



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

Report No.: 50-261/87-11

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 : April 11 - May 10, 1987

Inspectors: S. J. Uins 6/2/87  
 for H. E. P. Krug, Senior Resident Inspector Date Signed

S. J. Uins 6/2/87  
 for R. M. Latta, Resident Inspector Date Signed

Approved by: P. E. Fredrickson 6/4/87  
 P. E. Fredrickson, Section Chief Date Signed  
 Division of Reactor Projects

SUMMARY

Scope: This routine, announced inspection was conducted in the areas of Technical Specification (TS) compliance; including observance of any Limiting Conditions for Operation (LCO), 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, Plant Status Report, Systematic Assessment of Licensee Performance (SALP) and enforcement action followup.

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  
J. Benjamin, Supervisor, Operations  
R. Chambers, Engineering Supervisor, Performance  
D. Crocker, Supervisor, Radiation Control  
J. Curley, Director, Regulatory Compliance  
J. Eaddy, Supervisor, Environmental and Chemistry  
W. Flanagan, Manager, Design Engineering  
W. Gainey, Maintenance Supervisor, Mechanical  
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. Moore, Shift Foreman, Operations  
R. Morgan, Plant General Manager  
M. Morrow, Specialist, Emergency Preparedness  
D. Nelson, Operating Supervisor  
B. Murphy, Senior Instrumentation and Control Engineer  
M. Page, Engineering Supervisor, Plant Systems  
R. Powell, Principal Specialist, Maintenance  
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, construction personnel, security force members, and office personnel.

### 2. Exit Interview (30702, 30703)

The inspection scope and findings were summarized on May 11, 1987, with the Vice President of the Robinson Nuclear Project, the Acting Plant General Manager, the Director of Quality Assurance, the Director of the 1987 Outage, and the Director of Regulatory Compliance. The licensee acknowledged the findings without exception. The licensee did not identify as proprietary any of the materials provided to or reviewed by

the inspectors during this inspection. No written material was given to the licensee by the Resident Inspectors during this report period.

3. 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 maintenance activities, 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. Plant housekeeping and contamination control were observed to be excellent, considering that an outage was in progress.

The licensee was informed of a number of minor items observed by the inspectors during numerous plant tours including incomplete bolting of panels, inadequate housekeeping in specific areas, use of non-standard fasteners to secure panels, a small oil leak on the "B" EDG governor, and an inoperable emergency light.

The inspectors 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. Emergency Diesel Generators (EDG)
- h. Dedicated Shutdown (DS) System
- i. Service Water (SW) System

No violations or deviations were identified within the areas inspected.

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

During this reporting interval, the inspectors 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, review of completed logs and records associated with the emergency diesel generators, operation of the spent fuel pool cooling system, fuel transfer and core loading operations, and

the recovery of a twice burned fuel assembly which leaned out of position in the core, during refueling operations.

No violations or deviations were identified within the areas inspected.

5. Plant Operations Review (71707, 62703, 61726, 61707, 60710)

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 shift changes and plant tours. The inspectors conducted random off-hours inspections during the reporting interval to assure that operations and security were maintained in accordance with plant procedures.

The inspectors witnessed the transfer of fuel from the reactor vessel to the spent fuel pit on April 18, 1987. This activity was performed in accordance with General Operating Procedures GP-010, (Revision 1), titled "Refueling". The purpose of this procedure is to provide the initial plant conditions, precautions, and instructions required for the conduct of refueling operations of the reactor core.

In particular, the inspectors determined that the above procedure, along with selected referenced procedures, appeared adequate and that administrative controls and requirements were implemented properly. The inspectors witnessed the fuel transfer system operation including the verification of the manipulator crane limit switches and indexing operations, the fuel assembly gripper engagement, and retraction of a fuel assembly into the manipulator crane mast. The inspectors also observed the transfer operations from the manipulator crane to the upender including the verification of system interlocks. Additionally, the inspectors witnessed the movement of fuel from the upender in the spent fuel pool, using the spent fuel assembly handling tool from the spent fuel bridge. Throughout these operations, in both the containment and in the spent fuel pit, the inspectors noted that the radiation monitoring and radiological control practices matched the posted radiation work permit (RWP), that the shift manning requirements were met, that required water levels were maintained, that cleanliness and material control in and around the refueling area were well controlled and that precise communications and controls were maintained.

