



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

Report No.: 50-261/87-34

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: October 11 - November 10, 1987

Inspector: S. J. Vias
 R. M. Latta, Acting Senior Resident Inspector

11/25/87
 Date Signed

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

11/25/87
 Date Signed

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.

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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 November 10, 1987, with the Plant General Manager and the Acting 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 inspector during this inspection. No written material was given to the licensee by the Resident Inspector during this report period.

3. Licensee Action on Previously Identified Inspection Items (92701)

(Closed) Inspector Followup Item 50-261/87-05-04. This item involved the adequacy of the daily operability testing of the "A" emergency diesel generator (EDG) during periods of time when the "B" EDG was inoperable. As identified by the Safety System Functional Inspection team during their inspection of the emergency electrical system, an apparent inconsistency existed between the 60 minute run time designated by Operations Surveillance Test OST-401 (Revision 8) and the daily operability testing time of 30 minutes specified in Operations Work Permit, OWP-DG2 used to satisfy T.S. 3.7.2.d. As documented in Inspection Report 50-261/87-28, the duration of the surveillance testing of the EDG's has been revised to 90 minutes as specified in OST-401 (Revision 13). The inspectors determined that the licensee no longer utilizes OWP-DG2 to control the EDG's run time and that operability testing is constrained by the interval specified in the subject surveillance test; therefore, this item is closed.

(Closed) Inspector Followup Item 50-261/87-06-12. This item is identical to IFI 50-261/87-05-04 describe above, therefore, this item is closed.

4. Plant Tour (71707, 62703, 71710)

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 maintenance activities, 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 fire fighting equipment, and instrument calibration dates. Some tours were conducted on backshifts. Plant housekeeping and contamination control were observed to be excellent.

The licensee was informed of several minor items observed by the inspector during normal plant tours including corrosion on the emergency diesel generator field flash battery bus bars, evidence of valve packing leakage on the "B" Safety Injection pump gage isolation valve, a loose instrument line in the charging pump room, and missing valve label plates. These items were responded to by the licensee in a timely manner and corrective actions were prompt.

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. Service Water System

No violations or deviations were identified within the areas inspected.

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

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.

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) display of safety related parameters, including component status information, for indications related to conformance with the TS.

No violations or deviations were identified within the areas inspected.

6. Plant Operations Review (71707, 62703, 61726, 61707)

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 and plant tours. The inspector conducted random off-hours inspections during the reporting interval to assure that operations and security were maintained in accordance with plant procedures. The inspector also periodically verified the reactor shutdown margin and observed the reactor axial flux difference and compared the observed values with those required by the TS.

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. This was accomplished 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.

While performing a plant tour on October 29, 1987, the inspector witnessed the conduct of an unannounced fire drill. The scenario involved a postulated fire near the "A" Auxiliary Boiler, which is located on the ground floor of the turbine building. The inspector witnessed the response of the fire brigade team leader (senior reactor operator on duty) as well as the actions of other plant personnel participating in the drill. The inspector observed the use of self-contained breathing apparatus by selected fire brigade members as well as the utilization of available fire fighting equipment. The drill scenario was realistic and well developed and the fire brigade personnel responded quickly to the alarm.

No violations or deviations were identified within the areas inspected.

7. 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 plant tours. The inspector also visited the central and secondary alarm stations at various times during the reporting period.

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; perimeter patrols, and compensatory actions. In addition, the inspector routinely observed protected and vital area lighting and barrier integrity.

No violations or deviations were identified within the areas inspected.

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

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 procedure listed below conformed to TS requirements, that all precautions and LCO's 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;insured that test

discrepancies were properly rectified, and; independently verified selected test results and proper return to service. Specifically the inspector witnessed/reviewed portions of the following test activities:

- a. The inspector witnessed the conduct of Engineering Surveillance Test Procedure EST-071 (Revision 1) "Flux Map Code Verification." The purpose of this test was to verify that the constant values used in the flux map program are correct prior to each flux map. The inspector reviewed the completed attachments of the subject procedure and determined that they were consistent with the values stored in the Emergency Response Facility Information System (ERFIS) computer. No deficiencies were identified during the conduct of this surveillance test.
- b. On October 23, 1987, the licensee performed a measurement of the target axial flux difference using procedure EST-002 (Revision 5) titled "Nuclear Instrumentation System Power Range Axial Offset Calibration." The inspector determined that the subject procedure was technically adequate and that the target flux difference updating occurred at a frequency prescribed by the TS. In particular, the inspector ascertained that appropriate prerequisites and initial plant conditions for the measurements were delineated and met in the procedure and that the calculations for establishing the target axial flux difference for each of the excore detectors was correct. The inspector also determined that the ERFIS computer was updated to reflect the current target axial flux difference and that the control operators were utilizing the current target axial flux valves. No deficiencies were identified during the conduct of this test.
- c. The inspector also witnessed the execution of Operation Surveillance Test OST-406 (Revision 1) titled "TSC/EOF/PAP Diesel Generator." This test is conducted weekly to verify operability of the subject diesel generator. The inspector determined that the recorded test data was accurate and complete and that operational limitations were observed. The inspector did note that the engine low lube oil temperature annunciator light remained illuminated throughout the conduct of the test. The inspector subsequently determined that this discrepancy had been identified on the licensee's work request program, that the condition had been evaluated by maintenance management, and that electrical maintenance personnel had identified the cause of the condition as a faulty sensing switch. Further investigation revealed that this switch was being expedited from the supplier and that corrective maintenance was scheduled.

The inspector will continue to monitor this activity during subsequent inspections.

10. 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 LCO's and that redundant components were operable. 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 inspector verified that these activities were accomplished by qualified personnel using approved procedures, and determined that equipment was properly tested before being returned to service. In particular the inspector observed/ reviewed the following maintenance activities.

- a. Maintenance Surveillance Test MST-006 (Revision 4) titled "Reactor Coolant Flow Protection Channel Testing." This test, which is conducted monthly is designed to demonstrate the operability of the Reactor Coolant Flow Protection Channel Sets I, II,, and III. As noted in the subject procedure, the successful completion of this surveillance test satisfies the requirements of TS Table 4.1, Item 5. In reviewing the completed MST the inspector determined that it was accomplished within the required frequency, that the test equipment utilized was properly calibrated, and that there were no test discrepancies.
- b. The inspector observed portions of MST-013 (Revision 7) titled "Steam Generator Water Level Protection Channel Testing." The instructions contained in this procedure are designed to determine the operability of the level protection channels for the steam generators and satisfy the requirements contained in TS Table 4.1-1, Item II. For those portions of the surveillance test observed, the inspector confirmed that the annunciators gave the proper status, that the associated alarms responded as required, and that the specified voltages were within the required tolerances.
- c. The inspector also witnessed the daily execution of MST-101 (Revision 6) titled "Boric Acid Heat Tracing Operability. This procedure directs the functional testing of both boric acid heat tracing channels. The inspector reviewed the attached data sheets for the Boric Acid Tank Room and the Charging Pump Room and determined that all primary and secondary circuits were within the normal expected current ranges.

- d. Additionally the inspector reviewed completed Work Request WR/JO 87-APHZ 1 which repacked valve RC-525. This valve which serves as the by-pass on the Pressurizer Spray Line was repaired to correct excessive valve gland packing leakage. The inspector determined that all required materials were pre-staged and properly controlled and that the activity was well coordinated by Operations, Maintenance and Health Physics personnel to minimize radiation exposure. Post maintenance reactor coolant leak checks have verified that valve RC-525 was properly repacked.

The inspectors also 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.

11. ESF System Walkdown and Monthly Surveillance Observation (71710, 61726, 56700, 61715)

The inspector verified the operability of an engineered safety features system by performing a walkdown of the accessible portions of the Service Water System as prescribed in Operations Surveillance Test OST-302 (Revision 19) titled "Service Water System Component Test." The inspector determined 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 T.S. Section 4.5.1.6. The inspector noted that all the prerequisites for the performance of this test were performed and that all specified precautions and limitations were observed.

Additionally, the inspector 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 and jumpers. The inspector verified that valves were in proper position, power was available, valves were locked as appropriate, the associated check valves functioned properly, and both local and remote flow indications agreed.

