operators, mechanics, security force members, technicians, and administrative personnel.

NRC

- *D. Seymour

2. Exercise Scenario (82302)

The scenario for the emergency exercise was reviewed to determine that provisions had been made to test the integrated capability and a major portion of the basic elements existing within the licensee, state and local emergency plans and organization as required by 10 CFR 50.47(b)(14), 10 CFR 50, Appendix E, Paragraph IV.F and specific criteria in NUREG 0654, Section II.N.

The scenario developed for this exercise was adequate to exercise the onsite and offsite emergency organizations of the licensee for this utility only exercise. The extent of the state and local government participation was receipt of initial and follow-up notification messages. While no major problems with the scenario were identified during the review, an inconsistency with the data for the environmental monitoring teams became apparent during the exercise. The basis for the inconsistency was data based on a puff release from the "C" steam generator pressure operated release valve (PORV). The scenario projected this release to occur at 20:30 hours had incorporated it into the data for the environmental monitoring teams. As events played out during the exercise with the use of the simulator this release did not occur. On one occasion an unrealistic high radiation level was reported and caused some confusion before it was corrected by the drill controllers. The above inconsistencies did not detract from the overall performance of the licensee's emergency organization.

No violations or deviations were identified.

3. Assignment of Responsibility (82301)

This area was observed to determine that primary responsibilities for emergency response by the licensee had been specifically established and that adequate staff was available to respond to an emergency as required by 10 CFR 50.47(b)(1), 10 CFR 50, Appendix E, Paragraph IV.A, and specific criteria in NUREG 0654, Section II.A.

The inspectors observed that specific emergency assignments had been made for the licensee's emergency response organization and there were adequate personnel available to respond to the simulated emergency. The inspector observed that the emergency response facilities (ERFs) for this off-hours exercise were operational with specifically established responsibilities as follows:

- o Technical Support Center (TSC) - 48 minutes after the Alert classification

- Operational Support Center (OSC) - 57 minutes after the Alert classification
- Emergency Operations Facility (EOF) - 72 minutes after the Alert classification

The inspectors observed that the activation and operation of these ERFs appeared to be consistent with the licensee's approved procedures.

No violations or deviations were identified.

4. Onsite Emergency Organization (82301)

The licensee's onsite emergency organization was observed to determine that the responsibilities for emergency response are unambiguously defined, that adequate staffing was provided to insure initial facility accident response in key functional areas at all times, and that the interfaces were specified as required by 10 CFR 50.47(b)(2), 10 CFR 50, Appendix E, Paragraph IV.A, and specific criteria in NUREG 0654, Section II.B.

The "C" Shift was the training shift that provided the staffing for the Simulator Control Room. The shift supervisor assumed lead responsibilities for emergency response as the Interim Emergency Director with the declaration of the emergency classification. The initial staffing as observed for the exercise events was adequate to maintain reactor control, initiate emergency response organization call-in, and make required notifications. The call-in provided for mobilization of off-shift personnel and corporate assistance to augment the initial emergency organization. The interfaces between the onsite organization and offsite support agencies appeared to be adequately specified; however, demonstrated of this interface was not in accordance with procedures. The inspector noted the communicator needed assistance in locating the off-site support services phone number. The communicator then failed to include the location of the incident and status of the injured when requesting the assistance resources. It was also noted that Attachment IV to Emergency Plan Procedure 002 for requesting off-site emergency services was not completed. The above observations along with the misleading emergency description and plant condition status provided in the first follow-up message (See Paragraph 6) were identified as an exercise weakness.

Exercise Weakness 50-395/92-11-01: Requests for off-site assistance were not made in accordance with procedures and some follow-up communication information was incorrect. The inspector noted this exercise weakness resulted in a failure to fully demonstrated exercise objection 10 (See exercise object... attachment).

No violations or deviations were identified.