The inspectors compared the transferred locations and identification of selected fuel assemblies with the refueling status board in the control room and determined that they were in agreement. The inspectors also examined representative fuel handling data sheets from Fuel Management Procedure, FMP-019 (Revision 3), "Fuel and Insert Shuffle" and determined that the latest revision of the subject procedure was being utilized and that the transfer data appeared correct.

No violations or deviations were identified within the areas inspected.

6. Physical Protection (71707)

In the course of the monthly activities, the inspectors included a partial review of the licensee's physical security program. The inspectors verified by general observation, perimeter walkdowns and interviews, that measures were taken to assure the physical protection of the facility met current requirements. The inspectors routinely observed the alertness and demeanor of security force personnel during plant tours.

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; and patrols and compensatory posts. In addition, the inspectors observed protected area lighting; protected and vital areas barrier integrity; and verified an interface between the security organization and operations or maintenance.

The inspectors conducted a tour of the central and secondary alarm stations, as well as the PAP diesel generator facility. The inspectors determined that the licensee's access control and surveillance equipment was properly staffed and functioning, and that the PAP diesel was operational.

No violations or deviations were identified within the areas inspected.

7. Monthly Surveillance Observation (61726, 61700, 71710)

The inspectors observed certain surveillance related activities of safety-related systems and components to ascertain that these activities were conducted in accordance with license requirements. The inspectors observed portions of selected surveillance tests including all aspects of one major surveillance test involving safety-related systems.

On April 24, 1987, the inspectors witnessed the conduct of Operations Surveillance Test OST-910 (Revision 8), titled "Dedicated Shutdown Diesel Generator." OST-910 is designed to verify the operability of the Dedicated Shutdown (DS) diesel generator under emergency conditions and to confirm the operational readiness of associated mechanical and electrical components.

The inspectors determined that the DS diesel generator was properly aligned for service in accordance with the latest revision of OP-602; that the required administrative approvals were obtained; that precautionary limitations were observed; and that the prescribed acceptance criteria were achieved.

The inspectors determined that the surveillance test procedure conformed to TS requirements; that all precautions and LCO's were met; and that the surveillance test was completed at the required frequency. The inspectors

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 inspectors observed that the recorded test data was accurate and complete; verified that test discrepancies were properly rectified; and independently verified that the system was properly returned to service.

In conjunction with the conduct of OST-910, the inspectors witnessed portions of the preventative maintenance activities conducted in accordance with the following preventative maintenance (PM) procedures:

- PM-107, Dedicated Shutdown Diesel, Inspection Number 1, Revision 3
- PM-108, Dedicated Shutdown Diesel, Inspection Number 2, Revision 3
- PM-109, Dedicated Shutdown Diesel, Inspection Number 3, Revision 1
- PM-111, Dedicated Shutdown Diesel, Inspection Number 1, Revision 3.

These PMs provide guidance on the performance of general preventative maintenance on the DS diesel, including mechanical component and engine operating inspections, lubrication, fluid systems, and filtration maintenance.

The inspectors witnessed the adjusting of the fuel injector racks, the testing of the engine overspeed trip, the inspection and lubrication of the generator bearings, adjustments to the governor, and replacement of one of the air start motors. The replacement of the air start motor was precipitated by a misalignment of the air intake ports, detected during an unsuccessful start of the DS diesel. Following the replacement of the defective air start motor, the DS diesel was successfully started several times.

Subsequent to the completion of the above PMs, the inspectors witnessed the manually initiated start of the DS diesel in accordance with OST-910 and determined that it was properly synchronized with other power sources and that the assumption of load by the DS diesel generator did not exceed either 2400 kw or 300 amps. The inspectors also determined that all components associated with the DS diesel generator appeared to function properly and that the recorded readings were within the normal range.

On April 30, 1987, the inspectors witnessed the semiannual conduct of OST-405, (Revision 3), titled "TSC/EOF/PAP Diesel Generator." This surveillance test is designed to verify the mechanical and electrical performance of the security diesel generator and to assess the operational readiness of the related components to fulfill their required support function during emergency conditions.

The inspectors determined that the operations personnel conducting this test used the latest revision of approved procedures, that all procedural precautions and limitations were observed, that administrative approval and tagouts were obtained prior to initiating the test, that testing was

accomplished by qualified operations personnel, and that the recorded test data was accurate and complete. The inspectors noted that this test was run in conjunction with SP-012 (Revision 14) "Verification of Security System Component Operation" and that all required coordination efforts between organizations were accomplished.