While at the Service Water intake structure, the inspector witnessed the measurement of pump vibration in both the vertical and horizontal direction as well as the operational checks of each of the Service Water pumps. The inspector determined that the recorded flow rates, suction, and differential pressures were within the acceptance criteria specified in the test procedure. Also, the inspector ascertained that the instrumentation and test equipment utilized during this surveillance test were properly calibrated and controlled. The inspector noted that the "B" Service Water pump was not labeled with stenciled letters and that the

local "B" pump discharge pressure gage root valve and vent valve were not labeled. These items were identified to the licensee. The inspector subsequently determined that work requests had been generated to correct the identified labeling discrepancies.

No violations or deviations were identified within the areas inspected.

12. Cold Weather Preparations (71714)

The inspector conducted a review of licensee 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; the proper setting of thermostats; and that the heat tracing and strip heating circuits were energized. The inspectors also determined that, for systems which had been subjected to maintenance and/or modification during the past year, that any required protective measures were reestablished.

In particular, the inspector witnessed the operability verification performed by instrumentation and control technicians of various freeze protection panels throughout the plant. The inspectors observed channel current testing in the subject panels and, for those freeze protection channels which indicated a faulted condition, the inspector 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.

13. 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. Service Water Pumps Nozzle Loads (Closed) LER 87-11

On June 3, 1987, with Unit 2 in cold shutdown for a refueling outage, the licensee determined that the original nozzle loads for the service water (SW) supply pumps could exceed those allowable for continuous operation during a Design Basis Earthquake (DBE). This

condition was attributed to the Architect/Engineer having failed to confirm the adequacy of the original DBE nozzle loading for the SW supply pumps.

The inspector reviewed licensee correspondence concerning nozzle loads RNP/86-937, dated March 17, 1986 as well as documentation concerning additional seismic restraints added to the SW supply lines at the unit intake structure intended to reduce nozzle loads.

The inspector determined that the design calculations performed for the added seismic restraints were submitted to the SW supply pump manufacturer for confirmation of acceptability. Based on their analysis and concurrence by licensee engineering, the installation of the additional seismic restraints, have reduced the SW pump nozzle loads to acceptable values.

b. Failure to Post Fire Watch Within One Hour (Closed) LER 87-17

On May 22, 1987, with Unit 2 in cold shutdown for refueling, the "A" train of the Fire Detection and Suppression System was inadvertently rendered inoperable for one hour and forty two minutes. As identified by the licensee this condition occurred when a special procedure which was being conducted on the "A" EDG required the transfer of power on Motor Control Center (MCC) No. 5 from Emergency Bus No. 1 to the 480 volt dedicated shutdown bus. The transfer caused the loss of power to MCC-10, resulting in an undervoltage trip of the breaker feeding fire detection train "A". With fire detection train "A" out-of-service, the fire detection instrumentation and suppression systems for several fire zones were out-of-service. It is noted that during this period of time, redundant capability was afforded by The "B" train of the Fire Detection System and fire suppression capabilities were present.

As stated in TS Section 3.14.1.2.b with the number of operable fire detection instruments less than required by Table 3.14.1, within one hour increase the inspection frequency of the zone with the inoperable instrument(s) to at least once per hour. This action was not accomplished within the required time frame; however, the inspector ascertained that the affected fire alarm panel was restored to service immediately following the determination that it was de-energized. This determination as previously stated was made one hour and forty two minutes after it was inadvertently rendered inoperable. The inoperable fire detection train was identified by a fire protection technician who was performing a routine status check of the control room fire detection annunciators.

