



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

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Report No.: 50-261/94-11

Licensee: Carolina Power and Light Company
 P. O. Box 1551
 Raleigh, NC 27602

Docket No.: 50-261

License No.: DPR-23

Facility Name: H. B. Robinson

Inspection Conducted: March 28-31, 1994

Inspector: W. M. Sartor, Jr. 4/5/94
 W. M. Sartor, Jr., Team Leader Date Signed

Accompanying Personnel: A. Gooden, RII
 G. Salyers, RII

Approved by: K. P. Barr 4/6/94
 K. P. Barr, Chief Date Signed
 Emergency Preparedness Section
 Radiological Protection and Emergency Preparedness Branch
 Division of Radiation Safety and Safeguards

SUMMARY

Scope:

This routine, announced inspection was the observation and evaluation of the licensee's deferred 1993 Annual Emergency Preparedness Exercise. The inspection was conducted to assess the adequacy of the licensee's emergency response program, the implementation of the emergency plan and procedures, and the training program for emergency response. This was a partial participation exercise for the onsite evaluation. On November 30, 1993, the licensee provided information to the State and local response organizations for the offsite portion of the biennial exercise which was evaluated by the Federal Emergency Management Agency.

Results:

In the areas inspected, violations or deviations were not identified. The exercise was fully satisfactory with the exception of excessive time required to complete the Alert notification and to provide radiological data on the General Emergency notification (exercise weakness identified in Paragraph 6).

Exercise strengths included the licensee's improved emergency response facilities (Paragraph 9), the "STARSHIP" network of computers (Paragraph 7), and the thorough critique process conducted by the exercise evaluation staff (Paragraph 12).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

M. Arnold, Senior Reactor Operator, Shift Technical Assistant
*R. Barnett, Exercise Emergency Response Manager
*C. Baucom, Shift Outage Manager
*G. Bowen, Specialist, Emergency Preparedness Training
*A. Carley, Manager, Site Communications
K. Darwin, Senior Reactor Operator, Work Control Center
*R. Dayton, Plant Controller
*M. Gann, Senior Specialist, Emergency Preparedness
*A. Garrou, Project Specialist, Emergency Preparedness
*T. Gildersleeve, Specialist, Brunswick Emergency Preparedness
*D. Gudger, Senior Specialist, Regulatory Programs
*C. Hinnant, Vice President, Robinson
*B. Houston, Manager, Brunswick Emergency Preparedness
*R. Howell, Senior Specialist, Nuclear Assessment Department
*P. Jenny, Manager, Emergency Preparedness
*K. Jury, Manager, Licensing/Regulatory Programs
D. Knight, Simulator Shift Supervisor
*R. Kritch, Manager, Regulatory Affairs
*A. Lucas, Specialist, Emergency Preparedness
*T. McLeod, Office Supervisor
*R. Moore, Manager, Operations
*D. Nelson, Manager, Outage Management
*J. Padgett, Manager, Environmental and Radiological Control
*M. Pearson, Plant Manager, Robinson
R. Shane, Senior Reactor Operator, Simulator
*R. Steele, Manager, Maintenance Programs
*D. Taylor, Plant Controller
*D. Whitehead, Manager, Plant Support Services

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

Nuclear Regulatory Commission

*B. Mozafari, Project Manager
*C. Ogle, Resident Inspector
W. Orders, Senior Resident Inspector

*Attended exit interview

An index of abbreviations used in this report can be found in the last paragraph.

2. Exercise Scenario (82302)

The scenario for the emergency exercise was reviewed to determine whether provisions had been made to test the integrated emergency response capability and a major portion of the basic elements within the licensee's Emergency Plan, as required by 10 CFR 50.47(b)(14) and Section IV. of Appendix E to 10 CFR Part 50.

The scenario for this partial participation exercise was reviewed in advance of the scheduled exercise date and discussed with licensee representatives prior to the exercise. The exercise scenario was well organized and of sufficient detail for the licensee's emergency response organization to demonstrate the exercise objectives.

No violations or deviations were identified.

3. Onsite Emergency Organization (82301)

The licensee's organization was observed during the exercise to determine whether the requirements of Paragraph IV.A of Appendix E to 10 CFR Part 50 (as addressed in the Emergency Plan) were implemented with respect to descriptions, responsibilities, and assignment of the onsite emergency response organization.

The inspector determined that the initial onsite emergency organization was adequately defined and the primary and alternate assignments for the positions in the augmented emergency organization were clearly designated. During the exercise, the inspector observed that staff was available to fill key functional positions within the initial onsite emergency organization.

