



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

Report No.: 50-261/85-14

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 Conducted: April 11 - May 10, 1985

Inspectors:	<u><i>A K Harden for</i></u>	<u>5/21/85</u>
	H. E. P. Krug, Senior Resident Inspector	Date Signed
	<u><i>PK Harden for</i></u>	<u>5/21/85</u>
	H. C. Whitcomb, III, Resident Inspector	Date Signed
Approved by:	<u><i>PK Harden for</i></u>	<u>5/21/85</u>
	P. E. Fredrickson, Section Chief Division of Reactor Projects	Date Signed

SUMMARY

Scope: This routine, announced inspection involved 164 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 and IE Notice followup, organization and administration, independent inspection and enforcement action followup.

Results: Of the areas inspected, one inspector followup item was identified. No violations or deviations were identified.

Inspector followup item 50-261/85-14-01: "Vital Station Batteries," Paragraph 9.

REPORT DETAILS

1. Licensee Employees Contacted

- R. Barnett, Maintenance Supervisor, Electrical
- G. Beatty, Manager, Robinson Nuclear Project Department
- C. Crawford, Manager, Maintenance
- B. Flanagan, Engineering Supervisor - Nuclear
- F. Lowery, Manager, Operations
- *R. Morgan, Plant General Manager
- *B. Murphy, Senior Instrumentation and Control Engineer
- B. Reick, Manager, Control and Administration
- *D. Stadler, Director, Regulatory Compliance
- *J. Sturdavant, Technician, Regulatory Compliance
- *A. Wallace, Director, Onsite Nuclear Safety
- *C. Wright, Senior Specialist, Regulatory Compliance
- *H. Young, Director, 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 May 10, 1985, with those persons indicated in paragraph 1 above. The licensee acknowledged the inspection findings. No written material was provided to the licensee by the resident inspectors during this report period. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection.

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Plant Tour (71707, 62703, 71710)

The inspectors conducted plant tours periodically during the inspection interval to verify that monitoring equipment was recording as required, equipment was properly tagged, and operations personnel were aware of plant conditions. Plant housekeeping efforts were observed to be outstanding. The inspectors 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 inspectors 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 fire fighting equipment, and instrument calibration dates. Some tours were conducted on backshifts.

The inspectors performed valve lineup verifications and system status checks on the following systems:

- a. Auxiliary Feedwater System
- b. Rod Control System
- c. Emergency Station Batteries
- d. Service Water System
- e. Reactor Coolant Pump Seal Water System
- f. Halon System for the protection of the rooms containing the emergency electrical buses and the plant computer
- g. Fire Pump Diesel Engine

Within the areas inspected, no violations or deviations were identified.

5. Technical Specification Compliance (71707, 62703, 61726)

During this reporting interval, the inspectors verified compliance with selected limiting conditions for operation (LCOs) 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.

Within the areas inspected, no violations or deviations were identified.

6. Plant Operations Review (71707, 62703)

Periodically during the inspection interval, the inspectors reviewed shift logs and operations records, including data sheets, instrument traces, and records of equipment malfunctions. This review included control room logs, maintenance work requests, auxiliary logs, operating orders, standing orders, jumper logs, and equipment tagout records. The inspectors routinely observed operator alertness and demeanor during plant tours. The inspectors conducted random off-hours inspections during the reporting interval to assure that operations and security remained at an acceptable level.

During the last three hours of April 7, 1985, the control room operators observed erratic behavior of the seal water flow indication for the number one seal on the "C" reactor coolant pump (RCP-C). Just after midnight, this same flow indication dropped to practically zero, and then continued to vary below its previously established equilibrium flow rate. The licensee conservatively decided to reduce power and remove the unit from the grid in an orderly fashion. The unit breaker was opened at 0327 on April 8, 1985.

