



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

Report No.: 50-261/87-39

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

Docket No.: 50-261

License No.: DPR-23

Facility Name: H. B. Robinson

Inspection Conducted: December 11, 1987 - January 10, 1988

Inspector: *R. M. Latta*
In R. M. Latta, Acting Senior Resident Inspector

2/18/88
Date Signed

Accompanying Personnel: S. J. Vias

Approved by: *P. E. Fredrickson*
P. E. Fredrickson, Section Chief
Division of Reactor Projects

2/18/88
Date Signed

SUMMARY

Scope: This routine, announced inspection was conducted in the areas of followup on previous enforcement matters, operational safety verification, physical protection, surveillance observation, maintenance observation, ESF system walkdown, cold weather preparations, onsite followup of events and subsequent written reports, onsite review committee, and preparation for refueling.

Results: No violations or deviations were identified within the areas inspected.

REPORT DETAILS

1. Licensee Employees Contacted

R. Barnett, Maintenance Supervisor, Electrical
G. Beatty, Vice President, Robinson Nuclear Project Department
R. Chambers, Engineering Supervisor, Performance
D. Crocker, Supervisor, Radiation Control
J. Curley, Director, Regulatory Compliance
J. Eaddy, Supervisor, Environmental and Chemistry
R. Femal, Shift Foreman, Operations
W. Flanagan, Manager, Design Engineering
W. Gainey, Support Supervisor, Operations
P. Harding, Project Specialist, Radiation Control
E. Harris, Director, Onsite Nuclear Safety
D. Knight, Shift Foreman, Operations
E. Lee, Shift Foreman, Operations
F. Lowery, Manager, Operations
D. McCaskill, Shift Foreman, Operations
A. McCauley, Principal Specialist, Onsite Nuclear Safety
R. Miller, Maintenance Supervisor, Mechanical
R. Moore, Shift Foreman, Operations
R. Morgan, Plant General Manager
M. Morrow, Specialist, Emergency Preparedness
D. Myers, Shift Foreman, Operations
D. Nelson, Operating Supervisor
B. Murphy, Senior Instrumentation and Control Engineer
M. Page, Engineering Supervisor, Plant Systems
D. Quick, Manager, Maintenance
B. Rieck, Manager, Control and Administration
D. Sayre, Senior Specialist, Regulatory Compliance
D. Seagle, Shift Foreman, Operations
R. Smith, Manager, Environmental and Radiation Control
R. Steele, Shift Foreman, Operations
R. Wallace, Manager, Technical Support
L. Williams, Supervisor, Security
H. Young, Director, Quality Assurance/Quality Control (QA/QC)

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

2. Exit Interview (30702, 30703)

The inspection scope and findings were summarized on January 11, 1988, with the Vice President, Robinson Nuclear Project Department, the Acting Director of Regulatory Compliance, the Director, Onsite Nuclear Safety, and the Director of QA/QC. The licensee acknowledged the findings without exception. The licensee did not identify as proprietary any of the

materials provided to or reviewed by the inspector during this inspection. No written material was given to the licensee by the Resident Inspector during this report period.

3. Licensee Action on Previous Enforcement Matters (92702)

(Closed) Unresolved Item* 50-261/86-28-06: This unresolved item involved the application of 10 CFR 50.49 requirements to specific Limitorque motor-operated valves as delineated in Inspection and Enforcement Information Notice No. 86-03. This issue along with the programmatic elements for the establishment of the qualification of electronic equipment pursuant to 10 CFR 50.49 was incorporated into the findings of Inspection Report 50-261/87-10; therefore, this item is closed.

4. Operational Safety Verification (71707)

The inspector observed licensee activities to ascertain that the facility was being operated safely and in conformance with regulatory requirements, and that the licensee management control system was effectively discharging its responsibilities for continued safe operation by direct observation of activities, tours of the facility, interviews and discussions with licensee management and personnel, independent verification of safety system status and limiting conditions for operation, and reviewing facility records.

Periodically during the inspection interval, the inspector 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 inspector routinely observed operator alertness and demeanor during shift changes to verify that continuity of system status was maintained and that proper control room staffing existed. The inspector observed that access to the control room was controlled, that operations personnel were carrying out their assigned duties including adherence to procedures for ongoing activities and that the control room was free of distractions. In addition, on a daily basis in the control room, the inspector independently examined Emergency Response Facility Information System (ERFIS) and Safety Parameter Display Systems (SPDS). The inspector reviewed safety related parameters, including component status information, for indications related to conformance with the TS and compared the differences between instrument channels which monitor the same parameter.

*Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations.

During this reporting interval, the inspector verified compliance with selected limiting conditions for operation and reviewed results of certain surveillance and maintenance activities. These verifications were accomplished by direct observation of monitoring instrumentation, valve positions, switch positions, and review of completed logs and records. The inspector also periodically verified the reactor shutdown margin, observed the axial flux difference, and compared the observed valves with those required by the TS.

Plant tours were routinely conducted to verify that monitoring equipment was recording as required, equipment was properly identified, operations personnel were aware of plant conditions and maintenance activities, and that plant housekeeping and radiation controls were adequate. During these tours, the inspector assessed general plant/equipment conditions, including the operability of standby equipment and looked for the existence of unusual fluid leaks, excessive pipe vibration, pipe hanger and seismic restraint abnormalities, various valve and circuit breaker positions, equipment clearance tags, component status verification, and instrument calibration dates. The inspector also looked for the existence of fire hazards and ignition sources and assessed the operability of fire fighting equipment including fire alarms, suppression equipment, emergency lighting, fire barriers and emergency equipment.

Plant tours also included the periodic review of radiation protection controls to ensure that the licensee's health physics (HP) policies/procedures were being followed. The inspector observed portions of an area survey performed by HP personnel and determined that the requirements of a current radiological work permit were appropriate and were being complied with. The inspector also selectively examined radiation protection instrumentation such as area monitors, friskers, and portal monitors to verify operability and adherence to calibration frequency requirements.

The inspector determined that plant personnel including operations staff members were knowledgeable of plant conditions including equipment out of service and LCOs, that appropriate radiation controls were properly established and implemented, and that fire hazards and combustible materials were properly controlled. Plant housekeeping and contamination control were observed to be excellent.

During the inspection interval the inspector performed system status checks on the following systems:

- a. Safety Injection (SI) System
- b. Component Cooling Water (CCW) System
- c. Auxiliary Feedwater (AF) System
- d. Vital Station Batteries (VSB)
- e. Electrical Switchgear
- f. Chemical and Volume Control System (CVCS)
- g. Containment Spray System

No violations or deviations were identified within the areas inspected.

5. Physical Protection (71707)

In the course of the monthly activities, the inspector included a review of the licensee's physical security program. The inspector verified by general observation, perimeter walkdowns and interviews that measures taken to assure the physical protection of the facility met current requirements. The inspector routinely observed the alertness and demeanor of security force personnel during normal and backshift hours and visited the central and secondary alarm stations at various times during the reporting period to ensure that they were properly staffed and operational.

The performance of various shifts of the security force was observed in the conduct of daily activities to include protected and vital areas access controls; searching of personnel, packages and vehicles; badge issuance and retrieval; escorting of visitors; patrols and compensatory posts. In addition, the inspector routinely observed protected and vital area lighting and barrier integrity.

No violations or deviations were identified within the areas inspected.

6. Monthly Surveillance Observation (61726, 61700)

The inspector observed certain surveillance related activities of safety-related systems and components to ascertain that these activities were conducted in accordance with license requirements. The inspector determined that the surveillance test procedures listed below conformed to TS requirements, that all precautions and LCOs were met, and that the surveillance test was completed at the required frequency. The inspector also verified that the required administrative approvals and tagouts were obtained prior to initiating the test, that the testing was accomplished by qualified personnel in accordance with an approved test procedure and that the required test instrumentation was properly calibrated. Upon completion of the testing, the inspector observed that the recorded test data was accurate, complete and met TS requirements; ensured that test discrepancies were properly rectified; and independently verified that the systems were properly returned to service. Specifically, the inspector witnessed/reviewed portions of the following test activities:

- a. The inspector observed all aspects of operations surveillance test OST-202 (Revision 8) titled "Steam Driven Auxiliary Feedwater System Component Test." The purpose of this test is to verify the mechanical performance and assess the operational readiness of components in the auxiliary feedwater system. Successful completion of this monthly surveillance test satisfies the requirements set forth in TS Sections 4.8.2, 4.8.3, 4.8.4, and Table 4.1-1, Item 33. The inspector emphasized the review of the following pump and valve test activities: inlet (suction) pressure, pump differential pressure, pump vibration amplitude, lubricating oil pressure and temperature, turbine pump speed, valve stem travel and position indication, valve cycle times, and verification of pump discharge flow control valve operation. Upon completion of the test, the inspector determined that the recorded test data was within the acceptance limits specified in OST-202 and that the system was properly realigned for service.

