

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

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License Nos: NPF-2, NPF-8  
Report No: 50-348/96-14, 50-364/96-14  
Licensee: Southern Nuclear Operating Company, Inc.  
Facility: Farley Nuclear Plant  
Location: 7388 N State Hwy 95  
Columbia, AL 336319  
Dates: December 9-13, 1996  
Inspectors: W. Sartor, Exercise Team Leader  
D. Jones, Plant Support Inspector  
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Approved by: K. Barr, Chief, Plant Support Branch  
Division of Reactor Safety

## EXECUTIVE SUMMARY

Farley Nuclear Plant  
NRC Inspection Report Nos. 50-348/96-14, 364/96-14

This routine, announced inspection involved the observation and evaluation of the biennial emergency preparedness exercise. This full scale plume exposure exercise included the mobilization of Southern Nuclear Operating Company (SNC), Alabama Power Company (APC), Federal, State and local personnel and resources adequate to verify the capability of participating organizations to respond to an accident scenario requiring response. This inspection report addresses the response of the licensee's emergency response organization (ERO) from its onsite facilities which included the Simulator Control Room (SCR), the Technical Support Center (TSC), Operational Support Center (OSC), and the offsite facilities to include the Emergency Operations Facility (EOF) and the News Media Center (NMC). Observations addressing the offsite response by the State and local personnel will be provided in a separate report provided by the Federal Emergency Management Agency (FEMA). The onsite evaluation indicated overall good performance with the exception of two instances when significant emergency information was not communicated to the appropriate emergency manager in a timely manner.

### Control Room Simulator

- The Unit 2 Shift Supervisor assumed the responsibilities as the Emergency Director following his declaring the Alert for the abnormal conditions on Unit 1. The shift personnel properly implemented their emergency procedures to mitigate the abnormal events.

### Technical Support Center (TSC)

- The Emergency Director (ED) and his staff functioned well in implementing the Emergency Plan and Procedures to provide an effective accident response.

### Operational Support Center (OSC)

- The OSC Manager was effective in managing resources as directed by the TSC.

### Emergency Operations Facility (EOF)

- The EOF staff provided effective support to the ED and/or the EOF Manager in performing tasks in support of the Emergency Plan and Implementing Procedures that focused on the coordination and direction of the offsite emergency response functions.

### News Media Center (NMC)

- This facility was managed to provide timely information to the media.

## Report Details

### Summary of Exercise Events

This biennial emergency preparedness exercise was conducted from 7:00 a.m. to 12:42 p.m. on December 11, 1996. Player critiques were conducted by the licensee players in the Emergency Response Facilities (ERFs) following termination of the exercise. The NRC exit meeting was conducted on December 13, 1996.

## VI. Plant Support

### P4. Staff Knowledge and Performance in 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 existing within the licensee's plan.

##### b. Observations and Findings

The scenario was challenging and progressed from an Alert to a Site Area Emergency and then to a General Emergency. The scenario fully exercised the onsite and offsite emergency organizations of the licensee and provided sufficient information to the NRC, State and local government agencies for their full participation in the exercise.

##### c. Conclusion

The scenario developed for this exercise was effective in 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 Unit 2 (the unaffected unit) Shift Supervisor assumed the responsibilities of the Emergency Director (ED) and other personnel assumed pre-established emergency responsibilities. The ED declared the Alert emergency declaration and approved the notification

message to the offsite government agencies. Following the Alert declaration, the ED also directed the call-out of the emergency response organization to staff the ERFs. Pre-designated personnel then promptly responded to staff and then activate the ERFs.

c. Conclusion

The initial on-duty Simulator staff and augmented call-out staff were sufficient to respond and perform defined emergency responsibilities.