5. Emergency Classification System (82301)

This area was observed to determine that a standard emergency classification and action level scheme was in use by the nuclear facility licensee as required by 10 CFR 50.47(b)(4), 10 CFR 50, Appendix E, Paragraph IV.C, and specific criteria in NUREG 0654, Section II.D

Emergency Plan Procedure EPP-001 titled "Activation and Implementation of Emergency Plan" was used to promptly identify and properly classify the scenario simulated events. The Alert and Site Area Emergency (SAE) were timely and correct by procedure and as postulated by the scenario. A General Emergency was classified at 21:57 hours based on the loss of 2 of 3 fission product barriers with potential loss of the third barrier. Although this classification was not anticipated by the scenario, it was conservative, and not considered an issue.

No violations or deviations were identified.

6. Notification Methods and Procedures (82301)

This area was observed to determine that procedures had been established for notification by the licensee of State and local response organizations and emergency personnel, and that the content of initial and followup messages to response organizations has been established; and means to provide early notification to the populace within the plume exposure pathway have been established as required by 10 CFR 50.47(b)(5), 10 CFR 50, Appendix E, Paragraph IV.D and specific criteria in NUREG 0654, Section II.E.

An inspector observed that notification methods and procedures had been established to provide information concerning the simulated emergency conditions to Federal, State and local response organizations and to alert the licensee's augmented emergency response organizations. The initial notifications to State and designated county governments were made within 15 minutes following the classification of the emergency event. The first follow-up notification was made within the required one hour period, but it contained incorrect information. Specifically, the emergency

description/remarks section stated "aircraft crash on facility, no other change from initial report" and the plant condition section was marked as "stable". The initial emergency description had been "plane crash on facility affecting plant transformer. Loss offsite power to one train of safety busses. Personnel hurt with a fire in process. Also unrelated tube leak on Steam Generator." A more correct emergency description with the first follow-up would have indicated an unstable plant condition due to an ongoing steam generator tube rupture. It would have also noted that the fire caused by the plane crash was not out. The above observations were included in the exercise weaknesses previously identified in Paragraph 4.

During the course of this inspection but not directly a part of the exercise, the inspector observed a problem with the on shift fire protection officers who had responsibility as emergency communicators for the initial emergency organization. Specifically, on both occasions when the inspector asked how the licensee's off hours emergency response organization was notified to respond to the site he was provided incorrect or incomplete information. The requested information would have been locating the two group call-out numbers programmed into the telephone in the shift supervisor's office and explaining the initiation of the group pagers by dialing 999-999 for a real event. Awareness of the need for a callback from Security acknowledging the beeper activation was also desired. Section 8.1.1 of the licensee's Emergency Plan requires that persons with specific duties during an emergency receive additional training appropriate to their respective assignments. Contrary to the above, the licensee's additional training for communicators was not adequate for the assignment of group page initiation responsibilities based on the communicator's performance observed by the inspector. This apparent violation was discussed with licensee management. The inspector was aware of corrective action taken for the two communicators previously discussed and was informed of additional measures being taken to ensure other shift communicators would be able to initiate group page call-ins prior to assignment of shift responsibilities. This NRC identified violation is not being cited because criteria specified in Section VII.B of the NRC Enforcement Policy were satisfied.

NCV 50-395/92-11-02: Failure to adequately train emergency communicators for group-page call-in responsibilities.

7. Emergency Communications (82301)

This area was observed to determine that provisions existed for prompt communications among principal response organization and emergency personnel as required by 10 CFR 50.47(b)(6), 10 CFR 50, Appendix E,

Paragraph IV.E, and specific criteria in NUREG 0654, Section II.F.

The inspectors observed that provisions existed for prompt communications among the licensee's emergency response facilities and emergency organization. Although the provisions for communications appeared adequate, the flow of information between the emergency response facilities and personnel was a problem concerning the SAE declaration. Specifically, following the Alert declaration an inspector in the Technical Support (TSC) observed key personnel reviewing emergency action levels and being proactive to the emergency situation by verbalizing their awareness that if the current conditions were to also have a loss of offsite power the SAE emergency action level would be met. A few minutes later at 21:30 hours the offsite power supply was lost and shortly afterward noted on the TSC status board. The Emergency Director did not become aware of the power supply loss until 21:39 hours and he then promptly informed the offsite emergency coordinator (OEC) who had responsibility for emergency classification. The SAE was declared at 21:46 hours. Because key management had discussed the conditions for an upgrade, the 16 minutes between the EAL being met and the SAE being declared was excessive. The inspector identified this delayed flow of key information affecting emergency classification as an exercise weakness.