During the conduct of this test the inspector noted several minor procedural discrepancies relative to the documentation of surveillance test data. These discrepancies were identified to the licensee who is taking corrective action to revise the subject procedure. The inspector will continue to monitor this activity during subsequent inspections.

- b. The inspector also witnessed selected portions of OST-625 (Revision 7) titled "Fire Door Inspection." The stated purpose of this semi-annual surveillance test is to verify the operability of fire doors in accordance with TS section 4.14, 5.1.a and c and 3.14.7.1. Specifically, the inspector evaluated fire doors throughout the plant including swinging, roll-up, and horizontal sliding fire doors. During the conduct of this inspection the licensee identified several fire doors which were not in compliance with the controlling surveillance test procedure. These doors were appropriately declared inoperable in accordance with TS Section 3.14.7.2.C. and corrective work requests were initiated.

Subsequent evaluations performed by the inspector revealed that all of the fire doors identified as inoperable had been repaired within the time frame specified by TS and returned to service without incident.

- c. Additionally, the inspector witnessed the operational verification of the boric acid transfer pumps conducted in accordance with the inservice inspection program specified in ASME Section XI, subsection IWP. This test was completed using OST-108 (Revision 14) titled "Boric Acid Pumps Inservice Inspection." The inspector determined that the reference procedure was technically adequate, that the system was properly aligned for testing, and that all system readings were within the acceptable test parameters including pump suction and discharge pressures and vibration amplitude. No deficiencies were identified during the conduct of this surveillance test.

No violations or deviations were identified within the areas inspected.

7. Monthly Maintenance Observation and Maintenance Program Evaluation (62703, 62700, 62704, 62705)

The inspector observed several maintenance related activities of safety-related systems and components to ascertain that these activities were conducted in accordance with approved procedures, TS and appropriate industry codes and standards. The inspector determined that these activities were not violating LCOs and that redundant components were operable. The inspector also determined that the procedures used were adequate to control the activity, that QC hold points were established where required, that required administrative approvals and tagouts were obtained prior to work initiation, that proper radiological, and appropriate ignition and fire prevention controls were implemented, and that

replacement parts and materials used were properly certified. The inspector confirmed that these activities were accomplished by qualified personnel using approved procedures, and that the effected equipment was properly tested before being returned to service. In particular, the inspector observed/reviewed the following maintenance activities:

- a. The inspector witnessed the calibration of the isolation valve seal water tank pressure instruments PSL-1911 and PT-1911. This activity was performed in accordance with work request WR/JO 87-BUR511 and process instruction calibration procedure PIC-103 (Revision 4) titled "Electrical Indicators." The inspector determined that the test equipment used was properly calibrated, that the recorded voltages for the pressure switch alarm set point corresponded to the desired pressure indication, and that the pressure transmitter output voltages were within the specified tolerance for both the as-found and as-left conditions. Subsequent to this maintenance activity the inspector determined that the effected instrumentation was properly returned to service.
- b. The inspector observed the replacement of the reactor coolant system (RCS) loop "A", differential temperature, protection channel summator (TM-412J). This maintenance activity was administratively controlled by work request WR/JO 87-ASAY1. Specifically, the inspector determined that the affected loop "A" RCS instrumentation was properly removed from service, that the replacement component matched the description on the transfer tag, and that the summation unit was properly installed in the Hagan racks. Following the installation of this unit the inspector observed that the affected reactor protection channels were returned to service after the successful completion of post maintenance testing per maintenance surveillance test MST-003 (Revision 10) titled "Tavg and Delta-T Protection Channel Testing."
- c. The inspector also reviewed the completed results of maintenance surveillance tests MST-004 (Revision 8) titled "Pressurizer Pressure Protection Channel Testing," and MST-005 (Revision 6) titled "Pressurizer Water Level Testing." The inspector determined that these procedures were adequate to control the activity, that all required status lights and annunciators operated properly, and that each channel for both pressurizer pressure, and level were properly tested. Additionally, the inspector ascertained that the required processing points for the ERFIS computer were correctly removed and subsequently returned to service and that the pressurizer pressure and level protection channels sets I, II, and III were correctly returned to the normal setting following completion of the above tests.

