

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No: 50-261
License No: DPR-23

Report No: 50-261/99-08

Licensee: Carolina Power & Light (CP&L)

Facility: H. B. Robinson Unit 2

Location: 3581 West Entrance Road
Hartsville, SC 29550

Dates: November 7, 1999 - December 18, 1999

Inspectors: B. Desai, Senior Resident Inspector
A. Hutto, Resident Inspector
B. Sartor, Senior Emergency Preparedness
Inspector (Exercise Team Leader) (Section P4)
J. Kreh, Emergency Preparedness Inspector
(Section P4)
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(Section P4)

Approved by: Brian R. Bonser, Chief
Reactor Projects Branch 4
Division of Reactor Projects

Enclosure

EXECUTIVE SUMMARY

H. B. Robinson Steam Electric Plant, Unit 2 NRC Inspection Report 50-261/99-08

This integrated inspection included aspects of licensee operations, maintenance, engineering, and plant support. The report covers a 6 week period of resident inspection; in addition, it includes the results of inspections by regional emergency preparedness inspectors.

Operations

- The conduct of operations was risk-informed, professional, and safety-conscious (Section O1.1).
- Control room instrumentation deficiencies were being managed effectively by operations personnel in accordance with the licensee's procedures. There was no significant cumulative impact on operational safety as a result of the instrumentation deficiencies, and no Technical Specification (TS) requirements were impacted (Section O2.1).
- The service water system was appropriately configured and maintained. System parameters were being maintained within TS requirements (Section O2.2).
- A clearance associated with service water (SW) system motor operated valve (MOV) maintenance provided adequate isolation conditions for personnel safety and protection of plant equipment. The clearance was implemented in accordance with the licensee's procedures (Section O2.3).
- The licensee had appropriately identified operator workarounds. The existing workarounds did not significantly impact plant operational safety (Section O2.4).

Maintenance

- Maintenance activities were conducted in accordance with applicable work documents and procedures. Personnel were properly trained and knowledgeable of their assignments (Section M1.1).
- No problems were identified during observed surveillances. Completed surveillance test packages demonstrated acceptable test results (Section M2.1).

Engineering

- An operability determination (OD) and repair instructions for a SW piping leak downstream of the component cooling water heat exchangers was performed in accordance with the licensee's engineering procedures (Section E1.1).

- A review of data for select MOVs tested during the recent refueling outage determined that the tested MOVs met the acceptance criteria. No operability concerns were identified (Section E8.2).

Plant Support

- Radiological controls and security practices were properly conducted. Areas observed in the radiological control area were appropriately posted and secured. The security plan was effectively implemented and compensatory actions were initiated when required (Section R1.1, S1.1).
- The licensee's submittals of the scope and objectives as well as the scenario package were timely and appropriate for this biennial emergency preparedness exercise (Section P4.1).
- The licensee's performance in responding to the simulated emergency during the biennial exercise on December 8, 1999 was competent, and the exercise constituted a successful demonstration of the licensee's emergency response capabilities. Emergency declarations were correct and timely, and offsite notifications were initiated within approximately 15 minutes with the exception of the General Emergency notification. Command and control in each of the emergency response facilities was effective. Staffing of emergency response facilities was timely (Section P4.2).

Report Details

Summary of Plant Status

Robinson Unit 2 operated at or near 100 percent power throughout the inspection period.

I. Operations

O1 Conduct of Operations

O1.1 General Comments (71707)

The inspectors conducted frequent control room tours to verify proper staffing, operator attentiveness and communications, and adherence to approved procedures. The inspectors routinely attended operations turnover meetings, management review meetings, and plan-of-the-day meetings to maintain awareness of overall plant operations. Operator logs, Condition Reports (CR), and instrumentation were routinely reviewed. Plant tours were conducted to verify operational safety and compliance with Technical Specifications (TS), as well as to assess plant housekeeping. In general, the inspectors concluded that the conduct of operations was risk informed, professional, and safety-conscious.

O2 Operational Status of Facilities and Equipment

O2.1 Control Room Instrumentation Work Requests (WR) "Blue Dots" (71707)

The inspectors reviewed outstanding WRs initiated for control room instrumentation and controls to assess their cumulative impact on plant operation. These WRs are designated by a "blue dot" deficiency sticker placed adjacent to the affected instrument in accordance with maintenance management procedure MMM-003, "Maintenance Work Requests and Work Request Planning," Revision 62.