Exercise Weakness 50-395/92-11-03: Delayed flow of information between emergency response personnel resulted in SAE declaration 16 minutes after the EAL was met.

Additional communication problems affecting the activation of the offsite warning sirens were identified for corrective action by the licensee in their critique.

No violations or deviations were identified.

8. Emergency Facilities and Equipment (82301)

This area was observed to determine that adequate emergency facilities and equipment to support an emergency response were provided and maintained as required by 10 CFR 50.47(b)(8), 10 CFR 50, Appendix E, Paragraph IV.E and specific criteria in NUREG 0654, Section II.H.

The inspectors observed selected portions of the activation, staffing, and/or operation of the Simulator Control Room, Technical Support Center, Operational Support Center, and Emergency Operations Facility. No equipment problems were identified.

No violations or deviations were identified.

9. Accident Assessment (82301)

This area was observed to determine that adequate methods, systems and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use as required by 10 CFR 50.47(b)(9), 10 CFR 50, Appendix E, Paragraph IV.E, and specific criteria in NUREG 0654, Section II.I.

The accident assessment program includes both an engineering assessment of plant status and an assessment of radiological hazards to both onsite and offsite personnel resulting from the accident. During the exercise, the engineering accident assessment team functioned effectively in analyzing the plant status so as to make recommendations to the Emergency Director concerning mitigating actions to reduce damage to plant equipment, to prevent release of radioactive materials and to terminate the emergency condition. The inspector in the Simulator Control room noted that the balance of plant operator's persistence in getting permission to stop the turbine driven emergency feedwater pump limited the radioactive release via this unmonitored release path to seven minutes.

No violations or deviations were identified.

10. Protective Response (82301)

This area was observed to determine that guidelines for protective actions during the emergency, consistent with Federal guidance, are developed and in place, and protective actions for emergency workers, including evacuation of nonessential personnel, are implemented promptly as required by 10 CFR 50.47(b)(10), 10 CFR 50, Appendix E, Paragraph IV.E, and specific criteria in NUREG 0654, Section II.J.

An inspector verified the licensee had and used emergency procedures for formulating protective action recommendations for offsite populations within the 10 miles EPZ. The licensee's protective action recommendations were consistent with the EPA and other criteria and notifications were made to the appropriate State and local authorities within the 15 minute criteria. It was also noted that the licensee conducted a timely site accountability within the protected area.

No violations or deviations were identified.

11. Exercise Critique (82301)

The licensee's critique of the emergency exercise was observed to determine that deficiencies identified as a result of the exercise and weaknesses noted in the licensee's emergency response organization were formally presented to licensee management for corrective actions as required by 10 CFR 50.47(b)(14), 10 CFR 50, Appendix E, paragraph IV.E, and specific criteria in NUREG 0654, Section II.N.

The licensee conducted player critiques following the exercise termination. A formal licensee critique of the emergency exercise was held on July 17, 1992 with exercise controllers, key exercise participants, licensee management and an NRC person attending. Many but not all of the weakness or negative observations made by the inspection team during this exercise were presented. Followup of corrective actions taken by the licensee in response to their findings will be accomplished through subsequent NRC inspections.

No violations or deviations were identified.

12. Action on Previous Inspection Findings (92701)

Closed IFI 50-395/91-12-01: Review and take appropriate corrective action on improvement items that were identified in the areas of communications, status boards, and PAR assessment. The inspectors did not observe any OSC communications problems, poorly maintained status boards, or PAR assessment problems.

13. Exit Interview

The inspection scope and results were summarized on July 17, 1992, with those persons indicated in Paragraph 1. The inspector described the areas inspected and discussed in detail the inspection result listed below. The inspector also discussed the failure of the two emergency communicators to demonstrate their ability to properly initiate the group page call-in and identified it as a non-cited violation based on the corrective actions already taken and those to be taken to prevent recurrence. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

<u>Item Number</u>	<u>Description and Reference</u>
50-395/92-11-01	Exercise Weakness - Requests for off-site assistance were not made in accordance with procedures and some follow-up notification information was incorrect (Paragraph 4).
50-395/92-11-02	NCV - Failure to adequately train emergency communications for group page call in responsibilities (Paragraph 6).
50-395/92-11-03	Exercise Weakness - Delayed flow of information between emergency response personnel resulted in SAE declaration 16 minutes after the EAL was met (Paragraph 7).