The inspector also reviewed several outstanding work requests and the licensee's automated maintenance management tracking system (AMMS) to determine that the licensee was giving priority to safety-related maintenance and that a backlog which might affect performance was not developing on any given system.

No violations or deviations were identified within the areas inspected.

8. ESF System Walkdown and Monthly Surveillance Observation (71710, 61726)

The inspector verified the operability of an engineered safety features system by performing a walkdown of the accessible portions of the safety injection, residual heat removal, and containment spray systems, including the associated valves inside the containment. This walkdown was conducted in accordance with the licensee's operations surveillance test procedure OST-158 (Revision 5) titled "Safety Injection and Containment Spray Systems Flowpath Verification Monthly Interval At Power". The inspector ascertained that the current revision of the subject procedure was used by qualified operations personnel and that the monthly performance of this surveillance test satisfied the requirements of Section 4.5.2.2 of the TS.

The inspector determined that the prerequisites for the performance of this surveillance test were performed and that all specified precautions and limitations were observed, including the wearing of full anti-contamination clothing in posted high radiation areas. The inspector looked for equipment conditions, maintenance status, and items that might degrade performance (hangers and supports were operable, acceptable housekeeping, etc.). The inspector verified that valves were in proper position, power was available, and valves were locked as appropriate. The inspector compared both local and remote position indications and confirmed that the licensee's system lineup procedures matched the applicable plant drawings and as-built configuration and that the associated test instrumentation was properly installed and exhibited current calibration dates. While in containment the inspector identified evidence of valve packing leakage on valves SI 875 J and I located on the "B" safety injection accumulator. This condition was identified to the licensee and it was later determined that the deficiencies had been entered on the licensee's AMMS system and that corrective work requests had been generated.

No violations or deviations were identified within the areas inspected.

9. Cold Weather Preparations (71714)

The inspector conducted a review of the facilities cold weather preparations to ascertain that the licensee maintained effective implementation of the program of protective measures for extreme cold weather. It was determined that the licensee had inspected systems susceptible to freezing to verify the presence of heat tracing, strip heaters and insulation, that the thermostats had the proper settings, and that the heat tracing and strip heating circuits were energized.

In particular, the inspector witnessed the operability verification, performed by instrumentation and control technicians, of various freeze protection panels throughout the plant. The inspector observed channel current testing in the subject panels and, for those freeze protection channels which indicated a faulted condition, the inspectors determined that corrective maintenance work requests were initiated. Subsequent to the completion of the cold weather preventative maintenance testing, the inspector independently witnessed the return to service of the affected equipment.

No violations or deviations were identified within the areas inspected.

10. Onsite Followup of Events and Subsequent Written Reports of Nonroutine Events at Power Reactor Facilities (92700, 90714, 93702)

For onsite followup of nonroutine events, the inspector determined that the licensee had taken corrective actions as stated in written reports of the events and that these responses to the events were appropriate and met regulatory requirements, license conditions, and commitments. During this reporting period, the inspector reviewed the events described below 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.

a. Reactor Coolant System Flow Transmitter Calibration Discrepancy (Closed) LER 87-04

On April 27, 1987, the licensee determined that the three flow transmitters on RCS loop "C" were out of calibration. The transmitters are located on the suction side of the reactor coolant pump and provide indication of RCS flow rate. Each flow transmitter provides a signal to the reactor protection system and is calibrated subsequent to each refueling. Review of the calibration data indicated that the above noted condition would have caused a reactor trip signal at 89.6 percent loop flow rather than the 90.0 percent loop flow trip setpoint required by TS Section 2.3.1.2. It is noted that although the as-found condition of the flow transmitters was 0.4 percent below the T.S. limit, it is 2.6 percent above the value established in the design basis accident analysis and that the accuracy of the transmitters is only guaranteed to be plus or minus 0.5 percent of the full scale value.

As determined by subsequent investigation the calibration error was attributed to a small undetected leak in the tubing from the test equipment to the flow transmitter during the previous (1986) calibration.

