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

Report No.: 50-261/85-08

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: January 11 - February 10, 1985

Inspectors: P. K. Hardin 3/7/85
H. E. P. Krug, Senior Resident Inspector Date Signed

P K Hardin 3/7/85
H. C. Whitcomb, III, Resident Inspector Date Signed

Approved by: P K Hardin 3/7/85
P. E. Fredrickson, Section Chief Date Signed
Division of Reactor Projects

SUMMARY

Scope: This routine, unannounced inspection entailed 292 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 and IE Notice followup, organization and administration, independent inspection and enforcement action followup.

Results: Of the areas inspected, one violation and one inspector followup item were identified.

Violation 50-261/85-08-01; "Inadequate Surveillance of Safety-Related Station Batteries," paragraph 5.

Inspector Followup Item 50-261/85-08-02; "Motor Control Center 5 Isolation," paragraph 6.

REPORT DETAILS

1. Licensee Employees Contacted

*R. Barnett, Maintenance Supervisor, Electrical
*C. Crawford, Manager, Maintenance
J. Curley, Manager, Technical Support
J. Davis, Project Engineer (Acting)
B. Flanagan, Engineering Supervisor-Nuclear
F. Lowery, Manager, Operations
*R. Morgan, Plant General Manager
B. Rieck, 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, security force members, and office personnel.

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on February 12, 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 inspector. 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

(Closed) Violation 50-261/84-26-02; Inadequate controls over removal of containment sump debris screens. The licensee submitted supplemental response RSEP/84-1167 dated December 21, 1984 addressing the uncontrolled removal of the containment sump screens. Corrective action taken by the licensee to prevent further occurrence of uncontrolled sump screen removal includes installation of a permanent sign near the screens which requires that the Shift Foreman be notified prior to removal of the screens. The total corrective action taken appears to be adequate in precluding the uncontrolled removal of the containment sump screens.

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, operations personnel were aware of plant conditions, and plant housekeeping efforts were adequate. 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. Station Batteries

b. Electrical Distribution - Motor Control Centers (MCC) 5 and 6

c. Safety Injection System

d. Service Water System

e. Digital Metal Impact Monitoring System (DMIMS)

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 (LCO's) and reviewed results of selected surveillance tests. These verifications were accomplished by direct observation of monitoring instrumentation, valve positions, switch position, and review of completed logs and records.

The inspectors conducted a review of the established surveillance activities for the safety-related station batteries. Technical Specification section 6.5.1.1.1.c and 10 CFR 50 Appendix B Criterion V collectively require that written procedures established, implemented, and maintained for surveillance and test activities of safety-related equipment shall include appropriate quantitative acceptance criteria. Maintenance Surveillance Test Procedure, MST-902, titled "Battery Test-Daily", had been established to meet the requirements of Technical Specifications section 4.6.3.1 and 4.6.3.3 to provide assurance of battery operability. MST-902 did not, however, provide specific acceptance criteria defining battery operating temperatures. The vendor technical manual, supplied by Gould, titled "Station Battery Installation and Operating Instructions", specifies that normal battery operating temperatures range between 60 and 90 degrees Fahrenheit, with optimum range between 75 to 77 degrees Fahrenheit. As battery temperature is lowered from the "normal" temperature range, the battery capacity is reduced. MST-902 requires, in part, that the specific gravity for each pilot cell be determined daily. To correct for temperature deviations, MST-902 provides a Temperature Correction table (temperature range from 51 to 100 degrees Fahrenheit) which is used to adjust the measured specific gravity to obtain a value for the corrected specific gravity.

On January 22, 1985, the inspectors observed that the "A" station battery temperature was 55 degrees Fahrenheit and the "B" station battery temperature was 48 degrees Fahrenheit. During subsequent discussions with licensee personnel responsible for the station battery operation and maintenance, the inspectors were informed that battery operation at the observed temperatures was acceptable and that full battery capacity was assured as long as battery temperatures was maintained above approximately 40 degrees Fahrenheit. The vendor provided this information through verbal communications with the licensee after performing an evaluation of the Gould's Battery Load Capacity versus Temperature comparison graphs developed for the specific batteries at H. B. Robinson. This data, however, was not available on site at the time of this inspection, and is not reflected in either the established site operation or maintenance procedures or vendor technical manuals. Failure to provide appropriate quantitative acceptance criteria which specifies acceptable station battery operating temperatures ranges in established operating or maintenance procedures, used to determine safety-related battery operability, constitutes a violation.

This is identified as Violation 50-261/85-08-01; "Inadequate Surveillance of Safety-Related Station Batteries".

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 routine housekeeping activities, conducted on February 3, 1985, in the immediate area surrounding the R-21 Radiation Monitoring Vacuum Pump, water was inadvertently sprayed on the housing of the vacuum pump's two horsepower electric motor. The vacuum pump and associated electrical components receive 480 VAC power from Motor Control Center (MCC) 5, which supplies both safety-related and non safety-related equipment. The R-21 Vacuum Pump was electrically connected to MCC 5 using a Westinghouse Type FB-3100 breaker (100 amp rating). It is a function of this breaker, utilizing both a thermal long time tripping device and a magnetic instantaneous tripping device, to provide electrical isolation from MCC 5 should an electrical fault occur in the R-21 Vacuum Pump.