Attachment:
Scope and Objectives and
Narrative Summary

VIRGIL C. SUMMER NUCLEAR STATION
SCOPE AND OBJECTIVES

On July 15, 1992, between the hours of 1800 and 2400, a Radiological Emergency Exercise will be conducted at the Virgil C. Summer Nuclear Station (VCSNS) to test the integrated capability of the emergency organizations and a major portion of the Emergency Plan's basic elements. The simulated emergency will require mobilization and response of on-site and off-site company personnel to verify their capability in an actual emergency.

The exercise will not require the full participation of local and state government emergency personnel. This is a utility-only exercise.

The specific elements of the VCSNS Radiation Emergency Plan which will be exercised include:

- Accident assessment and classification
- Managerial direction and control
- Technical Support Center operations
- Operations Support Center operations
- Emergency Operations Facility operations
- News Media Center operations (Utility only)
- Site evacuation, personnel accountability and access control
- Public alerting and notification procedures (simulated activation of the siren system)
- Radiological monitoring and dose assessment

The objectives of the Radiological Emergency Exercise for South Carolina Electric & Gas Company (SCE&G) personnel are:

1. Test the ability of Operations personnel to effectively assess and respond to an abnormal operating condition which may produce an off-site radioactive release.
2. Test the abilities of Health Physics and Environmental Monitoring personnel, operating under emergency conditions, to monitor and assess radiological dose rates; to determine specific contamination levels, airborne and/or surface deposited concentrations; and, to assess specific indications (including their rates to change) that may be used for initiating emergency measures. This constitutes one of the Semi-Annual Health Physics Drills and the Annual Radiation Monitoring Drill.
3. Test the effectiveness and operability of VCSNS's site warning and evacuation procedures.
4. Test the effectiveness of VCSNS's emergency communications systems between the VCSNS and federal, state and local governments and field monitoring teams. This section constitutes the Annual Communications Drill.
5. Test the operations of the Technical Support Center and the Operations Support Center and the ability of staffing personnel to respond to an emergency condition.

VIRGIL C. SUMMER NUCLEAR STATION
SCOPE AND OBJECTIVES

6. Test the ability of the Operations Support Center to effectively dispatch and track the progress of emergency repair teams and to report team status and results.
7. Test the ability of Operations Support Center personnel to efficiently and effectively repair damaged equipment under emergency conditions.
8. Test the operations of the Emergency Operations Facility with respect to physical facilities, communications, emergency equipment, operations and assistance provided to VCSNS.
9. Test the operations of the News Media Center and the ability of staffing personnel to respond to an emergency condition with respect to public information and news media interface.
10. Ensure that emergency response personnel are familiar with their duties and responsibilities, thus identifying and deficiencies in personnel training.
11. Test the adequacy and operability of emergency equipment and identify any deficiencies in the quantity or quality of equipment.
12. Utilize the training simulator in the exercise with real-time station operating information and to provide more realism in the simulated emergency condition.
13. Test the flow of information between emergency response facilities and personnel. (1991 drill action item, identified by utility)

NARRATIVE SUMMARY

Prior to the commencement of this drill, the plant has Reactor Coolant System activity of $3E^2$ μ ci/gm and .1 gallon per minute 'C' Steam Generator tube leakage. The plant is in a 'B' Train maintenance week. 'C' Charging/Injection Pump is Red Tagged Out for an internal inspection.

At T=0, a light plane, which had been inspecting power transmission lines, crashes in the Switchyard. The plane strikes a lightning arrestor and two phases of Bus Number 3. This results in busses Number 2 and 3 de-energizing. This is a loss of 'B' Train off-site power. The pilot of the plane is killed by the crash. 'B' Diesel Generator starts and loads re-energizing 'B' Train safeguards power. The plant's sequencer will commence loading of safeguards equipment to the Diesel Generator. During the loading of equipment, the sequencer will fail to start 'B' Service Water Pump. The Reactor Operator will be able to start 'B' Service Water Pump manually at the Main Control Board. These events should be classified as an Alert Condition by the Shift Supervisor.