The inspectors found that sixteen WRs were outstanding at the time of the review as listed in the Blue Dot report in the Operations Report Book. Each outstanding WR was appropriately marked with a blue dot on the control board. There were several deficiencies at the time that were resulting in nuisance alarms for the operators. The inspectors found that these deficiencies were appropriately placed on the emergent work list for prompt resolution. The inspectors did not identify any significant cumulative impact on operational safety as a result of the instrumentation deficiencies and no TS requirements were impacted. The inspectors concluded that control room instrumentation deficiencies were being managed effectively by operations personnel in accordance with the licensee's procedures.

O2.2 Safety System Walkdown (71707)

The inspectors conducted a walkdown of the service water (SW) system to assess the general condition of system components, including labeling, to verify that system valve positions matched the system drawings and station operating procedures, and to assess plant housekeeping conditions around system components. No misaligned valves were identified and no housekeeping deficiencies were noted.

The inspectors also reviewed the applicable sections of the Updated Final Safety Analysis Report (UFSAR) and TS and identified no discrepancies. A review of the Maintenance Rule database was also performed and the inspectors found that the appropriate performance criteria data were being collected and trended. The inspectors reviewed the system engineer's system notebook and found it to be maintained in accordance with the licensee's engineering procedures. The service water system was appropriately configured and maintained. System parameters were being maintained within TS requirements.

O2.3 Clearance Walkdown (71707, 62707)

The inspectors verified proper implementation of clearance 99-01261 during a walkdown on December 10, 1999. The clearance was to isolate the service water motor operated valve V6-35A-MO for scheduled maintenance. The inspectors verified that valves, electrical breakers, and control switches were aligned appropriately to provide an adequate boundary for the scheduled maintenance activity. No discrepancies were identified during inspection of the clearance. The inspectors verified that the clearance was implemented in accordance with plant procedures.

O2.4 Operator Workaround Assessment (71707)

The inspectors reviewed the five open operator workarounds and did not identify any significant cumulative impact on operational safety. The inspectors also determined that the existing operator workarounds did not require compensatory actions that were beyond the scope and abilities of the operators. Procedures OMM-001-8, "Control of Equipment and System Status," Revision 9, and OMM-001-1, "Operations Unit Organization and Administration," Revision 10, that provide the requirements and guidance for the identification and processing of operator workarounds, were appropriately followed by the licensee. Operator Workarounds were also trended by the licensee for timely resolution. The licensee had appropriately identified operator workarounds. The existing workarounds did not significantly impact plant operational safety.

II. Maintenance

M1 Conduct of Maintenance

M1.1 Observation of Maintenance Activities (62707)

The inspectors observed all or portions of the following Work Request/Job Orders (WR/JOs) and Procedure Instrumentation and Control (PIC).

- WR/JO 99-ACSQ1, Replace Level Indicator LIC-947 Local RWST Indication
- WR/JO 99-ASCQ2, Rescale Level Transmitter LT-948 RWST Indication
- PIC 302, Pressure and Vacuum Gauges, Revision 5
- PIC 002, D/P Electronic Transmitter (4-20 mA Output), Revision 10
- WR/JO AEQC 004, Clean and Inspect Power Range NI N-41
- WR/JO AAXD 004, Calibrate the Power Range Nuclear Inst. Channel N-41
- WR/JO 99-AFCB1, Replace Relay LC-494A1-X(B) in Protection Rack #62
- WR/JO AAOQ 003, Limitorque Grease Inspection Of Valve V6-33A-MO
- WR/JO 98-AEDT2, Replace Thermal Overload Relay in MCC-6 (SI-867B)
- WR/JO 99-AERR1, Repair Service Water Leak Downstream of SW-740
- WR/JO 99-AETW1, Weld Repair Service Water Piping

The inspectors found that the maintenance observed was properly approved and was included in the plan of the day. The inspectors also found that the work was performed thoroughly, and with the work package present and in use. Accompanying documents such as procedures and supplemental work instructions were properly followed. Personnel were properly trained and knowledgeable of their assignments. The inspectors noted that supervisors and system engineers monitored the jobs on a frequent basis.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Surveillance Testing (61726)

The inspectors reviewed test package documentation and observed performance of all or portions of the following surveillance tests:

- OST 401-1, "EDG "A" Slow Speed Start," Revision 10

- OST 252-2, "RHR Component Test - Train "B" (Quarterly)," Revision 7
- OST 258-2, "RHR Valve Position Indicator Verification Train "B" (Every Two Years)," Revision 0

No problems were identified. Completed surveillance test packages demonstrated acceptable test results.

