



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA ST., N.W., SUITE 3100  
ATLANTA, GEORGIA 30303

Report No.: 50-261/82-42

Licensee: Carolina Power and Light Company  
411 Fayetteville Street  
Raleigh, NC 27602

Docket No.: 50-261

License No.: DPR-23

Facility Name: H. B. Robinson

Inspection at H. B. Robinson site near Hartsville, South Carolina

Inspector: *A. K. Hardman for* 1/24/83  
S. Weise Date Signed

Approved by: *A. K. Hardman for* 1/24/83  
P. Bemis, Section Chief, Project Branch No. 1 Date Signed  
Division of Project and Resident Programs

SUMMARY

Inspection on December 11, 1982 - January 9, 1983

Areas Inspected

This routine, announced inspection involved 94 resident inspector-hours on site in the areas of technical specification compliance, plant tour, operations performance, reportable occurrences, housekeeping, site security, surveillance activities, maintenance activities, quality assurance practices, radiation control activities, outstanding items review, IE Bulletin followup, spent fuel rack modification activities, and enforcement action followup.

Results

Of the 14 areas inspected, no violations or deviations were identified in 12 areas; 3 violations were found in 2 areas (low temperature overpressure protection system incapable of meeting design bases, paragraph 9.c.; failure to establish adequate calibration values, paragraph 9.b.; failure to follow procedures, paragraph 10.a.)

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## DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*R. B. Starkey, Plant General Manager
- \*J. Curley, Manager Technical Support
  - F. Gilman, Project Specialist, Regulatory Compliance
  - F. Lowery, Unit 2 Operations Supervisor
  - W. Crawford, Manager, Operations and Maintenance
  - R. Chambers, Unit 2 Maintenance Supervisor
- \*C. Wright, Specialist, Regulatory Compliance
  - S. Crocker, Manager, Environmental & Radiation Control
  - W. Flanagan, Engineering Supervisor, Plant
- \*J. Young, Director, Corporate QA/QC

Other licensee employees contacted included technicians, operators, mechanics, security force members, and office personnel.

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on January 10, 1982, with those persons indicated in paragraph 1 above. The licensee acknowledged the violations. The inspector discussed the problems detailed in paragraphs 9.b. and 11. The licensee indicated that a review of safety-related instruments installed or affected by plant modifications would be conducted and that the feasibility of testing manual pushbuttons during the spring 1983, steam generator outage would be explored.

### 3. Licensee Action on Previous Enforcement Matters

(Closed) Severity Level IV Violation 261/82-32-01. This item concerned correct locking of safety-related valves. The inspector reviewed CP&L response letter dated October 29, 1982; Administrative Instruction 4.0, Revision 149; and operations personnel routing documentation. The licensee's corrective action appears adequate.

### 4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations. New unresolved items identified during this inspection are discussed in paragraph 11.

## 5. Plant Tour

The inspector conducted plant tours periodically during the inspection interval to verify that monitoring equipment was recording as required, equipment was properly tagged, operations personnel were aware of plant conditions, and plant housekeeping efforts were adequate. The inspector determined that appropriate radiation controls were properly established, excess equipment or material was stored properly, and combustible material was disposed of expeditiously. During tours the inspector looked for the existence of unusual fluid leaks, piping vibrations, pipe hanger and seismic restraint abnormal settings, various valve and breaker positions, equipment clearance tags and component status, adequacy of firefighting equipment, and instrument calibration dates. Some tours were conducted on backshifts. The inspector performed major flowpath valve lineup verifications and system status checks on the following systems:

- a. Safety injection system accumulators
- b. Selected containment isolation valves
- c. DC power breakers and fuses
- d. Boration paths

## 6. Technical Specification Compliance

During this reporting interval, the inspector verified compliance with selected limiting conditions for operations (LCO's) and reviewed results of selected surveillance tests. These verifications were accomplished by direct observation of monitoring instrumentation, valve positions, switch positions, and review of completed logs and records. The licensee's compliance with selected LCO action statements were reviewed as they happened.

## 7. Plant Operations Review

The inspector periodically reviewed shift logs and operations records, including data sheets, instrument traces, and records of equipment malfunctions. This review included control room logs, auxiliary logs, operating orders, standing orders, jumper logs and equipment tagout records. The inspector routinely observed operator alertness and demeanor during plant tours. During abnormal events, operator performance and response actions were observed and evaluated. The inspector conducted random off-hours inspections during the reporting interval to assure that operations and security remained at an acceptable level. Shift turnovers were observed to verify that they were conducted in accordance with approved licensee procedures. No violations or deviations were identified.