P4.3 Emergency Classification System

a. Inspection Scope (82301)

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

b. Observation and Findings

The licensee's Emergency Plan Implementing Procedure 9.0, Emergency Classification and Actions, provided criteria for the classification of an emergency based on plant conditions and radiological hazards. The Unit 2 Shift Supervisor, as the interim ED, declared an Alert at 7:15 a.m. based on the failure of the reactor protection system to initiate and complete a reactor trip. The Procedure was next used in the TSC by the ED to classify a Site Area Emergency (SAE) at 8:55 a.m. with a reactor coolant system (RCS) leak greater than 500 gpm, dose equivalent iodine greater than 300 microcuries/gram, and containment pressure greater than 27 psig. The General Emergency was declared by the ED at 10:03 a.m., based on the loss of reactor coolant, fuel damage, and only one train of emergency core cooling system (ECCS) equipment available to mitigate plant conditions. Concomitant with the decision to upgrade to the General Emergency (GE), the containment began to leak which provided the loss of the third barrier. This was also included in the emergency description.

c. Conclusion

The licensee's procedure for emergency classifications was effectively used by the ED in his decision making. A conservative classification was initially being made for the GE as recommended by the NRC participation in the exercise; however, the loss of the containment barrier concomitant with the decision to upgrade to a GE permitted this declaration to be in accordance with the approved Emergency Plan and Implementing Procedures.

#### 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 Alert emergency notification to the States and counties was made by the Communicator in the Simulator Control Room. The first follow-up notification and the initial upgrades to the SAE and GE were made from the TSC. The remainder of the follow-up notifications were all made from the EOF. The inspector observed that the follow-up emergency information to the offsite agencies was driven by the instructions of the Recovery Manager to his staff to provide follow-up notifications on the quarter hours and facility briefings on the hour and half hour. As a result of these instructions, the management of emergency information to the offsite agencies was clock driven rather than event driven. This method of operation almost resulted in conflicting information being transmitted from the EOF following the GE notification from the TSC. Specifically, in an attempt to remain on the quarter hour schedule the EOF was preparing Message 008, a follow-up message to the GE notification. The message was being prepared to indicate no emergency release was occurring, whereas Message 007 (the GE notification from the TSC) indicated a release was occurring and included the containment leaking statement in their emergency description. The EOF Communicator noted the discrepancy in his comparison of Messages 007 and 008 and did not release the message although it had been approved for release. Discussions followed and the message was corrected prior to release.

##### c. Conclusion

The licensee demonstrated the ability to make initial and follow-up notifications to the States and counties in a timely manner with essential information for the upgraded classifications. Follow-up notifications could be improved to focus on providing emergency information to offsite agencies as significant changes occurred rather than providing updates strictly by the clock.

#### P4.5 Emergency Communications

##### a. Inspection Scope (82301)

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

b. Observation and Findings

The inspectors observed that the communications between the utility and offsite agencies and amongst the ERFs were effective for the prompt transmission of emergency information. The inspectors also noted good exchange of information between members of the ERO in most instances, with two noted exceptions. The first exception was the decision by the Unit 1 Shift Supervisor to evacuate the Unit 1 and Unit 2 Auxiliary Building. Although this was a protective action taken for onsite personnel, the interim ED was unaware of this decision until asked about it by the on-call ED prior to turnover. The second exception was the failure of the Recovery Manager to be aware of the leaking containment at the time of the GE. This almost resulted in an incorrect follow-up notification being provided as discussed in paragraph P4.4 above. This was also important information to the Recovery Manager as the lead manager in the EOF where the responsibilities for providing dose assessment information were located. A major responsibility to be provided to offsite agencies from the EOF following the GE was a dose assessment for the ongoing release. His failure to be timely informed of the release by either the TSC or his own staff was a significant oversight. These two instances of significant emergency information not being communicated to the appropriate emergency managers in a timely manner was identified as an exercise weakness.

- Inspector Follow-up Item (IFI) 50-348, 364, 96-14-01: Exercise Weakness--Significant emergency information was not communicated to the appropriate emergency manager in a timely manner.

c. Conclusion

With the noted exceptions, 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)

An inspector observed how information concerning the simulated emergency was made available to the public.

b. Observations and Findings

SNC and APC established its News Media Center in Dothan, AL. The news information from the licensee appeared to be timely and accurate.