III. Engineering

E1 Conduct of Engineering

E1.1 Service Water Leak Evaluation and Repair (37551, 62707)

The inspectors reviewed an operability determination (OD) and engineering service request (ESR) related to the repair of a pinhole leak in the SW system piping downstream of SW-740, B component cooling water (CCW) heat exchanger SW outlet isolation. The inspectors reviewed ESR 99-0345, Operability Leak Assessment of Leak Downstream of SW-740. The leak occurred outside the code class boundary, and there were no operability issues resulting from the leak. The wall thinning appears to be a result of flow induced erosion caused by the throttling effect of SW-740. The inspectors also reviewed ESR 99-00347, Leak Repair to SW Pipe at Discharge of CCW HX B. This ESR provided instructions for a code repair utilizing a welded pipe overlay which would restore the nominal wall thickness to the thinned pipe areas identified by the UT. The inspectors found the ESR to contain the appropriate 10 CFR 50.59 screening and evaluation. The ESR adequately addressed the structural issues such as pressure, dead weight and seismic loads. The inspectors found the repair instructions to be consistent with code requirements, specifically, Boiler and Pressure Vessel Code Case N-562, "Alternative Requirements for Wall Thickness Restoration of Class 3 Moderate Energy Piping Section XI, Division 1."

An OD and repair instructions for a service water piping leak downstream of the CCW heat exchangers was performed in accordance with the licensee's engineering procedures.

E8 Miscellaneous Engineering Issues (92903)

E8.1 (Closed) Licensee Event Reports (LERs) 50-261/1999-02, 1999-02, Supplement 1: Incorrect Gain Settings For Delta-Temperature Trips. The LER which related to the incorrect gain settings for Delta - Temperature Trips was discussed and reviewed NRC Inspection Report 50-261/99-07 and dispositioned as a non-cited violation. The licensee's corrective actions were also reviewed. An additional corrective action planned by the licensee is to perform a Safety System Functional Inspection (SSFI) on the Reactor Protection System and the Engineered Safeguards Features Actuation System.

E8.2 Motor Operated Valve (MOV) Program (37551)

The inspectors reviewed data for selected MOVs that were tested during the recent refueling outage per the MOV test program. The inspectors reviewed licensee technical management procedure TMM-032, "Motor Operated Valve Program," Revision 14. TMM-032 provide guidance to implement and maintain the overall MOV program. The inspectors reviewed the test data obtained for several MOVs tested during the recent refueling outage. These MOVs included auxiliary feedwater (AFW) system valves AFW-V2-16B, AFW-V2-16C, SI-870A, and FCV-620. The inspectors discussed the test data with the responsible engineer and determined that the results met the acceptance criteria. The inspectors noted the responsible engineer to be knowledgeable and demonstrated ownership of the overall program.

IV. Plant Support**R1 Radiological Protection and Chemistry (RP&C) Controls****R1.1 General Comments (71750)**

The inspectors periodically toured the radiological control area (RCA) during the inspection period. Radiological control practices were observed and discussed with radiological control personnel including RCA entry and exit controls, survey postings, locked high radiation area controls, and radiological area material condition. The inspectors concluded that radiation control practices were being conducted in accordance with procedures. The inspectors also toured the radwaste building and found that radwaste storage containers and laundry bags were in good condition and appropriately labeled. In addition, outside radwaste storage areas and structures were properly posted and exhibited correct labeling and effective housekeeping. The inspectors found that housekeeping throughout the plant was effective in maintaining areas free of unnecessary equipment and debris. Relatively few contaminated areas were noted, and posted locked high radiation areas were properly secured against unauthorized entry.

P4 Staff Knowledge and Performance in Emergency Preparedness (EP)**P4.1 Review of Exercise Objectives and Scenarios for Power Reactors****a. Inspection Scope (82302)**

The inspectors reviewed the exercise scenario to determine if it was of sufficient detail and challenge to demonstrate exercise objectives and meet regulatory requirements.

b. Observations and Findings

The scope and objectives for the 1999 H. B. Robinson exercise were submitted to the NRC on September 20, 1999. The complete scenario package was submitted on October 22, 1999. The exercise scenario was judged to be of sufficient detail and challenge to demonstrate the exercise objectives and test the licensee's onsite and offsite emergency organizations.

c. Conclusions

The licensee's submittals of the scope and objectives as well as the scenario package were timely and appropriate for this biennial emergency preparedness exercise.