## 8. Physical Protection

The inspector verified by observation and interview during the reporting interval that measures taken to assure the physical protection of the facility met current requirements. Areas inspected included the organization of security force, the establishment and maintenance of gates, doors and isolation zones in the proper condition, that access control and badging was proper, that search practices were appropriate, and that escorting and communications procedures were followed.

## 9. Low Temperature Overpressure Protection (LTOP) System

- a. As documented in IE Report 50-261/82-37 paragraph 9.a., the inspector identified apparent functional test deficiencies in monthly Periodic Test 5.8 for the LTOP actuation electronics. (261/82-37-05). During the licensee's evaluation of the LTOP system, it was discovered that the LTOP pressure transmitters (PT's 500 and 501) were calibrated using an improper zero adjustment value. The zero adjustment value is used to compensate the pressure transmitter for the static head of the sensing lines from the pressurizer. The zero adjust value used was that for a 1700-2500 psig narrow range pressurizer pressure transmitter instead the valve for a 0-3000 psig LTOP wide range pressure transmitter. The incorrect adjustment resulted in the transmitter output being 63 psi low, which is nonconservative for LTOP actuation. The licensee promptly reported the condition on December 14, 1982. The LTOP was not required to be operable at the time of the discovery of the problem. The pressure transmitters were correctly adjusted on December 13, 1982.
- b. The licensee investigated the event and reported the event in Licensee Event Report 82-18 dated December 23, 1982. The inspector reviewed the report and held discussions with licensee personnel. The calibration sheets for PT's 500 and 501 were not developed as part of the modification package, and therefore, were not formally developed, reviewed, and approved when the system was placed in operation. Calibration sheets were developed and revised by maintenance personnel without formal management controls until January 26, 1981, when the current administrative controls of Maintenance Instruction (MI)-4, Calibration Program, were implemented. The incorporation of these calibration sheets into the plant operating manual, however, was conducted without any technical review of the data. Thus, the PT 500 and 501 calibration sheets were approved years after system installation and without a technical review by the facility staff. Failure to adequately establish accurate calibration values for the LTOP pressure transmitters is a violation. (261/82-42-01). The Technical Specifications for procedure review and approval have undergone significant changes in 1982, which better provide for quality safety reviews. However, the failure to adequately review calibration sheets prior to their approval for use in MI-4 indicates potential inadequacy of other safety-related calibration sheets. The licensee agreed to review calibration sheets

for safety-related instrumentation installed or affected by plant modification.

- c. The inspector reviewed License Amendment 42 dated September 14, 1979 and Technical Specification 3.1.2.1.d. The Safety Evaluation Report for Amendment 42 discusses the design basis events and setpoint analysis for the LTOP system. The system was designed to prevent exceeding the Robinson 2 Appendix G curve pressure limit of about 500 psig for potential pressure transients between coolant temperature of 100-250°F during isothermal reactor coolant system conditions. The licensee uses a 400 psig power operated relief valve (PORV) actuation setpoint to preclude exceeding 500 psig during the design basis mass input and heat input events. Based on conservative calculations, the mass input case has a worst case overshoot of 78 psi, and the heat input case has a worst case overshoot of 66.9 psi. Addition of the overshoot value and the instrument error (63 psi) yield a plant pressure (541 psi and 529.9 psig, respectively) above the conservative 500 psig Appendix G curve limit. The inspector noted that the Appendix G curve assumes a -60 psi instrument error for conservatism. While the LTOP was available to mitigate pressure transients and did limit the peak pressure to 460 psig during an April 13, 1979 transient, the LTOP was not capable of satisfying its design basis function during those periods of required system operability since the system was completed in 1978. This condition constitutes a violation of the system operability requirements. (261/82-42-02).