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.

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 simulator was static for this exercise; however, the facility and equipment appeared to support the crew as they responded to the scripted messages.

Technical Support Center - The TSC was promptly activated with assigned emergency response personnel. The facility layout provided for the necessary communication between the TSC Manager and his staff.

Operational Support Center - The activation of the OSC was not observed by the NRC inspection team. Periodic brief observations during the exercise indicated the facility and equipment supported the OSC Manager in his management of re-entry teams as directed by the TSC.

Emergency Operations Facility - The EOF was activated and functioned well as personnel worked effectively with the available equipment.

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 provided by the licensee to the offsite agencies.

b. Observations and Findings

Protective action recommendations (PAR) made by the Unit 1 Shift Supervisor early in the accident sequence were appropriate but should have been coordinated with the interim ED. Offsite protective action recommendations were timely and appropriate. The licensee monitored the changing conditions following the initial PARs and modified the PARs when appropriate.

c. Conclusion

The licensee demonstrated the ability to implement protective measures for onsite personnel (with the noted exception) 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. From the player comments and the controller/evaluator observations, the controller/evaluator staff determined the performance of the emergency organization responding to the simulated accident to be satisfactory. A good summary of this performance and supporting observations was provided to licensee management on December 13, 1996, just prior to the NRC Exit Meeting.

c. Conclusion

The controller/evaluator organization did a good job of analyzing exercise performance.

V. Management Meetings

X1 Exit Meeting Summary

The Team Leaders presented the inspection summary to members of licensee management at the conclusion of the inspection on December 13, 1996. The summary indicated fully satisfactory performance with the exception of the exercise weakness addressing the flow of key emergency information. No proprietary information is contained in this report.

## PARTIAL LIST OF PERSON CONTACTED

Licensee

- R. Coleman, Maintenance Manager
- R. Hill, Nuclear Plant General Manager
- J. Horn, Outage Planning Supervisor
- W. Lee, Emergency Preparedness Coordinator
- R. Lero, Shift Supervisor
- D. Morey, Vice President, Nuclear
- C. Nesbitt, Assistant General Manager, Support
- R. Vanderbye, Emergency Preparedness Coordinator
- J. Walden, Senior Instructor
- W. Warren, Engineering Support Supervisor
- P. Webb, Technical Training Supervisor
- R. Wiggins, Planning and Scheduling Supervisor
- L. Williams, Training and Emergency Preparedness Manager

## INSPECTION PROCEDURES USED

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

## ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-348, 364, /96-14-01: IFI Exercise Weakness--Significant emergency information was not communicated to the appropriate emergency manager in a timely manner.

## LIST OF ACRONYMS USED

|      |                                     |
|------|-------------------------------------|
| APC  | Alabama Power Company               |
| ECCS | Emergency Core Cooling System       |
| ED   | Emergency Director                  |
| EOF  | Emergency Operations Facility       |
| EP   | Emergency Preparedness              |
| ERF  | Emergency Response Facility         |
| ERO  | Emergency Response Organization     |
| FEMA | Federal Emergency Management Agency |
| GE   | General Emergency                   |
| gpm  | Gallons Per Minute                  |
| IFI  | Inspector Follow-up Item            |
| NMC  | News Media Center                   |
| OSC  | Operational Support Center          |
| PAR  | Protective Action Recommendation    |
| psig | Pounds Per Square Inch Gravity      |
| RCS  | Reactor Coolant System              |
| SAE  | Site Area Emergency                 |
| SCR  | Simulator Control Room              |
| SNC  | Southern Nuclear Company            |
| TSC  | Technical Support Center            |

Attachment (10 Pages):  
Objectives, Initial Conditions, Narrative Summary, and Sequence of Events

1996 FARLEY NUCLEAR PLANT  
ANNUAL EXERCISE OBJECTIVES  
December 11, 1996

I. Participating Organizations

Full Participation: Southern Nuclear Operating Company (SNC), Alabama Power Company (APC), Nuclear Regulatory Commission (NRC), State of Alabama, State of Georgia, Houston/Henry County, and Early County.