In particular, the inspectors witnessed the preoperational checks on the PAP diesel including engine oil level, coolant quantity, visual check of the engine and the recording of the fuel oil storage tank level. The inspectors also observed the required breaker lineups, verification of control power and local control panel readings. Subsequent to the successful completion of this test, the inspectors verified that the system was returned to service.

No violations or deviations were identified within the areas inspected.

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

The inspectors 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 inspectors determined that these activities were not violating LCO's. The inspectors also determined (1) that the procedures used were adequate to control the activity, (2) that required administrative approvals and tagouts were obtained prior to work initiation, (3) that proper radiological, and appropriate ignition and fire prevention controls were implemented, and (4) that replacement parts and materials used were properly certified. The inspectors verified that these activities were accomplished by qualified personnel using approved procedures. The inspectors independently verified that equipment was properly tested before being returned to service.

In particular, the inspectors witnessed preventative maintenance (PM) activities associated with both the "A" and "B" motor generator (MG) sets on April 14, 1987. This PM involved the disassembly, cleaning, inspection, lubrication, and reassembly of the flexible coupling, between the motor and the generator. The inspectors observed the match marking of the coupling prior to disassembly, the visual inspection of the gear teeth, and the lubrication of the coupling. The inspectors verified that the MG sets were under work permit control and that they had been properly tagged out in accordance with OMM-005, (Revision 7), "Clearance and Test Request". The inspectors noted that the maintenance personnel involved appeared knowledgeable and were familiar with the equipment and that all required tools and expendable materials had been prestaged.

The inspectors also witnessed the preventative maintenance performed on valves SI-880A, B, C, and D. These are motor operated globe valves which are located on the discharge side of the containment spray pumps. The PM's performed on the subject valves were conducted in accordance with

PM-112, (Revision 5), "Limatorque Inspection No. 1", PM-113, (Revision 1), "Limatorque Inspection No. 2", and PM-423, (Revision 4), "Limatorque Inspection No. 3". The purpose of these PM's is to perform lubrication and electrical inspections on Limatorque motor operators. The inspectors verified that the above activities were conducted utilizing the latest revision of the controlling procedures and that the equipment involved was properly tagged out of service. The inspectors observed that the external surfaces of the Limatorque operators were thoroughly cleaned prior to removal of the limit switch cover to preclude the entry of debris or foreign material into the valve operator and that ALARA requirements to minimize radiation exposure and the spread of contamination were adhered to. The inspectors observed the disassembly, inspection, cleaning and refurbishment of the limit switch contacts, as well as the checking of lubrication levels in the main gear box and drive sleeve top bearing. The above activities were performed adroitly by both the mechanical maintenance and the instrumentation and control personnel involved.

Additionally, the inspectors witnessed the inspections performed on the "C" reactor coolant pump (RCP) motor after it was removed from the pump on April 13, 1987. These inspections were focused on determining the root cause of the excessive pump shaft vibrations experienced during the later portion of this operation. Radial bearing clearances were measured, the torque on the lower bearing was checked and the flywheel cover fasteners were tightened and locked in place. The inspectors also witnessed portions of the draining and refilling of the oil in the upper and lower bearing housings as well as the installation of the lower bearing oil sight glass. These activities were determined to be implemented under the auspices of an approved work request and were controlled by an appropriate radiological work permit. The inspectors observed that appropriate precautions were taken to prevent the spread and inhalation of radioactive contamination and that removed parts were segregated and controlled.

On April 13, 1987 the inspectors witnessed the installation of a new motor control center for the manipulator crane. This work was conducted in accordance with work request WR/JO 86-A1XU1 and was initiated as a system upgrade. The manipulator crane control panel is mounted on the refueling bridge and controls all movements of the bridge, trolley, mast, and main hoist, which in turn are used to handle all fuel assemblies in the reactor vessel and refueling canal.

During this evaluation, the inspectors witnessed the termination of motor control center and control console wiring and the installation of the indexing camera. Additionally, the inspectors questioned the factory representatives and licensee personnel regarding the scope of the work, work controls, and post installation verification testing. The individuals involved were knowledgeable and the work appeared well controlled both from an administrative and a radiological standpoint.

Additionally, the inspectors reviewed several outstanding job orders to determine that the licensee was giving priority to safety-related

maintenance and that a backlog which might affect its performance was not developing on a given system.

No violations or deviations were identified within the areas inspected.

9. Operational Safety Verification (71707, 82301)

The inspectors 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.

In particular, the inspectors observed that control room staffing, access controls and shift turnovers were in keeping with the outage conditions; and that no TS violations occurred. The inspectors noted that the correct valve lineups were employed for both spent fuel pool cooling and residual heat removal system operation.