At T=15, the Control Room receives a DMIMS alarm on 'C' Steam Generator. 'C' Steam Generator develops a tube leak which steadily increases to 500 gallons per minute over a 20-minute period.

At approximately T=30, the plant should Safety Inject due to a low pressurizer pressure signal. The 'A' Diesel Generator will come up to speed, but will not field flash, due to broken generator excitor brushes.

At T=30, the 'C' Steam Generator tube leak will steady out at 500 gallons per minute.

At T=40, the Main Control Room will lose Main Condenser vacuum indication. This will prevent the use of the condenser steam dumps for plant cooldown. A release to the environment will commence, due to the use of the Steam Generator power-operated relief valves. The loss of condenser vacuum indication will be due to a bad card in the racks. Also, at approximately

T=40, Operators should be isolating the 'C' Steam Generator. 'C' Main Steam Isolation Valve will be closed during this procedure.

At T=45, while isolating 'C' Steam Generator, the 'C' Steam Generator to Turbine-Driven Emergency Feed Pump Isolation Valve (XVG 02802B) cannot be closed from the Main Control Board. An Operator should be sent to locally investigate and close this valve.

At T=55, the Control Room receives a report from an Operator, at XVG 02802B, that the valve cannot be manually closed locally. (This is due to a failure of the Limitorque linkage to engage.)

At approximately T=60, the Turbine-Driven Emergency Feed Pump starts due to low levels in 'A' and 'B' Steam Generators which will occur during rapid plant cooldown. The Turbine-Driven Emergency Feed Pump will come up to minimal speed and cannot be controlled from the Main Control Board. This will be due to an I/P converter problem with the pump's governor. The Turbine-Driven Emergency Feed Pump steam exhaust boot will come loose from the piping when the pump starts. This will fill the room with contaminated steam. When the pump is secured, the steam will be removed by the room's normal ventilation.