Partial Participation: State of Florida

II. Purpose

- A. To meet the requirements of 10CFR50, Appendix E, 44CFR350.0 and NUREG-0654/FEMA-REP-1, Rev. 1.
- B. To conduct a full scale plume exposure exercise which will include the mobilization of SNC, APC, Federal, State and Local personnel and resources adequate to verify the capability of participating organizations to respond to an accident scenario requiring response.

III. Southern Nuclear Operating Company and Alabama Power Company Objectives

A. On-site

- 1. Demonstrate that control room staff can assess the event, classify the event, take corrective measures to control the event and activate emergency response procedures.
- 2. Demonstrate that plant staff can activate and staff the Technical Support Center (TSC) and perform accident response activities including:
  - a. Dose Assessment
  - b. Off-site notification and protective action recommendations
  - c. Reclassification of emergency status
  - d. Personnel Accountability for all personnel on-site
  - e. Radiation Monitoring Team (RMT) Dispatch and Control (if required)
  - f. Site access control and admittance of essential personnel
  - g. Dispatch and control of re-entry teams
- 3. Demonstrate the capability to turn over EOF functions to the EOF staff when the EOF is activated and staffed.
- 4. Demonstrate that plant staff can activate and staff the Emergency Operations Facility (EOF) and perform accident response activities including:
  - a. Assuming the dose assessment function and the RMT direction and control function from the TSC staff.
  - b. Coordinating logistics, engineering functions, licensing functions and manpower with the TSC and EOC.
  - c. Preparing and coordinating news releases and activating the NMC.

\* Emergency Communication Organization staff assigned to the EOF and NMC will be prepositioned in the Dothan Area to reduce transport time and thus allow for sufficient time to exercise the facilities.

000002

5. Demonstrate the capability to augment EOF staff with non-essential plant personnel.
6. Demonstrate the adequacy of the plant's communication system including:
  - a. Communication links to Corporate Emergency Operations Center (EOC)
  - b. News Media Center (NMC)
  - c. Interplant communications
  - d. Communication links to state and local authorities
7. Demonstrate the capability to perform radiological monitoring.

B. Off-Site

1. Demonstrate that the corporate staff can be activated and staff the EOC in a timely fashion.
2. Demonstrate that Corporate Headquarters Emergency Operations Center (EOC) staff can provide support for:
  - a. Activation of facilities
  - b. Logistics (as required)
  - c. Engineering and Licensing (as required)
  - d. Support organization notification
  - e. Briefing of company management
  - f. News release preparation
3. Demonstrate that the Public Information Organization can respond to media and public inquiries, establish a rumor control center, and issue and coordinate news releases.

IV. State and Local Objectives

See Attachment 1 (Any State or Local objective that cannot be demonstrated due to conditions inconsistent with the scenario will be demonstrated in a separate drill.)  
(Reference Extent of Play Agreements between the States and FEMA.)

V. Joint Objectives (SNC, APC, NRC, State of Alabama, State of Georgia, State of Florida, Houston/Henry County and Early County)

- A. Demonstrate that all parties can coordinate news releases and conduct a joint news conference.
- B. Demonstrate that adequate technical information can be exchanged among involved agencies.

VI. Exercise Limits

The plume exposure exercise will be conducted on December 11 and will begin prior to 8 A.M Central and conclude by 2:30 P.M. Central.

**1996 ANNUAL EMERGENCY EXERCISE  
INITIAL CONDITIONS  
DECEMBER 11, 1996**

**1.0 INITIAL PLANT CONDITIONS**

1.1 Unit 1

100% power steady state, 874 MWs, 174 days on-line.

1C RCP lower oil reservoir has possible oil leak.

Boron concentration 810 ppm.

A train is the on-service train.

1A Aux Building Main Exhaust fan is out of service due to motor winding ground.