P4.2 Evaluation of Exercises for Power Reactors (82301)

a. Inspection Scope

During the period December 6-8, 1999, the inspectors observed and evaluated the H. B. Robinson Steam Electric Plant biennial, full-participation emergency preparedness exercise as well as selected activities related to the licensee's conduct and self-assessment of the exercise. Licensee activities inspected during the exercise included those occurring in the Control Room Simulator, Technical Support Center, Operations Support Center, and Emergency Operations Facility. The inspectors evaluated licensee recognition of abnormal plant conditions, classification of emergency conditions, notification of offsite agencies, development of protective action recommendations, command and control, communications, adherence to Emergency Implementing Procedures (EIPs), and the overall implementation of the licensee's Emergency Plan. The exercise was conducted on December 7, 1999 from 6:30 a.m. to 2:00 p.m.

b. Emergency Response Facility (ERF) Observations and Findings

b.1 Control Room Simulator (CRS)

The initiating event in this scenario commenced at 8:38 a.m. as a steam line break outside of the containment vessel. (Details regarding the exercise scenario may be found in a narrative summary included in the attachment to this report.) The Superintendent of Shift Operations was effective as the Site Emergency Coordinator (SEC) and turned over this responsibility to the Technical Support Center at 9:28 a.m.

b.2 Technical Support Center (TSC)

The TSC was staffed and activated in a timely manner. The Site Emergency Coordinator promptly established command and control by conducting a briefing to discuss the condition of the plant and immediate repair priorities. Briefings involving TSC

principals were held periodically and when significant changes in plant conditions occurred. The briefings were concise with an appropriate level of detail. Video monitoring of the TSC briefs kept the different areas of the TSC informed. Plant status boards were quickly updated as new data were received.

The TSC declared a Site Area Emergency (SAE) at 9:38 a.m., due to a loss of all AC electrical power to the safety buses and a loss of all auxiliary feedwater. The event was reclassified as an Alert when an exercise controller explained that EPCLA-02, "Emergency Action Level (EAL) Interpretation Guide," intended for a 15 minute delay in a SAE classification, if the loss of safety function was due to a loss of power to the safety buses. The reclassification did not impact the licensee's response to the simulated accident but was necessitated to permit other agencies participating in the exercise sufficient time to demonstrate certain objectives.

b.3 Operations Support Center (OSC)

The inspectors briefly observed activities at the OSC, and found that the facility appeared to be generally effective in the dispatch of repair teams.

b.4 Emergency Operations Facility (EOF)

Following the Notification of Unusual Event (NOUE) declaration at 8:38 a.m., the interim SEC invoked the option of activating the EOF (which is not required at the NOUE classification). Required minimum staffing was expeditiously achieved, and the Emergency Response Manager (ERM) provided an initial briefing to the EOF staff at 9:10 a.m. The EOF was activated at 9:28 a.m. The primary responsibilities of the EOF were communications with state and county governmental authorities, development of protective action recommendations (PARs) for the public, and radiological assessment.

Command and control of facility operations by the ERM was excellent. Periodic briefings by the ERM provided the staff with appropriate details as well as an overall perspective of the simulated event. The EOF staff functioned efficiently and professionally.

The initial notification of the General Emergency (GE) declaration at 12:09 p.m. was provided to offsite governmental agencies via emergency notification message number 6. The transmission and content of this message was problematic for the following reason:

- The licensee's state/county emergency communicator established voice contact with state and county agencies at 12:24 p.m. (15 minutes after the GE declaration), but then gathered contact information and waited for the notification forms to arrive by facsimile transmission at all designated locations before starting the actual verbal transmission of the message at 12:34 p.m. (25 minutes

after the GE declaration). This did not meet the intent of the licensee's procedural requirements to commence verbal notification of state and county authorities within 15 minutes of an emergency declaration (Section 8.2.3 of emergency procedure EPNOT-2, "EOF State/County Emergency Communicator," Revision 1).

The licensee's critique process identified these issues and documented them for follow-up and corrective action by means of Condition Reports (CRs) 99-02439 and 99-02441.

b.5 Licensee Exercise Critique

Following the exercise, the licensee conducted facility critiques in which the players assessed their own performance and identified areas for improvement. The player critiques for the OSC, TSC, and EOF were observed to be satisfactory. Subsequently, the licensee's controller/evaluator organization held detailed discussions, reviewed documentation, and conducted interviews as necessary to develop critique results. The licensee's critique identified no significant issues but several areas for improvement, including some of those identified by the NRC and discussed in this report. On December 8, 1999, the Emergency Planning Supervisor presented the critique findings to licensee management.

c. Overall Exercise Conclusions

The licensee's performance in responding to the simulated emergency was competent, and the exercise constituted a successful demonstration of the licensee's emergency response capabilities. Emergency declarations were correct and timely, and offsite notifications were initiated within approximately 15 minutes with the exception of the GE notification. Command and control in each of the ERFs was effective. Staffing of emergency response facilities was timely.