The licensee immediately initiated a comprehensive evaluation of the seal water behavior of the number one seal for RCP-C, and also began the process of trying to purchase a new seal. As a result of consultation with the pump vendor, the licensee concluded that the erratic behavior of the flow rate associated with the number one seal water flow was a result of the misbehavior of the number two seal. The flow indication for the number one seal was affected because increased flow past the number two seal diminishes

the pressure between the number one and number two seals, where the tap for the number one seal flow rate sensor is located.

The licensee discovered that a replacement seal of appropriate design was not readily available; however, the licensee also established that the erratic behavior of the number two seal was precedenced, and that at least one other RCP, with a similar number two seal problem, operated for months without causing a problem which required a reactor shutdown. The licensee also established that failure of the number two seal would provide adequate time to shut the reactor down before the number one seal would be expected to fail. The licensee then reviewed the seal failure indications and other related matters with the control room operators and reconnected the unit to the grid at 0348 on April 9, 1985. Along with licensee personnel, the inspectors have been carefully monitoring the number one seal leakoff flow rate indication. No problems have been observed to date (May 10, 1985) in that the seal leakoff flow rate for the number one seal has been steady, within an acceptable range, at about 2.47 gallons per minute.

In an NRR review of the containment sump configuration, NRR concluded that the water inventory available for recirculation is adequate, even with the refueling canal drain valves closed at Robinson 2, but that the margins could be small for certain postulated accidents. The corrective action committed to by the licensee: i.e., leaving the drain valve open during operation, is considered an acceptable means for resolving this matter for Robinson 2.

The inspectors reviewed this issue and the associated corrective action with the licensee. Specifically, the licensee, in Revision 2, modified General Procedure 1001 (GP-1001), titled "Filling, Purification, and Draining the Refueling Cavity," at step 4.4.16.1 to leave the refueling cavity drain valve, WD-1757C, open during plant operation. This item is considered closed.

Within the areas inspected, no violations or deviations were identified.

7. Physical Protection (71707)

The inspectors 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 the 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.

Within the areas inspected, no violations or deviations were identified.

8. Review of Information Notices (92717)

a. IEN 83-75

Licensee actions in response to IE Information Notice 83-75 included augmentation of operator training and improving the procedures specifying operator actions when malfunctions of the reactor rod control/indication system occur. In particular, the licensee evaluated and made changes as necessary to those procedures specifying operator actions for a misaligned control rod and a malfunctioning rod position indicator. The guidance outlined by INPO SOERs and SERs was reviewed for applicability at H. B. Robinson and implemented as appropriate. Due to physical hardware differences between the H. B. Robinson rod control/indication systems with those cited in the IE Notice and INPO documents, the licensee procedures do not: (1) require the determination of how long a control rod has been misaligned when found misaligned, or (2) specify the rate of control rod movement during recovery of the misaligned rod. The licensee has determined that the presently installed rod control/indication system will immediately alert the operators of any impending abnormal rod configurations and that adequate procedural guidance has been established to aid the operators in safely restoring the plant to a normal configuration.

b. IEB 84-06

Licensee actions with respect to IE Information Notice 84-06 included upgrading operator training to emphasize how to identify and prevent back leakage from the main feedwater system, revising the AFW system shutdown sequence specified in the operating and surveillance testing procedures, and repairing/replacing those system components responsible for causing the steam binding in the AFW pumps. The licensee evaluated the guidance outlined by INPO SOERs and SERs for applicability at H. B. Robinson and implemented the recommendations as necessary. The inspectors observed that back leakage from the main feedwater system does not presently appear to be a problem at the Robinson facility. Both the suction and discharge piping from the normally closed motor-operated isolation valves to the casings of the motor and steam driven AFW pumps was cool to the touch. Although neither local or remote AFW piping temperature indication is available, the licensee requires that the auxiliary operator physically touch the AFW piping and pumps for steam binding once every 12 hours. A portable temperature indicator is available as needed. The results of these checks are recorded on the operator logs. The inspectors noted that these logs are not included as part of the controlled procedure program, and that they can be modified at any time without a formal evaluation as to the safety impact. Permanent corrective action to correct the AFW steam binding problems previously experienced at H. B. Robinson included replacing the AFW pump discharge check valves and the AFW containment isolation check valves during the last refueling outage.