Following the Alert emergency declaration made by the Shift Supervisor in the Simulator Control Room, the pagers were activated to direct the immediate staffing of the Technical Support Center, Operational Support Center, and the Emergency Operations Facility. Although the Shift Supervisor entered the incorrect code for a drill activation, corrections were quickly made and designated individuals responded to their respective onsite emergency facility to assume the duties of assigned emergency positions.

No violations or deviations were identified.

4. Emergency Response Support and Resources (82301)

This area was observed to determine whether arrangements for requesting and effectively using assistance resources were made, whether arrangements to accommodate State and local personnel at the EOF were adequate, and whether other organizations capable of augmenting the planned response were identified as specified by 10 CFR 50.47(b)(3), Paragraph IV.A of Appendix E to 10 CFR Part 50, and guidance promulgated in Section II.C of NUREG-0654 (Revision 1).

An inspector noted that the licensee's Emergency Plan and procedures identified other organizations capable of augmenting the planned response. The limited participation of this exercise did not include these organizations; however, arrangements for requesting offsite assistance resources were in place.

No violations or deviations were identified.

5. Emergency Classification System (82301)

This area was observed to verify that a standard emergency classification and action level scheme was in use by the licensee as required by 10 CFR 50.47(b)(4) and Paragraph IV.C of Appendix E to 10 CFR Part 50, and to determine whether that scheme was adequately implemented.

The licensee's EAL-1 and EAL-2 flowchart was used to identify and classify each emergency condition and to escalate to more severe classifications as the simulated accident progressed. The licensee's classifications and emergency declarations were appropriate throughout the exercise.

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 the content of initial and followup messages to response organizations had been established; and a means to provide early notification to the population within the plume exposure pathway had been established as required by 10 CFR 50.47(b)(5), 10 CFR 50, Appendix E, Paragraph IV.D, and the specific criteria in NUREG-0654, Section II.E.

The inspector reviewed the licensee's procedure (PEP-171, Emergency Communicator and Staff) for providing emergency information to Federal, State, and local response organizations, and for alerting and mobilizing the licensee's augmented emergency response organization. The inspector noted that implementing procedures for notifications had been established and were adequate to provide guidance to personnel responsible for initial notification to the State and local authorities.

The notifications to the offsite authorities were generally well formulated and properly approved; however, two observations were made that reflected issues with timeliness that require improvement.

- The initial notification was for the Alert emergency classification made in the Simulator at 0903 hours. The simulated event was a fire affecting safety related equipment and resulted

in the Auxiliary Operator trained as the emergency communicator being dispatched to the scene of the fire. Although the Shift Supervisor designated someone else to be the emergency communicator, the actual notification to the offsite authorities did not occur until approximately twenty minutes after the emergency classification. This notification process was also assisted by the communicators in the EOF, although the formal discussion of turnover responsibilities did not occur until approximately ten minutes later.

- The second issue was the failure to provide the radiological data for the General Emergency declaration in a timely manner. Specifically, the General Emergency was declared at 1121 hours and the emergency notification was initiated approximately 13 minutes later with the required Recommended Protective Actions; however, the message was incomplete without the radiological data for items 11-14 being included. The notification form stated that the information in items 11-14 may not be available on initial notifications. However, in this case the radiological data was not transmitted until approximately 50 minutes later with a routine follow-up notification.

The inspector identified and summarized the above negative observations as an exercise weakness as follows:

Inspector Followup Item 50-261/94-11-01: Exercise Weakness for failure to provide timely information to the State and local response organizations following an emergency classification.

One Exercise Weakness, but no violations or deviations were identified.

7. Emergency Communications (82301)

This area was observed to verify that provisions existed for prompt communications among principal response organizations and emergency personnel as required by 10 CFR 50.47(b)(6), 10 CFR 50, Appendix E, Paragraph IV.E, and the specific criteria in NUREG-0654, Section II.F.

The inspector observed that communications among the licensee's emergency response facilities and emergency response facilities and emergency organization and between the licensee's emergency response organization and offsite authorities were good. This exercise saw the licensee's use of its network of computers known as "STARSHIP" (Site Transient Analysis and Review Systems Having Interactive Processing) to enhance its communication and accident assessment capabilities.

The "STARSHIP" network of computers provided an accident assessment, notification/communication, and record-keeping capability that was quite effective. This menu-driven system provided select ERO personnel with access to displays such as: Real-time plant data, SPDS, Miscellaneous, and Emergency Preparedness. From the Miscellaneous Display, for example, the Emergency Notification Form, EP Logs, and Event Log List

were some of the items that could be accessed. The Emergency Notification Form was presented as a window that allowed the user to enter appropriate data onto the form and then fax it to various locations (onsite and offsite). Observations indicated that the "STARSHIP" network will enhance the communications process as the capabilities are further utilized via additional training and familiarity with the system.