S1 Conduct of Security and Safeguards Activities

S1.1 General Comments (71750)

During the period, the inspectors toured the protected area and noted that the perimeter fence was intact and not compromised by erosion or disrepair. Isolation zones were maintained on both sides of the barrier and were free of objects which could shield or conceal an individual. Lighting of the perimeter and of the protected area was acceptable.

P8 Miscellaneous Security and Safeguards Issues

- P8.1 (Closed) Escalated Enforcement Item (EEI) 50-261/99-010-01, 99-010-02, 99-010-03, 99-010-04, and 99-010-05: Access authorization apparent violations. By letter EA 99-272 dated November 23, 1999, access authorization EEIs 50-261/99-010-01, 99-010-02, 99-010-03, and 99-010-04 were dispositioned as four examples of a Severity Level IV violation for the Robinson facility. This violation was identified as 50-261/01014, failure to comply with the regulations in 10 CFR Part 73 and the provisions of the Robinson Physical Security Program related to the Access Authorization Program. EEI 50-261/99-010-05 was dispositioned as a violation of minor significance and was not subject to formal enforcement action.**

V. Management Meetings**X1 Exit Meeting Summary**

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on December 22, 1999. The licensee acknowledged the findings presented at the exit meeting. Dissenting comments were not received from the licensee. The licensee did not identify any materials used during the inspection as proprietary information.

PARTIAL LIST OF PERSONS CONTACTED**Licensee**

T. Cleary, Operations Manager
J. Clements, Site Support Services Manager
S. Collins, Radiation Protection Superintendent
R. Duncan, Robinson Engineering Support Services Manager
J. Fletcher, Maintenance Manager
J. Moyer, Director of Site Operations
R. Steele, Outage Management Manager
T. Walt, Plant General Manager
R. Warden, Regulatory Affairs Manager
A. Williams, Training Manager
D. Young, Vice President, Robinson Nuclear Plant

NRC

B. Desai, Senior Resident Inspector
A. Hutto, Resident Inspector

INSPECTION PROCEDURES USED

- IP 37551: Onsite Engineering**
- IP 61726: Surveillance Observations**
- IP 62707: Maintenance Observation**
- IP 71707: Plant Operations**
- IP 71750: Plant Support Activities**
- IP 82301: Evaluation of Exercises for Power Reactors**
- IP 82302: Review of Exercise Objectives and Scenarios for Power Reactors**
- IP 92903: Followup - Engineering**

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-261/01014	VIO	Failure To Comply With The Regulations In 10 CFR Part 73 And The Provisions Of The Robinson Physical Security Program Related To The Access Authorization Program In Four Examples (Section P8.1).
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Closed

50-261/99-010-01	EEI	Failure To Review And Evaluate Background Information For Persons Granted Unescorted Access (Section P8.1).
50-261/99-010-02	EEI	Continuation Of The Granting Of Unescorted Access Authorization (Section P8.1).
50-261/99-010-03	EEI	Failure To Maintain Original Data On Which The Licensee Granted Unescorted Access Authorization For Five Years (Section P8.1).
50-261/99-010-04	EEI	Failure to Log Safeguards Events Within 24 Hours Of Discovery (Section P8.1).
50-261/99-010-05	EEI	Failure To Document Individuals' Training In Accordance With Licensee Requirements (Section P8.1).
50-261/99-02-00 and 01	LER	Incorrect Gain Settings For Delta-Temperature Trips (Section E8.1).