The inspector determined that all three flow transmitters were recalibrated using known valid test equipment and were returned to service. Additionally, the previous cycle operating history was reviewed and it was determined that the reactor coolant loop trip setpoint was never approached during the period the transmitters were out of calibration. The inspector determined that this was an isolated case of calibration error and that the corrective action taken by the licensee to review all calibration deviations and discrepancies was adequate to preclude similar events in the future.

b. Reactor Trip Due to Intermediate Range Channel Trip Setpoint Procedural Deficiency (Closed) LER 87-22

As previously documented in Inspection Report 50-261/87-25, this event occurred after the replacement of the compensated ion chamber for the intermediate range (IR) detector NI-35 but prior to the calibration of the associated high flux trip setpoint. The setpoint is based on detector current equivalent to 25 percent of full reactor power as determined by startup testing. The existing setpoint used was that of the old detector, but the new detectors response was significantly higher. Channel N-35 reached the current equivalent to the old detector setpoint before the automatic trip could be bypassed. This resulted in a reactor trip from approximately 8 percent power. Following the trip, N-35 was properly calibrated, and the unit returned to power operation.

The inspector reviewed operations work procedure OWP-011 (Revision 3) titled "Nuclear Instrumentation" and determined that it had been revised to ensure that the high flux trip setpoint for a replacement IR detector is bypassed during startup until the proper IR setpoint can be established. This procedural change is regarded as adequate to preclude similar events in the future.

c. Reactor Trip Experienced During Surveillance Testing (Closed) LER 87-25

This event which occurred on September 25, 1987, involved a reactor trip from 100 percent power when an instrumentation and control (I&C) technician performing a surveillance test on the "B" train reactor trip breaker (RTB) inadvertently opened the "A" train RTB with the "B" train still in test. This satisfied the one-out-of-two reactor trip logic. As previously documented in Inspection Report 50-261/87-30, this occurrence was attributed to a cognitive personnel error aggravated by equipment and procedural inadequacies.

Subsequent to this event the licensee initiated corrective measures which included enhanced labeling of the RTB test automatic shunt trip test switches, color coding to distinguish the two trains, unique key switches, and dividing the surveillance test into four separate test procedures. The inspector reviewed the four issued maintenance and surveillance test procedures and witnessed the

conduct of MST-20 (Revision 0) titled "Reactor Protection Logic Train "A" At Power." The inspector determined that the above identified corrective measures had been implemented with the exception of the installation of unique key switches, which are currently on order. The inspector also witnessed the portion of MST-20 which restored the "A" train reactor trip breaker to service and determined that the human factors improvements and the completed procedural enhancements were adequate to preclude similar events in the future.

No violations or deviations were identified within the areas inspected.

11. Onsite Review Committee (40700, 36700)

During the reporting period the inspector conducted comprehensive discussions of current safety-related activities with plant management and technical personnel including: Operations, Environmental and Radiation Controls, Quality Assurance, Regulatory Compliance, and Onsite Nuclear Safety organizations. Topics discussed included licensee activities associated with plant operations proposed modifications, corrective actions associated with the the fire protection system, ongoing construction activities, preparations for refueling, and communication interfaces.

The inspector also evaluated certain activities of the plant nuclear safety committee (PNSC) to determine whether the onsite review functions were conducted in accordance with TS and other regulatory requirements. In particular, the inspector reviewed the minutes for the special PNSC meeting held on December 16, 1987, concerning the turbine runback due to the loss of motor control center MCC-6 which occurred on November 4, 1987. It was ascertained that provisions of the TS dealing with membership, review process, frequency, qualifications, etc., were satisfied, and that the previous meeting minutes were reviewed to confirm that decisions and recommendations were accurately reflected in the minutes. The inspector also followed up on previously identified PNSC activities to independently confirm that corrective actions were progressing satisfactorily.

No violations or deviations were identified within the areas inspected.

12. Preparation for Refueling (60705)

A refueling outage is scheduled to commence in the latter part of August 1988. The inspector reviewed licensee preparations for refueling including the adequacy of procedures and administrative controls for the upcoming refueling activities/outage and for the receipt of new fuel. As part of this activity, the inspector verified that technically adequate, approved procedures were available covering the receipt, inspection and storage of new fuel, fuel handling, transfers and core verification, the inspection of fuel to be reused, and the handling and inspection of any other core internals. Specifically, the following fuel management procedures (FMP) were reviewed:

FMP-013 (Revision 0)	Inspection of New Fuel Assemblies and Shipping Containers
FMP-016 (Revision 0)	Fuel Assembly Visual Inspection
FMP-017 (Revision 2)	Core Mapping Following Fuel Loading
FMP-018 (Revision 0)	Inspection of Exposed Fuel In The Spent Fuel Pit
FMP-019 (Revision 4)	Fuel and Insert Shuffle

No violations or deviations were identified within the areas inspected.