1.2 Unit 2

100% power and steady state, 872 MWs, 282 days on-line

Boron concentration 390 ppm

A train is the on service train

**2.0 LCOs**

2.1 UNIT 1

a) LCO for 1B Charging Pump

2.2 UNIT 2

None

3.0 MAINTENANCE ITEMS

3.1 UNIT 1

1A Auxiliary Building fan motor removal in process. Motor to be shipped for rewinding.

1B Charging pump is tagged out for speed changer reduction gear repair. Estimated maintenance completion is 48 hours. Pump was declared inoperable 6 hours ago.

3.2 UNIT 2

Operations is receiving new fuel.

4.0 METEOROLOGICAL CONDITIONS

Wind Speed:

3.0 mph at 150 feet

3.3 mph at 35 feet

Wind direction from:

7 degrees at 150 feet

10 degrees at 35 feet

Delta T

-1.34 degrees channel 1

-1.34 degrees channel 2

**1996 ANNUAL EMERGENCY EXERCISE  
NARRATIVE SUMMARY  
December 11, 1996**

The exercise starts at 0700. At 0705 the 1C RCP trips resulting in a main turbine trip. The reactor fails to trip automatically (ATWT) but is manually tripped by the Control Room crew by opening the CRDM MG set breakers from the Main Control Board. Rods F2, F6, H6, and M4 fail to fully insert. Emergency boration is started per the Emergency Operating Procedures (EOPs).

Following the reactor trip, radiation monitors RE-4, 6, 7, 11, 12, and 24A/B alarm resulting in Containment Purge automatic isolation. Actions of AOP-32 are begun based on possible indications of high RCS activity (Approximately 3% clad failure has occurred due to the high power to flow condition when the 1C RCP tripped).

At approximately 0720 the Control Room staff should declare an **ALERT** emergency based on Emergency Implementing Procedure (EIP) 9.0. Plant staff will start taking actions for an Alert emergency and the TSC and EOF staffs will be called in to the plant. Within 75 minutes of the Alert declaration, the TSC and EOF should have minimum staff in place and start turning over to perform designated functions. The EOC in Birmingham will also have staff available to support plant operations.

At 0742 rod F2 falls to 122 steps.

The 1A Charging Pump trips at approximately 0835. The 1A CCW pump and 1C Charging Pump are started by the Control Room crew to restore normal charging and seal injection flow. Rod H6 falls to 50 steps. Repair teams are dispatched to investigate and repair the 1A Charging Pump.

At approximately 0841 indications of increasing charging flow lead the Control Room crew to enter AOP-1 to determine if an RCS leak exists. At approximately 0843 the crew has indications that RCS leakage is in excess of 50 gpm.

At 0845 the crew observes a rapid decrease in pressurizer level, a corresponding increase in Containment pressure, increasing Containment radiation levels and Safety Injection automatically actuates. The cause of the transient is a large break loss of coolant accident on the 1A Reactor Coolant loop which causes fuel cladding failure to increase to approximately 50%. Containment pressure peaks at 41 psig. Following implementation of the EOPs the crew determines that the 1A Residual Heat Removal (RHR) pump, 1A Containment Spray pump, and the 1B and 1C Containment Fan Coolers have tripped indication. Rods F2, F6, H6, and M4 indicate fully inserted.

At approximately 0852 the staff should determine the need to upgrade the emergency classification to a **SITE AREA EMERGENCY** based on EIP-9.0. Once declared the

plant staff should begin taking actions for a Site Area emergency per the Emergency Implementing Procedures (EIPs) while the crew continues actions per the EOPs.

By approximately 0940 the crew completes alignment of the Emergency Core Cooling System (ECCS) to the cold leg recirculation mode. Steam Generator depressurization per EEP-1.0 begins.

At approximately 0945 the Reactor Vessel Level Indication System (RVLIS) indicates that water level has been restored in the reactor vessel.