No violations or deviations were identified.

8. Public Education and Information (82301)

This area was observed to determine whether information concerning the simulated emergency was made available for dissemination to the public as required by 10 CFR 50.47(b)(7), 10 CFR 50, Appendix E, Paragraph IV.D, and specific criteria in NUREG-0654, Section II.G.

Information was provided to the media and the public in advance of the exercise. The licensee's Joint Information Center was located at its Southern Division Operations office on US Highway 52 in Florence, South Carolina. Because this facility was activated and evaluated by FEMA during the November 30, 1993, exercise, it was not activated during this onsite exercise. However, a total of four news releases were prepared by public information personnel and approved by the Emergency Response Manager during this exercise.

No violations or deviations were identified.

9. Emergency Facility and Equipment (82301)

This area was observed to determine whether 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 the specific criteria in NUREG-0654, Section II.H.

The inspector observed activation, staffing, and operation of the emergency response facilities to include the Simulator Control Room (SCR), TSC, OSC, and the EOF. In all cases, the facility and its dedicated equipment facilitated the emergency response.

The TSC and EOF, which had been redesigned and upgraded prior to the 1992 exercise, continued to contribute to improved emergency management. Additionally, the OSC has been relocated to the new Operations and Maintenance Building within the protected area. The dedicated space and equipment for the OSC along with its relocation within the protected area greatly enhanced the repair team effort.

No violations or deviations were identified.

10. Accident Assessment (82301)

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

The accident assessment reviewed by the inspector included an engineering assessment of plant status and an assessment of radiological hazards to both onsite and offsite personnel resulting from the simulated accident. The licensee was effective in the identification and mitigation of the release path and the dose assessment team in the EOF was able to provide dose projections and source term estimates for the accident sequence.

No violations or deviations were identified.

11. Protective Responses (82301)

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

The inspector verified that the licensee had emergency procedures for formulating protective action recommendations (PARs) for the offsite populace within the 10-mile EPZ. The PARs were quickly formulated and promptly provided to the State and local authorities with the General Emergency notification message.

The inspector also observed that protective actions were instituted for onsite emergency responders which included periodic radiation surveys in the ERFs, evacuation of nonessential personnel, and continued accountability of emergency response personnel. It was also observed in the TSC that the Radiological Control Director and Emergency Repair Director demonstrated a good interface in protecting the Damage Control Team members from exceeding the emergency worker exposure limits.

No violations or deviations were identified.

12. Exercise Critique (82301)

The licensee's critique of the emergency exercise was observed to determine whether the deficiencies identified as a result of the exercise, and the 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.F, and specific criteria in NUREG-0654, Section II.N.

The licensee conducted player critiques in the ERFs immediately following the exercise. On March 30, 1994, the licensee also conducted evaluator/controller critiques prior to the formal presentation to facility management on the following day. The licensee's critique to their management on March 31 was comprehensive and addressed observations as strengths, deficiencies, or comments. The detailed draft report that was provided to management was representative of an aggressive emergency preparedness program with a commitment for improvement.

No violations or deviations were identified.

13. Action on Previous Inspection Findings (92701)

(Closed) Exercise Weakness 50-261/91-26-03: Failure to provide complete information regarding the simulated casualty to State and local governments. This issue was closed based on observations during this exercise which included: The SEC in the SCR and the ERM in the EOF reviewed the emergency notifications to ensure complete and up-to-date information was being provided. The emergency communicator in the EOF also verbalized awareness of this requirement as notifications were formulated for approval.

14. Exit Interview

The inspection scope and results were summarized on March 31, 1994, with those persons indicated in Paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results listed below. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

<u>Item Number</u>	<u>Status</u>	<u>Description and Reference</u>
50-261/94-11-01	Open	Exercise Weakness for delayed Initial Notification (Paragraph 6).