**H. B. ROBINSON 1999 EXERCISE COMBINED
OBJECTIVES AND NARRATIVE SUMMARY OF SCENARIO**

Item #	Obj. #	Combined Objectives for the 1999 Biennial Exercise - All Facilities
1	6	Demonstrate the ability to obtain assistance from law enforcement, medical, and fire-fighting organizations including assistance for contaminated personnel.
2	7	Demonstrate the ability to provide a representative to the State Emergency Operations Center/Forward Emergency Operations Center (SEOC/FEOC) (when activated) and County Emergency Operations Center (EOCs).
3	8	Demonstrate the ability to coordinate radiological monitoring and analysis.
4	9	Demonstrate the ability to identify and properly classify events using appropriate procedures, plant system parameter values, and the Emergency Action Levels (EALs).
5	10	Demonstrate the ability to alert, notify, and mobilize Emergency Response Organization (ERO) personnel.
6	11	Demonstrate the ability to make initial emergency notification to State and Chesterfield, Darlington, and Lee County Warning Points or EOCs within 15 minutes following declaration of each emergency classification.
7	12	Demonstrate the ability to make follow-up notifications to State and Chesterfield, Darlington, and Lee County Warning Points or EOCs within 60 minutes following initial and change of classification notifications.
8	13	Demonstrate the ability to formulate protective action recommendations and transmit to State and County personnel.
9	16	Demonstrate the ability to communicate between the Control Room (CR), Technical Support Center (TSC), Emergency Operations Facility (EOF), Operational Support Center (OSC), Joint Information Center (JIC), and Environmental Monitoring teams.
10	17	Demonstrate the ability to communicate with the NRC within 60 minutes following each emergency classification declaration.
11	18	Demonstrate the ability to activate the JIC and interface with the news media.
12	19	Demonstrate the ability to provide a Corporate spokesperson and timely dissemination of information to the news media.
13	20	Demonstrate the ability to deal with rumors.
14	21	Demonstrate the ability to obtain data from meteorological, hydrologic, seismic, radiological monitors, and sampling devices.**
15	23	Demonstrate the ability to determine the source term and magnitude of releases.
16	24	Demonstrate the ability to project dosage to the public, from the ingestion pathway, based on plant and field data.
17	29	Demonstrate the ability to provide ERO personnel protective clothing, respiratory protection, dosimetry, and radioprotective drugs. This also includes determination of doses received and maintenance of dose records 24 hours per day.
18	39	Perform a critique at the conclusion of an exercise to evaluate the ability of organizations to respond as required.

Combined Objectives for the 1999 Biennial Exercise - Facility Specific					
Item	Obj#	Simulator Control Room	Met	Not Met	Not Performed
1	9	Demonstrate the ability to identify and properly classify events using appropriate procedures, plant system parameter values, and the EALs.			
2	10	Demonstrate the ability to alert, notify, and mobilize ERO personnel.			
3	11	Demonstrate the ability to make initial emergency notification to State and Chesterfield, Darlington, and Lee County Warning Points or EOCs within 15 minutes following declaration of each emergency classification.			
4	12 *	Demonstrate the ability to make follow-up notifications to State and Chesterfield, Darlington, and Lee County Warning Points or EOCs within 60 minutes following initial and change of classification notifications.			
5	13	Demonstrate the ability to formulate protective action recommendations and transmit to State and County personnel.			
6	16	Demonstrate the ability to communicate between the CR, TSC, EOF, OSC, and Environmental Monitoring teams.			
7	17	Demonstrate the ability to communicate with the NRC within 60 minutes following each emergency classification declaration.			
8	21 **	Demonstrate the ability to obtain data from meteorological, hydrologic, seismic, radiological monitors, and sampling devices.			
9	23	Demonstrate the ability to determine the source term and magnitude of releases.			
10	29	Demonstrate the ability to provide ERO personnel protective clothing, respiratory protection, dosimetry, and radioprotective drugs. This also includes determination of doses received and maintenance of dose records 24 hours per day.			
11	39	Perform a critique at the conclusion of an exercise to evaluate the ability of organizations to respond as required.			

* Based on the scenario timeline the Simulator Control Room is not expected to make follow-up notifications to the State and Counties, however conditions may make it possible.

** This Scenario does not include the use of hydrologic and seismic monitors.

Combined Objectives for the 1999 Biennial Exercise Facility Specific					
Item	Obj	Emergency Operations Facility	Met	Not Met	Not Performed
1	6	Demonstrate the ability to obtain assistance from law enforcement, medical, and fire-fighting organizations including assistance for contaminated personnel.			
2	7	Demonstrate the ability to provide a representative to the SEOC/FEOC (when activated) and County EOCs.			
3	8	Demonstrate the ability to coordinate radiological monitoring and analysis.			
4	11	Demonstrate the ability to make initial emergency notification to State and Chesterfield, Darlington, and Lee County Warning Points or EOCs within 15 minutes following declaration of each emergency classification.			
5	12	Demonstrate the ability to make follow-up notifications to State and Chesterfield, Darlington, and Lee County Warning Points or EOCs within 60 minutes following initial and change of classification notifications.			
6	13	Demonstrate the ability to formulate protective action recommendations and transmit to State and County personnel.			
7	16	Demonstrate the ability to communicate between the CR, TSC, EOF, OSC, and Environmental Monitoring teams.			
8	21**	Demonstrate the ability to obtain data from meteorological, hydrologic, seismic, radiological monitors, and sampling devices.			
9	23	Demonstrate the ability to determine the source term and magnitude of releases.			
10	24	Demonstrate the ability to project dosage to the public, from the ingestion pathway, based on plant and field data.			
11	29	Demonstrate the ability to provide ERO personnel protective clothing, respiratory protection, dosimetry, and radioprotective drugs. This also includes determination of doses received and maintenance of dose records 24 hours per day.			
12	39	Perform a critique at the conclusion of an exercise to evaluate the ability of organizations to respond as required.			