At approximately 1000 the crew begins alignment of the Containment Spray System to the recirculation mode. At 1002 indications of release from containment to the environment through the penetration room are observed concurrent with loss of flow indication from FT-958B (B Train Containment Spray Flow Transmitter). The release path to environment is via a B Train Containment Spray pipe break at FT-958B due to the thermal transient caused by placing the Containment Spray system on recirculation. By approximately 1007 Plant staff should declare a **GENERAL EMERGENCY** and begin taking actions for a General emergency based on EIP-9.0.

It is anticipated that the leak from the Containment Spray system cannot be stopped prior to the end of the exercise due to high dose rates in the areas where work would need to be performed.

The News Media Center (NMC) will be activated and staffed by representatives from SNC, APC, the State of Alabama, the State of Georgia, the State of Florida, Houston/Henry County, Early County, and the Nuclear Regulatory Commission (NRC). Media and public interest will be simulated and news releases will be prepared and released.

The exercise will terminate once the radiation monitoring teams have tracked the plume, the EOF has been staffed and is performing EOF activities and the NMC has conducted a press conference. The termination will be coordinated with the States of Alabama, Georgia, and Florida if occurring prior to 1300 Central time.

**1996 Annual Exercise  
Sequence of Events**

| Min  | Event  | Action/Expected Response   |
|------|--|--|
| 0700 | Initial Conditions:<br>100% Power, 810 ppm (MOL), Control Rods at 228 steps<br>1B Charging Pump tagged out for work on speed changer reduction gear  |  |
| 0705 | 1C RCP trips<br>First Out Annunciator is GE1 - ONE LOOP LO FLOW OR RCP BKRS OPEN RX TRIP<br><br>Main Turbine trips automatically<br><br>Reactor does not trip automatically and does not trip using the MCB handswitches<br><br>All rods are fully inserted except rods F2, F6, H6, and M4 <ul style="list-style-type: none"> <li>• F2=210</li> <li>• F6=102</li> <li>• H6= 168</li> <li>• M4=228</li> </ul> | EEP-0 entered<br><br>FRPS.1 entered <ul style="list-style-type: none"> <li>• Crew trips CRDM MG set breakers from MCB to trip the reactor</li> <li>• Roving SO called to open Unit 1 Reactor Trip Breakers locally</li> <li>• Crew begins emergency boration</li> </ul>                    |
| 0707 | FH1 - RMS HI RAD annunciates due to R-6, 11, and 12 alarming<br><br>(Controller note: Alarms are due to normal RCS leakage inside CTMT and existing letdown/charging flowpaths; no new leakage path is responsible for these radiation monitors)<br><br>(3% Clad Failure due to high power to flow ratio)  | Crew evaluates the alarms per FH1 and AOP-32: <ul style="list-style-type: none"> <li>• Chemistry contacted to sample RCS for activity per CCP-1300</li> <li>• Chemistry contacted to sample all SGs for activity</li> <li>• HP should be contacted to survey Auxiliary Building</li> </ul> |
| 0708 | FH4 - RE24 A OR B HI RAD annunciates due to R24A & B alarming <ul style="list-style-type: none"> <li>• Containment Purge automatically isolates</li> </ul><br>(Controller note: Alarms are due to normal RCS leakage inside CTMT and existing letdown/charging flowpaths; no new leakage path is responsible for these radiation monitors)   | Crew verifies actions of FH1 completed<br><br>(Controller note: When CTMT purge is isolated R24A and B will return to near pre-event levels)   |
| 0710 | System Operator opens RX Trip Breakers locally and reports to the Control Room   | Crew verifies breakers open on the MCB   |
| 0712 |  | Crew transitions back to EEP-0<br><br>Unit 2 Shift Supervisor begins classification of the emergency event per EIP-9.0.  |
| 0713 |  | Crew transitions to ESP-0.1  |
| 0714 | FH1 - RMS HI RAD annunciates due to R4 alarming  | Crew evaluates the alarm per FH1   |
| 0715 |  | Turbine Building SO contacted to isolate the Turbine Building  |
| 0720 | FH1 - RMS HI RAD annunciates due to R7 alarming  | Crew evaluates alarm per FH1.  |