15. Index of Abbreviations Used in This Report

EAL	Emergency Action Level
EOF	Emergency Operations Facility
EPZ	Emergency Planning Zone
ERF	Emergency Response Facility
ERM	Emergency Response Manager
ERO	Emergency Response Organization
EW	Exercise Weakness
FEMA	Federal Emergency Management Agency
JIC	Joint Information Center
NRC	Nuclear Regulatory Commission
OSC	Operations Support Center
PAR	Protective Action Recommendation
PEP	Plant Emergency Procedure

SAE Site Area Emergency
SCR Simulator Control Room
SEC Site Emergency Coordinator

Attachment:
Exercise Objectives and
Timeline

ROBINSON 1993 EXERCISE OBJECTIVES PERFORMED ON MARCH 30, 1994

1. Demonstrate the ability of the Control Room to detect accident conditions, assess and project radiological consequences, and formulate near term mitigating actions.
2. Demonstrate the adequacy of the Technical Support Center in providing accident assessment and mitigation, and communication/notification activities.
- 2A. Demonstrate the adequacy of the Emergency Operation Facility in providing dose assessment and communication/notification activities.
3. Demonstrate the ability to identify and properly classify the emergency in accordance with the Emergency Plan and Implementing Procedures.
4. Demonstrate the adequacy of alerting, notifying, and mobilizing Emergency Response Organization Personnel.
5. Demonstrate the timeliness of initial and follow-up notifications to responsible state and local government agencies.
6. Demonstrate the adequacy of the information provided to responsible state and local government agencies.
7. Demonstrate the capability to make timely and accurate notification to the Nuclear Regulatory Commission. (Actual participation of the NRC Operations may be simulated.)
8. Demonstrate the ability to communicate with plant emergency teams and company environmental monitoring teams.
9. Demonstrate the ability to communicate between emergency response facilities.
10. Demonstrate the ability to support the radiological assessment process while maintaining personnel radiation exposure as low as reasonably achievable (ALARA).
11. Demonstrate the capability to perform radiological monitoring activities and assessment.
12. Demonstrate the ability to provide adequate radiation protection services such as dosimetry and personnel monitoring.

13. Demonstrate the ability to adequately control the spread of contamination and the radiological exposure of on-site and off-site emergency workers.
14. Demonstrate the ability to formulate appropriate protective action recommendations to off-site government authorities.
16. Demonstrate the ability to augment the on-shift emergency organization within the time limits specified within the Emergency Plan and its implementing procedures (normal working hours).
17. Demonstrate that the Technical Support Center, Operational Support Center, and Emergency Operations Facility can be activated in accordance with the Emergency Plan and its implementing procedures.
32. Demonstrate the activation, operation, and reporting of field monitoring teams.
33. Demonstrate the assessment of radiological consequences of the accident and of any release of radioactive material to the environment.
36. Demonstrate the ability to reassess plant conditions and evaluate recovery considerations as defined by the plant emergency plan.
38. Demonstrate that previously identified NRC Open Items resulting from the previous year's exercise can be closed.

Numbered objectives represent their order in the data base and are not intended to be sequential.

Robinson 1993 Deferred Annual Exercise

Note: This Exercise will be run with the simulator in interactive mode, all times given are approximate

At 0830 EST on March 30, 1994 Robinson Unit 2 is at 100% power, late in core life, and the RCS activity is normal. At 0846, a small fire in the Charging Pump room occurs at the "A" Charging Pump and cabling area. Fire alarms will be received in the Simulator Control Room and a Fire Brigade response initiated. At 0855 the dedicated shutdown power supply (a power supply in addition to the Emergency Busses) will be de-energized as a result of the fire, removing the use of loads supplied from the DS bus ("A" Charging Pump, "A" CCW Pump, etc.).

An **Alert** should be declared around 0900 based on a fire with the potential to affect safety related equipment. The fire may be successfully extinguished by the plant Fire Brigade after 15 minutes of in-room fire fighting effort. No offsite assistance will be required to extinguish the fire.

At 0915 a 100 gpm primary to secondary leak is ramped in to the "A" Steam Generator. The leak causes alarms in the blowdown radiation monitor for the associated Steam Generator and the Condenser Air Ejector discharge monitor. Plant shutdown may begin around 0930. At 0926, the fan belts break on the HVS-1 supply fan interrupting supply air to the Auxiliary Building. The loss of supply air disrupts the flow balance within the Auxiliary Building, but negative pressure is maintained.

During the plant shutdown, a spurious Turbine Trip occurs with no associated Reactor trip (ATWS). A manual trip from the control board will be required to reduce reactor power. This represents a second **Alert**. The Steam Dump System (designed to relieve steam flow from the Steam Generators to the Condenser after a Turbine Trip) fails to operate. All Steam line Power Operated Relief Valves (PORVs) open to prevent overpressurization. When the plant stabilizes the "A" Steam Line PORV will remain stuck open.

A **Site Area Emergency** should be declared around 1017 based upon a 100 gpm leak in the Reactor Coolant System and the stuck open PORV which provides a direct uncontrolled path to the atmosphere. However the release is minor as no fuel failure has occurred at this time.