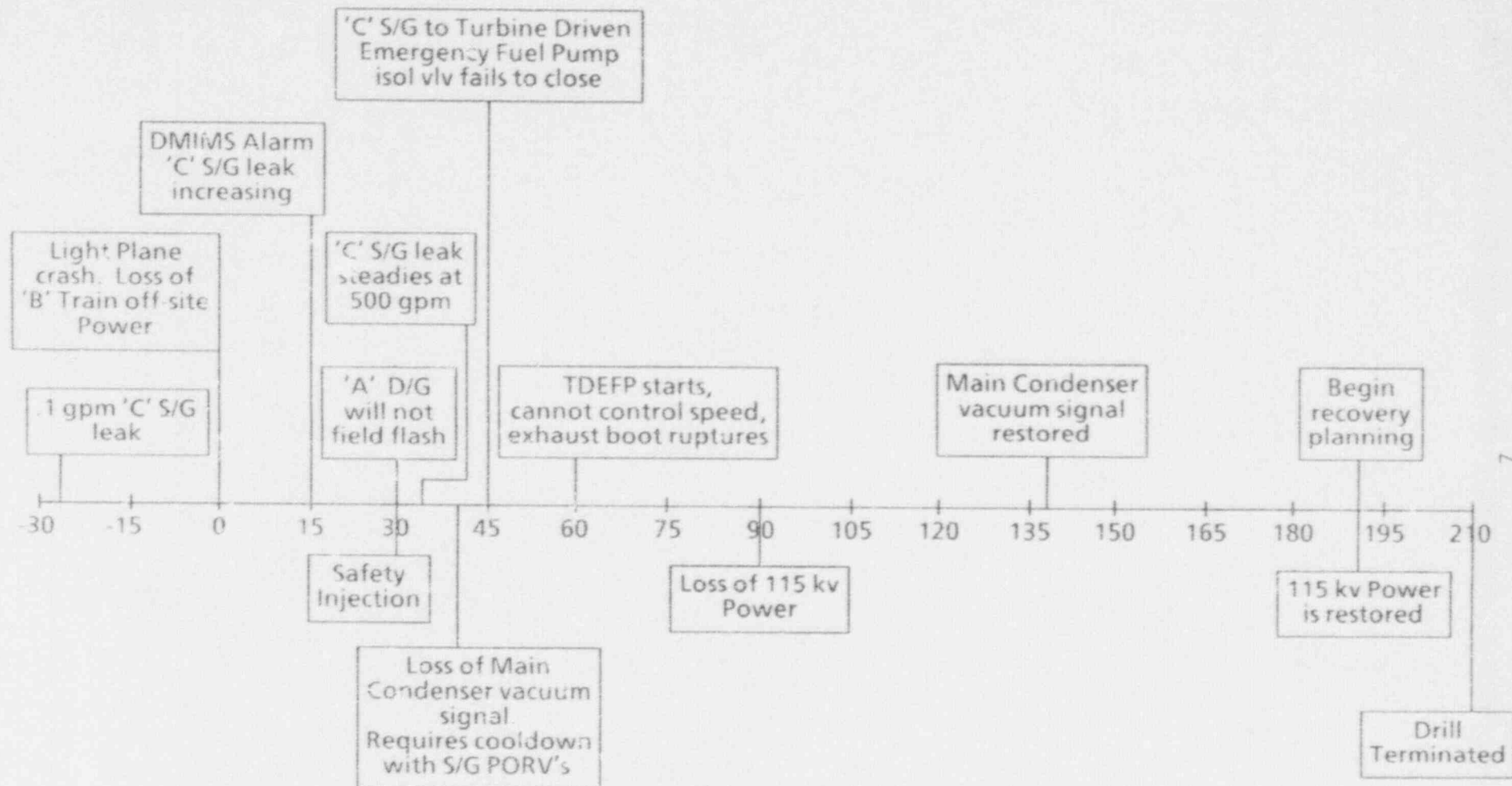
At T=90, the 115 Kv Parr Line will de-energize. This will result in a loss of 'A' Train off-site power; and because the 'A' Diesel Generator is still inoperable, the IDA Switchgear will be de-energized. This should be classified as a Site Area Emergency.

At T=140, the Main Condenser Vacuum will be restored. This will allow use of the Main Condenser for further cooldown of the plant, if desired.

At T=180, the Corporate Dispatcher will call the Control Room and report that the Relay Department has replaced a distance relay on the 115Kv line at Parr. The 115Kv line is ready to be re-energized. This will allow restoration of 'A' Train, off-site power.

At T=190, 'A' Train, off-site power will be restored by energizing the 115Kv (Parr) line. This will allow the Off-Site Emergency Coordinator to begin recovery planning and possible de-escalation of the Emergency classification.

At T=210, the exercise will be terminated.



Chronological Listing of Major Events

Time	Event	EAL Classification		
Predrill	<ul style="list-style-type: none"> - 'C' Chg/Inj pp red tagged out - 'B' Train Maint. Week - Failed Fuel Action Plan #2, 3 E² μCi/gm - 2 mph wind from 90° 			
740	T=-20	-	.1 gpm tube leakage 'C' S/G	
800	T=0	-	Light plane crash in switchyard. Bus #2 and Bus #3 de-energizes. Results in a loss of 'B' Train off-site power.	Alert
		-	'B' D/G starts and loads	
		-	Sequencer fails to start 'B' Service Water Pump (requires operator action to start 'B' SW pump)	
815	T=15	-	DMIMS Alarm 'C' S/G 'C' S/G tube leak ramps in over 20 minutes to 500 GPM	
830	T=30	-	SI due to Lo Pressurizer Pressure signal 'A' D/G Generator Excitor Brushes broken. Generator will not field flash.	
835	T=35	-	'C' S.G tube leak steady at 500 gpm	
840	T=40	-	Loss of main condenser vacuum signal due to a bad card in the racks. Requires plant cool down using PORV's (release to environment)	
		-	'C' MSIV is closed to isolate 'C' S/G	
845	T=45	-	'C' S/G to TDEFP isol vlv (2802B) fails to close from the MCB	