#### 10. Spent Fuel Rack Modification (50095)

- a. On December 28, 1982, the inspector reviewed the procedural controls on fuel movement in the spent fuel pit (SFP) in preparation for rack replacement. The inspector reviewed Attachment 17 to Modification 633, Fuel Shuffle Procedure, and the Fuel Handling (FT) procedures referenced therein. Attachment 17 paragraph 2.2 required that fuel be moved in strict accordance with FT's 2.0, 3.0, 9.14, and 10. The inspector reviewed these FT's and the spent fuel pit parameters log-sheets associated with fuel movement on December 26-28, 1982. The following discrepancies were noted:
- 1) FT 3.0, Fuel Assembly and Core Component Movement Prerequisites and Periodic Checkoff, paragraph 3.5 requires that the periodic checkoff sheet (Table 3.4) be completed at the beginning of each shift. The applicable portions of the Table 3.4 for spent fuel movement were not being utilized.
  - 2) FT 3.0, paragraph 3.11 requires sampling the SFP for boron every eight hours. This sampling was not being conducted.
  - 3) FT 3.0, paragraph 4.3.2 requires SFP water level to be at least 36 feet 3 inches. The SFP low level annunciator was in alarm and the water level during fuel movement was about 35 feet.

The modification implementing procedure of Attachment 17 is required to be followed revised and re-reviewed prior to implementation. Failure to follow modification implementing procedures is a violation. (261/82-42-03). The licensee took immediate action to suspend fuel movement, revise the modification implementing procedure, and restore normal SFP water level.

- b. The inspector also reviewed the plant and construction storage procedures and practices and verified that the racks were properly identified, handled, and protected. Storage appeared to meet the licensee's Class 3 requirements defined in their store room procedure. The inspector witnessed a partial receipt inspection which identified some rack marking discrepancies. The licensee has contacted the vendor to obtain additional quality assurance documentation. Receipt inspection documentation will be reviewed during a future inspection. The inspector visually examined several new fail racks for appearance and size of welds, cleanliness, obvious defects, and proper identification. The required orientation arrows were not provided, and CP&L is obtaining clarification of rack orientation from the vendor. The discrepancies must be resolved prior to rack installation.

11. Independent Inspection (92706)

Testing of reactor and turbine gageboard (RTGB) pushbuttons for manual initiation of safety system functions. The inspector reviewed various licensee procedures for the testing of safety related equipment with respect to Technical Specification (TS) Tables 3.5-2 through 4. These tables specify operability requirements for safety related manual initiation features. The inspector conducted discussions with licensee operations personnel and had the following findings:

- a. Table 3.5-2 Item 1, Manual reactor trip. This feature consists of two separated RTGB pushbuttons, either of which provide a trip. Licensee procedures do not explicitly require testing of either pushbutton. General Procedure-6, Plant Cooldown to Cold Shutdown, and Periodic Test (PT)-R5.9.1., Refueling Interval Rod Drive Mechanism Timing Test, require opening the reactor trip breakers but does not specify the method. Licensee personnel indicated that the rightmost pushbutton is used to open the trip breakers during conduct of these procedures.
- b. Table 3.5-3 Item 1a., Manual safety injection initiation. This feature consists of two located RTGB pushbuttons, either of which provide initiation. PT 2.1, Refueling Safety Injection Test, and PT 23.2, Refueling Emergency Diesel Auto Start on Loss of Power and Safety Injection, both require a manual safety injection initiation. Neither procedure specifies which pushbutton to use in order to assure that both pushbuttons are tested.
- c. Table 3.5-3 Item 2a., Manual containment spray initiation. This feature consists of two collocated RTGB pushbuttons both of which must be pushed to provide initiation. This feature is tested in PT 3.1, Refueling Containment Spray Test.

- d. Table 3.5-4 Item 1.a.ii., Manual containment phase A isolation. This feature consists of two collocated RTGB pushbuttons either of which provide isolation initiation. PT 2.6, Refueling Isolation Valve Seal Water Test, requires a manual containment phase A isolation initiation, but does not specify or document testing of both pushbuttons.
- e. Table 3.5-4 Item 2c., Manual steamline isolation. This feature consists of three collocated RTGB pushbuttons. Each button shuts the main steamline isolation valve for its respective steamline. No surveillance procedure tests these pushbuttons.
- f. Manual turbine trip. This feature consists of one RTGB pushbutton for remote turbine tripping. PT 15.1, Refueling Turbine Trip Logic Channel Testing, tests this feature.

Technical Specifications 4.4.2, 4.5.1, and 4.7.1. require surveillance testing of containment isolation valves, the safety injection system, and main steam stop valves, respectively. While the T.S. does not clearly state that the manual pushbuttons are to be tested, this testing should be conducted to ensure full system operability. The NRC is continuing to evaluate these testing inadequacies, and this item is unresolved pending NRC resolution. (UNR - 261/82-42-04).