No violations or deviations were identified within the areas inspected.

10. ESF System Walkdown and Monthly Surveillance Observation (71710, 61726, 56700)

The inspectors verified the operability of an engineered safety features system by performing a walkdown of the accessible portions of the Spent Fuel Pool (SFP) system. The inspectors confirmed that the licensee's system lineup procedures matched plant drawings and the as-built configuration. The inspectors looked for equipment conditions and items that might degrade performance (hangers and supports were operable, housekeeping, etc.) and inspected the interiors of electrical and instrumentation cabinets for debris, loose material, jumpers, evidence of rodents, etc. The inspectors verified that valves were in proper position, power was available, and valves were locked as appropriate. The inspectors compared both local and remote position indications.

In particular, the inspectors verified that the water level in the SFP was within the required range and that both the normal demineralized water, alternate component cooling water, as well as the fire main water make up systems were operable, that the SFP decay heat removal system was functioning, and that the required radiation monitors in the spent fuel building and main stack vent were in service. The inspectors also observed that the spent fuel building air filtration system was operable and discharging through HEPA and charcoal filter system in accordance with OP-906, that negative pressure was maintained in the SFP building, and that the temperature and humidity in the SFP were maintained and recorded per FHP-003.

The inspectors checked the high and low level alarms and the high temperature alarm indications in the SFP and the control room and verified their agreement. The inspectors also verified that proper shift manning and supervision were being maintained, that the proper control of material was achieved, and that the cleanliness levels maintained were commensurate with the activities being conducted.

Additionally, the inspectors witnessed the inspection and reconstitution of fuel assemblies in the SFP. These activities were conducted in accordance with special procedure SP-702, (Revision 2), "Ultrasonic Testing and Repair of Fuel Assemblies". The inspectors verified that the equipment utilized for the ultrasonic inspections was properly calibrated and that the subject procedure was the latest revision. The inspectors questioned the fuel manufactures representative and the licensee's fuels engineer conducting the inspections and reconstitution activities, and determined that they were knowledgeable and adept at their occupations.

No violations or deviations were identified within the areas inspected.

11. 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 inspectors 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 inspectors reviewed the following LERs 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. When licensee identified violations were noted, they were reviewed in accordance with enforcement policy. The inspectors had no further comments.

<u>LER</u>	<u>EVENT</u>
87-001	Manual Reactor Shutdown
87-002	Reactor Shutdown Trip

No violations or deviations were identified within the areas inspected.

12. Onsite Review Committee (40700)

The inspectors reviewed certain activities of the Plant Nuclear Safety Committee (PNSC) to ascertain whether the onsite review functions were conducted in accordance with TS and other regulatory requirements. The inspectors (1) attended the regular monthly PNSC meeting held on April 15, 1987 and observed the conduct of the meeting, (2) ascertained that provisions of the TS dealing with membership, review process, frequency, qualifications, etc., were satisfied, and (3) reviewed meeting minutes to confirm that decisions and recommendations were accurately reflected in

the minutes, and (4) followed up on previously identified PNSC activities to independently confirm that corrective actions were progressing satisfactorily. The inspection emphasized PNSC followup of items which require resolution prior to restart.

No violations or deviations were identified within the areas inspected.

13. Generic Letter Followup (92703)

During the week of May 4th, the inspectors participated in the evaluation of issues resulting from the environmental qualification (EQ) inspection conducted by the Office of Inspection and Enforcement, Division of Quality Assurance, Vendor and Technical Training Center Programs. The EQ inspection included a review of (1) the implementation of the 10 CFR 50.49 program, (2) Technical Evaluation Report/Safety Evaluation Report EQ corrective action comments, (3) EQ documentation files, and (4) physical inspection of selected equipment in harsh radiation environments. Guidance for these activities is included, in part, in Generic Letter 86-15 titled "Information Relating to Compliance with 10 CFR 50.49, Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants, (Generic Letter 86-15)."

The inspectors attended the entrance meeting of the EQ inspection team which included a presentation by the licensee of its EQ program, procedures, file organization, and status of open or new items requiring further evaluation. Throughout the week, the inspectors maintained contact with the inspection team and interacted in investigation and resolution of issues and identified to Regional management the more significant inspection findings. On May 8, 1987, the inspectors attended the exit meeting for the EQ team inspection in which inspection findings were identified to licensee management.

The inspectors did not identify any issues beyond those identified by the EQ inspection team at their exit.