At 1116, a Loose Parts Monitoring System (LPMS) alarm occurs which indicates loose parts transported in the Reactor Coolant System. The loose parts result in mechanical damage to a number of fuel assemblies in the core. Approximately 9% of the fission product activity normally trapped in the space between the fuel and the cladding (gap activity) is released into the RCS. Reactor coolant related radiation monitors begin to alarm. Since there is also a leak of coolant into the "A" Steam Generator, this activity is released out the open PORV.

A **General Emergency** should be declared at around 1130 based upon the fuel damage in addition to the direct pathway via the Steam Generator leak and open PORV for release into the environment.

From 1130 until approximately 1300, the release continues while the Control Room cools down and depressurizes the Reactor Coolant System to mitigate the release. At 1210, the chain drive on the Turbine turning gear breaks, causing the turbine to stop rolling. Damage Control teams may want to repair the chain to prevent damage to the turbine.

Deferred 1993 RNP Exercise Time line

Note: This Exercise will be run with the simulator in interactive mode, all times given are approximate

T0	0830	Initial conditions: Reactor is at 100% power steady state, RCS boron concentration is 22 ppm, late in core life, normal RCS activity. "A" Charging and "A" CCW pumps are running.
T+16"	0846	Fire alarm in Charging Pump Room (one train), Fire Tech. will be dispatched to investigate.
T+18"	0848	Second train fire alarm actuated in Charging Pump Room, Fire alarm will be sounded and fire brigade will respond.
T+21"	0851	Approximate time for status report from Charging Pump Room. Status will be room has heavy smoke near the overhead and flames appear to be coming from the "A" Charging Pump fire. Sparks have been thrown from "A" pump onto "B" pump and the Charging Pump Control Panel causing some burn marks on both.
T+25"	0855	DS Bus Undervoltage alarm is received on the DS/FP Annunciator panel A. "A" CCW Pump and "A" Charging Pump will be lost as a result of the loss of the DS bus. "D" Service Water Pump alternate power supply from the DS bus is lost also.
T+26"	0856	480 Volt Bus Ground Alarm (APP-009-E7) is received to give the Control Room indications of other potential problems. Approximate time for Fire Brigade at the scene.
T+30"	0900	Approximate time for declaring ALERT based on fire with potential to effect safety related equipment.
T+38"	0908	Approximate time fire is reported out. Actual time for "fire out" will be after 15 minutes of in room fire fighting. Initial attempts with portable equipment will be unsuccessful.
T+45"	0915	Charging Pump High Speed alarm (APP-003-F4) is received on the RTGB. Steam Generator Tube Rupture is beginning (100 gpm leak ramped in over 10 minutes) in "A" Steam Generator.
T+46"	0916	A second Charging Pump will be started and a leak rate determination (OST-051) may be started.
T+50"	0920	R-19A (Steam Generator Blowdown) monitor alarms.
T+52"	0922	R-15 (Condenser Air Ejector Discharge) monitor alarms.
T+56"	0926	Fan belts break on HVS-1 interrupting supply air to the Auxiliary Building.

1993 Deferred Exercise Time line (Continued)

T+59" 0929 Start shutdown of the Reactor at 2% a minute, RCS boration begins.

T+72" 0942 Approximate time to recover DS bus (actual time to be determined by player response), this will recover "A" CCW Pump.

T+75" 0945 Shutdown rate increased to 3% a minute.

T+97" 1007 A spurious Turbine trip and an failure of the reactor to automatically trip (ATWS). Manual Trip from the RTGB will be successful.

T+98" 1008 Due to a failure of the Steam Dump System to operate all three Steam Generator PORVs lift to reduce pressure.

T+102" 1012 "A" S/G PORV will remain open after temperature is returned to normal.

T+103" 1013 The Main Steam Isolation Valve for "A" S/G to be shut after RCS temperature is reduced below 547F.

T+107" 1017 Approximate time to declare SITE AREA EMERGENCY based on two (RCS and Containment) Fission Product Barriers breached.

T+152" 1102 "A" S/G PORV fails full open.

T+166" 1116 LPMS alarm is received in the Control Room.

T+168" 1118 R-9 (Letdown line) monitor alarms and continues to increase.

T+171" 1121 R-9 exceeds 5 Rem (if Letdown is in service).

T+175" 1125 Approximate time for GENERAL EMERGENCY declaration.

T+176-END 1126 Cooldown and depressurization to stop release.

T+220" 1210 Chain drive on Turbine Turning Gear breaks, causing turning gear to stop.

T+270" 1300 Approximate end of drill.