**1996 Annual Exercise  
Sequence of Events**

|       |  |  |
|-------|--|--|
| 0720  |  | <p>Crew expected to declare <b>ALERT</b> based on EIP-9.0, Guideline 3, step 5.0, "Failure of the reactor protection system to initiate and complete a trip which brings the reactor subcritical (ATWT)".</p> <p>When ALERT declared appropriate notifications and ERO activation should be made:</p> <ul style="list-style-type: none"> <li>• Contact Emergency Director</li> <li>• Contact Recovery Manager</li> <li>• Contact Emergency Support Manager</li> <li>• Activation of TSC/EOF/EOC via CAN</li> <li>• ECO activated by EC (NMC pre-activated)</li> <li>• ARCD, GEMA, and NRC notified per EIP-9.</li> </ul> |
| 0729  |  | <ul style="list-style-type: none"> <li>• Crew transitions to UOP 2.1</li> <li>• Maintenance contacted to determine problem with 1C RCP</li> <li>• AOP-4.0 referenced</li> </ul>  |
| 0733  | Per procedure crew places steam dumps in steam pressure mode and in doing so open atmospherics   | Counting Room notified to perform CCP-645  |
| 0734  | DG4 - 1A BAT LVL LO-LO alarms  | Crew stops emergency boration  |
| 0742  | F2 rod falls to 122 steps  |  |
| 0750  |  | Crew may secure 1A RCP per UOP 2.1 if Operations Manager desires (Controller intervention required to prevent securing the RCP to maintain data package integrity)   |
| 0835  | <p>1A Charging Pump trips and 1B is not available</p> <p>H6 rod falls to 50 steps</p>  | <p>Crew recognizes that the 1A Charging Pump has tripped and starts 1A CCW pump and 1C Charging Pump manually</p> <ul style="list-style-type: none"> <li>• Rover and A-man requested to investigate DF06 and Charging pump problem, respectively</li> <li>• SS will evaluate Tech Specs for applicability for the failure</li> </ul>   |
| 0839  | FH1 -RMS HI RAD annunciates due to R2 alarming   | Crew refers to ARP FH1<br>HP notified  |
| 0841+ | <p>Indications of PZR level control problems</p> <ul style="list-style-type: none"> <li>• Pressurizer level slowly lowering</li> <li>• VCT auto makeup starts</li> </ul> | <p>Crew enters AOP-1.0</p> <ul style="list-style-type: none"> <li>• Crew may manually increase charging and/or reduce letdown</li> </ul>   |

**1996 Annual Exercise  
Sequence of Events**

|       |  |  |
|-------|--|--|
| 0841+ |  | <ul style="list-style-type: none"> <li>• Rover reports overcurrent trip flag on 1A Charging pump</li> <li>• A-man reports no abnormal conditions indicated at the 1A Charging pump</li> </ul>  |
| 0843  |  | Crew determines that leak rate might be in excess of 50 gpm  |
| 0843  | MK4 - LIQ GAS PROC PNL ALARM alarms  | A-man contacted to investigate cause of the alarm (WHT level rise)   |
| 0845  | <p>Pressurizer level and RCS pressure rapidly decreasing</p> <p>Safety Injection horn sounds</p> <p>GB4 - PRZR LO PRESS RX TRIP/SI is first out annunciator</p> <p>All rods indicate fully inserted</p>  | Crew reenters EEP-0  |
| 0846+ | <p>Containment pressure rapidly increasing</p> <p>RX Vessel Level Indication System (RVLIS) = 0%</p> <p>(Containment pressure peaks at 41 psig)</p> <p>(Core damage increases to 50% clad failure due to rapid RCS depressurization and subsequent core uncover)</p> | <p>EEP-0 immediate actions completed and crew continues in EEP-0</p> <ul style="list-style-type: none"> <li>• 1A RHR pump discovered tripped</li> <li>• Crew secures RCPs and verifies Phase B actuation</li> <li>• 1A CTMT Spray pump discovered tripped</li> <li>• 1B and 1C Fan Coolers discovered failed - will not run in slow speed or re-start in fast speed</li> </ul>   |
| 0852  | <p>SPDS indicates</p> <ul style="list-style-type: none"> <li>• Red Path on P1 exists</li> <li>• Orange path on Z1 exists</li> </ul>  | <p>Crew completes EEP-0 and transitions to FRP P.1</p> <p>Staff expected to declare a <b>SITE AREA EMERGENCY</b> based on EIP-9.0, Guideline 2, step 1.1 "RCS fault - A major loss of primary coolant".</p> <ul style="list-style-type: none"> <li>• Activation of the EOF should be made if not already done</li> <li>• Plant Emergency Alarm (PEA) should be sounded starting the protected area accountability</li> <li>• Notifications to ARCD, GEMA, NRC, and ESM commence</li> </ul> |
| 0854  |  | Crew transitions to FRP Z.1  |
| 0855  | Emergency Notification Form should be complete   |  |
| 0856  |  | Crew transitions to EEP-1  |