## 12. Reactor Trip Breaker Failure

- a. On December 20, 1982, while at 94% power, 'A' reactor trip breaker failed to open during scheduled surveillance testing. The breaker undervoltage coil de-energized as required on a train 'A' trip signal, but the breaker did not trip. The breaker was manually tripped by instrumentation and control technicians. The failed breaker was replaced with the 'B' reactor trip bypass breaker, and both 'A' and 'B' reactor trip breakers were successfully tested. The licensee's investigation determined that the mechanical trip arm had become sticky due to a buildup of dirt and insufficient lubrication of the mechanical parts. Two undervoltage trip devices were replaced with new devices from stock, and the breakers were cleaned and inspected. After re-installation of the two refurbished breakers, the surveillance test was successfully completed on both breakers. The licensee agreed to submit an information report to the NRC on the breaker failure.
- b. The inspector noted that this event was similar to the 'B' reactor trip breaker failure on September 23, 1981. This failure was discussed in IE Inspection Report 50-261/81-27 and CP&L information report dated November 10, 1981. In October, 1981, the licensee rush ordered certified replacement undervoltage relays to refurbish the other reactor trip and bypass breakers. These parts have never been received. The relays used as replacements in the reactor trip breakers are non-quality controlled, commercial grade relays. While this was previously consistent with the licensee's position that electrical power supply circuit elements are non-Q whose failure actuates the affected safety systems, this position appears inadequate in light of

the relay mechanical failures resulting in breaker non-actuation. Additionally, the licensee agreed to review the need to initiate preventive maintenance for relay cleaning and lubrication or replacement on a schedule to reasonably preclude recurrence. These items, including report submission, constitute an inspector followup item. (50-261/82-42-05).

13. Reactor Trip (93702)

On December 31, 1982, with the plant at 95% power, a reactor trip occurred on low steam generator (S/G) level in 'C' S/G. The trip was caused by the shutting of 'C' Main Steam Isolation Valve due to a poor electrical connection in the valve power supply fuseholder. Safety systems performed as required, and an unusual event was declared and reported to the NRC. Later in the day with the plant in hot shutdown, a second reactor trip occurred when a steam leak on a S/G blowdown containment isolation valve cause a ground which resulted in the loss of instrument bus 4 on overcurrent. A second unusual event was declared and reported to the NRC. The steam leak was isolated and repaired, and the instrument bus returned to normal. The plant returned to power operation on January 1, 1983.

14. Followup on IE Bulletins (IEB's)

- a. IEB 82-01, Alteration of Radiographs. This Bulletin was received by the licensee, but did not require any action. CP&L is cognizant of the issue, and the bulletin, including Revision 1, is closed.
- b. IEB 82-02, Degradation of Threaded Fasteners. The inspector reviewed the bulletin and the licensee's response dated July 30, 1982. The inspector verified that, for Action Item 3 of the bulletin, the licensee submitted a timely response which included the desired information. Action Item 3 of IEB 82-02 is closed.
- c. IEB 82-03, Stress Corrosion in Recirculation System Piping. This bulletin, including Revision 1, was received by the licensee but did not require any action. CP&L is cognizant of the issue, and the bulletin is closed.

15. Licensee Event Report (LER) Followup

The inspector reviewed the following LER's to verify that the report details met license requirements, identified the cause of the event, described appropriate corrective actions, adequately assessed the event, and addressed any generic implications. Corrective action and appropriate licensee review of the below events was verified. The inspector had no further comments.

<u>LER</u>	<u>EVENT</u>
82-17	IVSW-12 Found Shut
80-09, Rev. 1	Primary To Secondary Leak



## 16. Outstanding Item Review

(Closed) Open item 261/82-32-07. The licensee has continued to conduct surveillance and incore/excore detector calibration runs to provide data on detector N44. This data has been evaluated both by CP&L and the nuclear instrument vendor. One of the microammeters associated with N44 was replaced due to perceived meter-to-power level discrepancies. On December 14, 1982, the licensee conducted Periodic Test 1.8 after the latest nuclear instrumentation calibration and determined that all detectors were within specifications for actual versus expected current values.

(Closed) Inspector followup item 261/82-27-09. This item concerned the need to upgrade maintenance on the pressurizer block valves. The licensee issued plant operating experience report 82-04, which the maintenance foremen reviewed with their personnel.

(Closed) Inspector followup item 261/82-02-13. The licensee has installed a plant public address station in the Unit 2 First Aid room.