** The Scenario does not include the use of hydrologic and seismic monitors.

Combined Objectives for the 1999 Biennial Exercise - Facility Specific					
Item	Obj	Technical Support Center	Met	Not Met	Not Performed
1	6	Demonstrate the ability to obtain assistance from law enforcement, medical, and fire-fighting organizations including assistance for contaminated personnel.			
2	9	Demonstrate the ability to identify and properly classify events using appropriate procedures, plant system parameter values, and the EALs.			
3	16	Demonstrate the ability to communicate between the CR, TSC, EOF, OSC, and Environmental Monitoring teams.			
4	17	Demonstrate the ability to communicate with the NRC within 60 minutes following each emergency classification declaration.			
5	21**	Demonstrate the ability to obtain data from meteorological, hydrologic, seismic, radiological monitors, and sampling devices.			
6	29	Demonstrate the ability to provide ERO personnel protective clothing, respiratory protection, dosimetry, and radioprotective drugs. This also includes determination of doses received and maintenance of dose records 24 hours per day.			
7	39	Perform a critique at the conclusion of an exercise to evaluate the ability of organizations to respond as required.			

** The Scenario does not include the use of hydrologic and seismic monitors.

Combined Objectives for the 1999 Biennial Exercise - Facility Specific					
Item	Obj	Operations Support Center	Met	Not Met	Not Performed
1	8	Demonstrate the ability to coordinate radiological monitoring and analysis.			
2	16	Demonstrate the ability to communicate between the CR, TSC, EOF, OSC, and Environmental Monitoring teams.			
3	21**	Demonstrate the ability to obtain data from meteorological, hydrologic, seismic, radiological monitors, and sampling devices.			
4	29	Demonstrate the ability to provide ERO personnel protective clothing, respiratory protection, dosimetry, and radioprotective drugs. This also includes determination of doses received and maintenance of dose records 24 hours per day.			
5	39	Perform a critique at the conclusion of an exercise to evaluate the ability of organizations to respond as required.			

** The Scenario does not include the use of hydrologic and seismic monitors.

Combined Objectives for the 1999 Biennial Exercise - Facility Specific					
Item #	Obj #	Joint Information Center	Met	Not Met	Not Performed
1	18	Demonstrate the ability to activate the JIC and interface with the news media.			
2	19	Demonstrate the ability to provide a Corporate spokesperson and timely dissemination of information to the news media.			
3	20	Demonstrate the ability to deal with rumors.			
4	39	Perform a critique at the conclusion of an exercise to evaluate the ability of organizations to respond as required.			

H.B. Robinson Steam Electric Plant Unit No. 2

Biennial Graded Exercise

December 07, 1999

Narrative Summary and Timeline

Note

This exercise is a Biennial Graded Exercise, with partial participation by the State and County agencies. The exercise will be conducted with the Control Room simulator in the interactive mode. All times are for planning purposes and may vary (except the start of the release) due to the response of the Operations crew located in the Simulated Control Room.

At 0630 on December 7, 1999, H. B. Robinson Steam Electric Plant (HBRSEP) Unit No. 2 is at 100 percent power and at the beginning of core life and has been in continuous operation for 43 days. Rolling brown outs have occurred due to some Y2K problems associated with the Pearl Harbor computer virus. Random occurrences of the virus along the Eastern Seaboard have made grid loads critical as well as presenting a slightly destabilized electrical grid in the Southeastern United States.

The weather conditions include the wind direction from the North Northeast from about thirty degrees with variable wind speeds of five to ten miles per hour. Temperatures will be in the mid-thirties at night and rising to the mid forties during the day. Partly cloudy skies will dominate the region for the next few days. During the past several weeks, rain has inundated the region. Rain totals have exceeded all past records for weekly and daily totals.

Conditions in the plant include the following:

- Steam Driven Auxiliary Feedwater (SDAFW) Pump is out of service for repairs to the trip throttle valve.
- All other Caution Tags/Caps installed are consistent with the current plant conditions.
- Fuel cladding leakage below technical specification requirements has been evident over the last three days.
- There is currently no Loose Parts Monitoring System indication. An event review team is currently investigating the cause of higher than normal radioactivity.
- Intermittent indications of Hydrogen-3 slightly above the lower limit of detection have been seen in the secondary samples analysis results.