**1996 Annual Exercise  
Sequence of Events**

|       |   |  |
|-------|---|--|
| 0857+ | Procedural requirements will be relayed to TSC for accomplishment via reentry   | Crew requests TSC to close ECCS disconnects<br><br>TSC requested to evaluate RCS sample requirements and initiate needed sampling actions  |
| 0907  | EIP-9.0 upgrade notifications should be complete  |  |
| 0922  | Protected area accountability should be complete  |  |
| 0929  | CH2/CH3 annunciates indicating RWST LO Level  | Crew enters ESP-1.3 to align for cold leg recirculation  |
| 0933  | • CTMT pressure decreases to less than 4 psig   |  |
| 0938  |   | Crew completes ESP 1.3 and returns to EEP-1 until RWST LO-LO level   |
| 0942+ |   | Crew begins SG depressurization  |
| 0945  | RVLIS indicates level restoration   | TSC contacted by crew to determine RX Vessel vent requirements and long term cooling requirements  |
| 0956  | CH4/CH5 annunciate indicating RWST LO-LO level  | Crew begins to realign the CTMT Spray system to recirculation mode per ESP-1.3   |
| 1002  | CTMT Spray realignment to recirculation is completed<br><br>FT-958B transmitter fails low<br><br>FH1 - RMS HI RAD annunciates due to R14, R21, R22, and R29 alarming.   | Crew refers to ARP FH1 and notifies HP.  |
| 1007  | (Release is from the B train CTMT Spray system once CTMT Spray is aligned to take suction from the CTMT sump. A thermal transient due to placing Containment Spray on sump recirculation results in pipe failure at FT-958B in the 100' Piping Penetration Room. Securing the Spray pump will stop the pumping of CTMT sump water into the Penetration Room but will not stop the release. CTMT atmosphere back leakage from the CTMT Spray header into the Penetration Room will continue due to Penetration Room isolation check valve 8822B being partially stuck open.) | Plant staff should decide to upgrade the emergency classification to <b>GENERAL EMERGENCY</b> based on EIP-9.0 Guideline 1, step 1.2 "Fission Product Barriers - Loss of two of three fission product barriers with a potential loss of the third".<br>(Dose projections should indicate a need to declare a Site Area Emergency based radiological release).<br><ul style="list-style-type: none"> <li>• Make appropriate notifications per EIP-9.0.</li> <li>• Make protective action recommendations</li> <li>• Sound PEA (if not previously actuated).</li> <li>• Have the News Media Center (NMC) activated (if not previously activated).</li> <li>• Plant Staff may send reentry team(s) to locate the source of the leak from the containment</li> </ul> |
| 1022  | EIP-9.0 upgrade notifications should be complete  | TSC is expected to continue actions necessary to stop release. (All actions will be unsuccessful due to habitability).   |
| 1300  | Scenario termination  |  |