c. IEN 84-02

IE Information Notice No. 84-92 "Cracking of Flywheels on Cummings Fire Pump Diesel Engines" alerts recipients of potential fatigue failure cracking of flywheels on certain models of Cummings diesel engines which drive fire pumps. The Robinson site diesel engine was of the type identified as being susceptible to fatigue cracking; however, no such cracking was observed by the licensee during ten years of use, during which time the licensee inspected the engine every 18 months. Nevertheless, in response to IEN 84-92, and as recommended by the vendor, on April 23, 1985, the licensee installed a new flywheel, part number 3047463, composed of more ductile iron.

During the Information Notice review, the inspectors reviewed the following licensee documents:

- AOP-001, "Malfunction of Reactor Control System", Revision 0
- OP-003, "Rod Control and Position Indication", Revision 2
- APP-005, "Rod Control and Annunciators", Revision 3
- APP-007, "Condensate and Feedwater Systems", Revision 3
- OP-402, "Auxiliary Feedwater System", Revision 9
- OST-201, "Auxiliary Feedwater System Component Test (Monthly)",
Revision 11
- Rod Control System Lesson Plan
- Auxiliary Feedwater System Lesson Plan
- Feedwater System Lesson Plan
- Misaligned Control Rods Lesson Plan
- Auxiliary Feedwater System Steam Binding Lesson Plan

Within the areas inspected, no violations or deviations were identified.

9. Monthly Surveillance/Observation (61726)

Vital batteries were inspected during this reporting period and no violations or deviations were identified. The A and B vital battery banks have experienced an expected capacity reduction over the years. Consequently, the licensee removed from these banks loads which were not safety related and placed them on a new battery bank, designated the C battery bank, which is not a safety related bank. With the load requirements thus substantially reduced, the licensee data indicates that the A and B battery banks will probably perform satisfactorily for ten more years. In part, this estimate follows from the vendor experience that these batteries will accommodate 100 to 200 charge/discharge cycles, over a 20 year period,

depending upon how low the battery capacity gets during the discharge portion of a cycle. The licensee stated that the vital batteries have experienced approximately five cycles to date. The licensees' operation, maintenance, inspection program and practices relative to batteries, based upon the inspection to date, are generally satisfactory. However, this item is being designated as an inspector followup item for reasons which include the following:

- a. The seismic structure has not yet been compared to the as-built drawings or the vendor installation guidelines.
- b. The licensee does not use a low voltage limit for individual cells during the five year load test; however, the licensee load test is performed using the station actual load profile, which is simulated using a computer controlled variable resistor bank. Thus, if a cell polarity reversal occurs, it will not result in a bank test failure, unless the bank voltage drops below the bank low voltage limit.
- c. Applicable licensee procedures are in the process of being evaluated in greater detail by the inspectors.

The licensee has promulgated a number of procedures compassing the areas of vital battery operations, maintenance and testing, specifically:

MST-902 (Revision 3) "Battery Test Daily"

MST-903 (Revision 5) "Station Battery Charge-Monthly"

EST-12 (Revision 1) "Station Battery Load Test-Periodic Test"

CM-302 (Revision 2) "Charging (Individual or Group Cells) of the Station Batteries"

PM-410 (Revision 1) "Inspection of Battery Banks and Cell Connections"

PM-411 (Revision 1) "Disassembly, Cleaning, Assembly, and Testing of Battery Cell Connections"

As stated previously, more detailed evaluation of these procedures by the inspectors is in progress.

This item is identified as inspector followup item IFI 50-261/85-14-01: "Vital Station Batteries".