As stated by the licensee the event was attributable to inadvertent procedural controls in that the special procedure did not address the loss of fire detection and suppression train "A". The inspector reviewed Special Procedure SP-776 (Revision 0) as well as Operating

Procedure OP-603 (Revision 19) titled "Electrical Distribution, and System Description SD-016 (Revision 16) titled "Electrical System" and determined that changes had been made to these procedures to preclude the inadvertent transfer of power to MCC-10. Also, permanent labels have been installed on the transfer switches and power supply breakers stating required action to restore power to MCC-10 and the fire detection train "A" system. The inspector determined that this event was an isolated case of inadequate procedural controls and that the corrective actions taken by the licensee are sufficient to prevent similar occurrences in the future.

c. Residual Heat Removal Pump Miniflow Recirculation

On October 30, 1987 the licensee identified a reportable event involving the potential for degraded recirculation flow in the Residual Heat Removal (RHR) System pumps. The event which was reported under 10 CFR 50.72(B)(2)(iii) involved two design concerns in the RHR miniflow recirculation piping configuration.

The purpose of the miniflow recirculation line is to divert part of the RHR pump discharge flow back to the suction of the pumps. The miniflow line ensures that the RHR pump does not overheat or oscillate excessively when the discharge line is closed or when the Reactor Coolant System pressure exceeds the pump shut-off head during the ECCS injection phase of safety injection.

Under safety injection conditions, both RHR centrifugal pumps operate in parallel. In this configuration there is a tendency for one of the pumps to be stronger than the other. This difference is not a problem at moderate to high flow conditions due to the shape of the pump characteristic curve in these regions. There is, however, a tendency during multiple RHR pump operation on miniflow to dead-head the weaker pump under low flow conditions. This phenomena is manifested at low flow rates due to the flatness of the pump characteristic curve in this range.

As delineated to the licensee in a Westinghouse Owens Group letter (WOG-RRG-87-020) dated October 26, 1987 the problem was identified on a plant that requested Westinghouse to determine if parallel RHR pump operation while on miniflow was acceptable. The particular plant's RHR system configuration was reviewed and it was determined that the potential existed for the stronger pump to dead-head the weaker pump during low flow, parallel pump operating conditions while on miniflow only. In addition it was determined that inadequate recirculation flow was available to even support continuous operation of a single RHR pump on miniflow.

The reference WOG letter states that the length of time the RHR pump could run at dead-headed conditions without pump degradation or damage was 10.4 minutes. The letter further stated that the recommended minimum flow rate was 500 gpm for each pump to insure safe continuous operation while in miniflow recirculation.

In response to the above noted condition the licensee performed an analysis of the RHR system including a system walkdown and determined that a similar RHR pump miniflow recirculation piping configuration had existed at Robinson since initial construction. However, the licensee's analysis indicated that for single pump operation, which is the case during monthly surveillance testing, adequate recirculation flow exists (greater than 500 gpm) to prevent damage or degradation to the RHR pumps. This analysis is supported by periodic surveillance test results which indicate no evidence of adverse effects on RHR pump performance to date. In order to verify the single pump recirculation flow rates, the licensee is preparing a special test procedure which will be implemented during the next monthly surveillance test. Additionally, in order to prevent dead-heading of the pumps, the licensee has issued an interim emergency operating procedure change which requires securing one of the RHR pumps within 10 minutes if the Reactor Coolant System pressure is greater than the shut-off head of the RHR pumps and both pumps are running. The inspector will continue to monitor this activity during subsequent inspections.

No violations or deviations were identified within the areas inspected.

14. 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 activities; plant modifications, including the security system upgrade; the fire protection system; ongoing constructions activities; and communications 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 October 27, 1987 concerning the reactor trip which occurred on September 28, 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.

15. Participation in NRR/Licensee Meetings (94702)

On October 28, 1987, the inspector participated in a meeting at H. B. Robinson concerning recent changes to the licensed operator requalification examination program as administered under the provisions of 10 CFR 55.59 (a)(2)(iii). Attendees at this meeting included CP&L Corporate Management, NRC Headquarters Operator Licensing Branch personnel, and representatives from Region II Operations Branch. The meeting was convened to discuss the implementation of a voluntary pilot program at Robinson which would incorporate a more operations oriented format for NRC administered requalification examinations. Discussion details included administrative concerns, simulator test format, plant walk-through evaluations, and written examination concepts. At the conclusion of the meeting it was mutually determined to proceed with the development of a requalification testing program that would be administered on the week of December 14, 1987. The resident inspector will continue to monitor this activity in subsequent inspections.

No violations or deviations were identified within the areas inspected.