Although the evaluation being conducted by the licensee is not yet complete, the licensee suspects that after the water entered the motor housing a phase-to-phase electrical short was created. The electrical short caused excessive current to be drawn through the R-21 Vacuum Pump controller circuit and isolation breaker. The magnitude of the current caused physical damage to and partial vaporization of the pump controller circuit, exceeded the trip setpoint of the R-21 Vacuum Pump isolation breaker and cause the

isolation breaker to trip to the "open" position. The physical damage to the pump controller circuit also produced ionized gas inside the R-21 Vacuum Pump breaker/controller cabinet. As the breaker contacts began to open, the presence of this ionized gas caused arcing across the breaker contacts to occur. The arcing across the breaker contacts created sufficient heat to cause physical damage to the breaker housing and 3-phase electrical connection terminals. This damage to the 3-phase electrical terminal connections resulted in subsequent arcing across the terminals constituting a fault on the MCC 5 bus which caused the MCC 5 feeder breaker E1 to trip open, thus interrupting power to the associated safety-related equipment.

The licensee performed an engineering evaluation to determine the cause of this incident. The licensee determined that the R-21 Vacuum Pump motor breaker actuates at 1400 amps (defined as a nominal 100 amp application). Since the motor is less than 5 horsepower (2 horsepower), the motor starter utilized is a NEMA size #1 consistent with industry practice. A size #1 starter is rated to interrupt up to 300 amps. Thus, when the motor shorted on February 3, 1985, a current much greater than 300 amps passed through the motor starter causing its destruction and partial vaporization. This mismatch between the controller interrupting capacity and the breaker actuation is called a breaker coordination problem. To correct this problem, the instantaneous actuation current of the breaker should be less than 300 amps (defined as a nominal 20 amp application). A review of all loads on MCC 5 and 6 (safety and non-safety related) was performed to determine if any the other similar motor starter-breaker mismatches existed. The licensee identified two other loads with similar problems. These loads were identified as the R-20 Vacuum Pump and the "A" Fuel Oil Transfer Pump. Temporary corrective action consisted of replacing the trip devices in the three breakers identified above with devices that are designed to trip well below the 300 amp controller capacity. In summary, the three breaker trip actuators, which were set for nominal 100 amp application, are now set for a nominal 20 amp application. The licensee is continuing to expand the scope of the evaluation of this problem until a complete and formal evaluation is achieved.

This is identified as Inspector Followup Item 50-261/85-08-02; "Motor Control Center 5 Isolation".

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. Organization and Administration (36700/92706)

On January 3, 1985, the licensee announced the promotion of the Engineering Supervisor - Nuclear, to Manager - Design Engineering Section (DES). The establishment of the DES resulted from the reorganization of the Robinson Nuclear Project Department in December 1983. The transfer of design engineering responsibilities from the Technical Support Unit to the DES was delayed due to the accelerated schedule of the Steam Generator Replacement Outage. The DES will be responsible for designing and engineering safe, economical, and constructible modifications, additions, and repairs under the management direction of the Manager of DES. The licensee stated that the transition of design engineering functions will be conducted on a gradual basis. The Manager of DES reports to the Manager, Robinson Nuclear Project Department.

9. IE Bulletin Followup (92703)

On January 15, 1985, a licensee review of IEB-79-02/14 seismic restraint work identified problems with a number of restraints supporting systems required by the Technical Specifications, which the licensee then declared inoperable. Specifically, using the interim criteria identified in IEB 79-02, Revision 1, Supplement 1, the licensee determined that 95 of the 132 seismic restraints for which modifications were not begun did not meet the interim criteria. This is a change as an earlier licensee assessment concluded that the interim criteria were met. As a result, on January 17, 1985, the licensee placed the plant in cold shutdown to begin modification of these restraints. One additional restraint previously identified as not requiring modification was reevaluated as requiring modification.

At this time, the licensee stated that 39 restraints meet the interim criteria and are thus determined to be operable, but require future modifications to fully satisfy the bulletins. On February 10, 1985, after completion of the 96 modifications mentioned above, the plant was brought to criticality and power operations resumed.

10. Licensee Action on Previously Identified Inspection Findings (92701)

(Closed) Inspector Followup Item 50-261/84-44-07; Service Water System. The licensee submitted a status report of corrective actions taken regarding the Service Water System corrosion problems on January 4, 1985 (correspondence serial: RSEP/84-1267). In this report, the licensee stated that the root cause of the corrosion problem had been determined to be microbiologically induced corrosion (MIC). The licensee also described an in-service monitoring program which would be implemented prior to power escalation above 2% power. The licensee stated that the program was designed to ensure that new leakers, if found, will be repaired; that the effectiveness of the various sleeving techniques will be assessed; that the progress of the corrosion phenomena can be tracked such that a corrosion rate can be determined to establish the most appropriate inspection frequency; and ensure

that temporary and/or permanent repairs may be made in a timely manner without jeopardizing the service water system safety function.

Based on the licensee identification of the corrosion mechanism, the completed service water system piping repairs, and the proposed in-service monitoring program to be established and implemented prior to power operations above 2%, this inspector followup item is closed.