At approximately 0710, the Operations Crew will accept the watch taking control of the plant. At approximately 0715, a leak will develop on the southwest side of the Condensate Storage Tank (CST) due to a ruptured vertical weld seam approximately one foot from the ground. The initial leak rate is 5,000 gallons per minute (gpm). Once the head pressure is reduced (at CST level of approximately 45 %) the leak will slow to 2,000 gpm. This leak can not be isolated all repair attempts will fail. An alternate source of makeup water should be established in accordance with (IAW) OP-915. The crew may elect to align to a backup supply (Service Water or Deepwell) to the AFW Pumps suction IAW OP-402. Due to the rapid reduction in CST level, the crew may conservatively decide to commence a controlled plant shutdown.

At 0745, a blown power fuse on Power Range Nuclear Instrument NI-43 will cause a Turbine Runback. The crew will respond IAW AOP-015, Secondary Load Rejection or Turbine Runback, and will stabilize the plant at 65 %.

At 0830, a Main Steam Line Break (5E6 lbm/hr) outside of the CV will occur resulting in a Reactor Trip and Safety Injection (SI). The rupture will be down stream of the R-31 monitor and upstream of the Main Steam Isolation Valve (MSIV). The actual pipe failure will be located at the intersection of the pipe and brace. The MSIVs do not auto-close on the SI. The crew will respond IAW PATH-1, and should diagnose the failure of the Main Steam Isolation Valves (MSIVs) to automatically close. The crew will transition to EPP-11, Faulted S/G Isolation. "A" Emergency Diesel Generator (EDG) will not start. Conditions will be met for the declaration of an UNUSUAL EVENT. Declaration of the UNUSUAL EVENT should be completed by 0845.

Fuel cladding leakage will escalate as a result of the Reactor Trip. Due to resulting Reactor Trip, Radiation Control may conduct process filter surveys per HPP-012. Elevated radiation levels will be evident in the area surrounding the Volume Control Tank Room and Seal Water Return filter. Chemistry may elect to conduct Reactor Coolant System sampling in the Sample Room. Increased activity will be noted at this time due further degradation of the fuel cladding.

At approximately 0930 or earlier, a Loss of Offsite Power will occur due to an electrical failure of the Start up Transformer. The failure is due to the explosion of the top line insulator. "B" EDG (which was running unloaded due to the SI) trips as a result of the electrical perturbation. Transition to "EPP-1 Loss of All AC Power" should be made by the crew. "B" EDG will be manually (locally) started within ten minutes.

Conditions will be met for the declaration of an ALERT due to E1/E2 de-energized for less than 15 minutes. The State and Counties will be notified, beepers will be initiated and all on site Emergency Response Facilities will be requested to activate at this time. Declaration of the ALERT should be completed by 0945.

Once 480V Bus E2 is energized, the 'B' Motor Driven Auxiliary Feedwater Pump will start and will continue to run for approximately 55 minutes. At approximately 1040, the 'B' MDAFW pump will trip due to a breaker malfunction.

At 1055, conditions will be met for the declaration of a **SITE AREA EMERGENCY** due to loss of Secondary Heat Sink. Due to loss of feedwater flow, the Operations crew will transition into FRP-H.1, Response to Loss of Secondary Heat Sink. Declaration of the **SITE AREA EMERGENCY** should be completed by 1100.

The SDAFW pump and 'A' Emergency Diesel Generator will be returned to service at 1105.

At approximately 1200, the plant will experience a guillotine steam generator tube leak. The guillotine steam generator tube leak is due to the drying out of the "A" Steam Generator. The affected tubes are located at the top of "A" Steam Generator. The release will start due to the ruptured steam line in conjunction with the damage to "A" Steam Generator. The release offsite will impact portions of both Darlington County and Lee County. The major portion of the release will be found in the North East section of Lee county that protrudes into the ten mile area surrounding the HBRSEP.

At approximately 1200, R-31A will alarm indicating that an offsite release is occurring. This will allow the determination to be made that the breach of the third fission product barrier has occurred. A declaration of a **GENERAL EMERGENCY** should be made at this time. This declaration should be completed by 1215.

From 1200 until the end of the Biennial Graded Exercise, HBRSEP Environmental Monitoring Teams will monitor radiological conditions from the plant out to ten miles and determine the activity.

At approximately 1500, the Biennial Graded Exercise will terminate. After a short break, a critique will be conducted in each CP&L facility.