



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA STREET, N.W., SUITE 2900  
ATLANTA, GEORGIA 30323-0199

Report No.: 50-261/93-31

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

Docket No.: 50-261

License Nos.: DPR-23

Facility Name: H.B. Robinson

Inspection Conducted: November 15-19, 1993

Inspector: G. R. Wiseman 12/7/93  
G. Wiseman Date Signed

Accompanying Personnel: M. Miller

Approved by: C. A. Casto 12/15/93  
C. A. Casto, Chief Date Signed  
Test Programs Section  
Engineering Branch  
Division of Reactor Safety

SUMMARY

Scope:

This routine, announced inspection was conducted in the areas of design changes and plant modifications, and engineering and technical support activities.

Results:

In the areas inspected one violation with two examples was identified.

Violation 50-261/93-31-01, Failure to Update Design Documents:

- (1) Failure to follow procedure by not updating the weekly status of the Request for Engineering Tasks (Section 2.a.).
- (2) Failure to follow procedure by not updating 33 Priority A drawings within the required time period (Section 2.d.).

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The modification program contained adequate requirements to implement design changes in a timely and satisfactory manner. The plant modification packages reviewed were easy to follow since they were logically arranged; detailed; and, contained additional information that required the control room drawings be completed (revised) before turnover to operations. The use of the temporary modification program for implementing and controlling leak repairs ensured the leaks will be tracked.

In general, the staffing levels appeared to be adequate to provide support to the plant. The technical staff was knowledgeable, competent, and exhibited an attitude of providing maximum effort in performing their engineering duties. The quality of communications between engineering and the plant staff was effective. Technical Support (TS) management's implementation of the prioritization and tracking process for open and backlog items was adequate. The overall trend of TS backlog items has shown a reduction during 1993.

The engineering groups were actively involved in the identification and resolution of problems in support of reliable plant operations. Management has been supportive of engineering's active role in the identification of plant system configuration problems as evidenced in the number of Adverse Condition Reports (ACRs) initiated by the Technical Support Unit and NED.

The Nuclear Assessment Department assessment activities have been more aggressive in the identification of engineering program problem areas and has improved engineering. The Technical Support Managers Report Card system is a good tool for self-assessment of performance.

Problems continued in maintaining plant configuration. Previous plant change backlogs have contributed to present design input and configuration problems. In past periods, engineering follow-through in the update of drawings and vendor information following plant modifications had been inconsistent resulting in drawing and vendor manual configuration control discrepancies. These discrepancies have led to identified problems during the implementation of new modifications and increased engineering workloads in support of resolution of additional ACRs and emergent issues. Problems in the timeliness and resolution of ACR issues have been identified by the licensee and are being addressed through the development of new standards of time requirements in the governing procedures.

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*G. Attarian, Manager, Nuclear Engineering Department, Electrical
- R. Barnett, Manager, Project Management
- \*A. Canterbury, Manager, Component Engineering
- S. Clark, Manager, Maintenance
- T. Cleary, Manager, Technical Support
- \*W. Farmer, Manager, Inservice Inspection
- \*D. Gudger, Engineer, Regulatory Affairs
- \*B. Harward, Manager, Nuclear Engineering Department, Onsite Programs
- \*A. McCauley, Manager, Electrical Systems
- R. Morgan, Acting Plant General Manager
- \*P. Musser, Manager, Engineering Assessments
- \*M. Page, Manager Nuclear Engineering Department, Mechanical
- E. Roper, Fire Protection Engineer
- \*E. Schoemaker, Manager, Mechanical Systems
- M. Scott, Manager, Nuclear Steam Supply Systems
- D. Waters, Manager, Regulatory Affairs

Other licensee employees contacted during this inspection included engineers, operators, technicians, and administrative personnel.

#### NRC Resident Inspector(s)

- W. Orders, Senior Resident Inspector
- C. Ogle, Resident Inspector

\*Attended exit interview

### 2. Design Changes and Plant Modifications (37700)

#### a. Plant Modifications to Improve Reactor Safety

The inspectors reviewed the initiatives taken by the licensee to identify and implement plant modifications to improve reactor safety and plant operation. Plant modifications packages are prepared by the Nuclear Engineering Department (NED) located both onsite and offsite at corporate headquarters. Design changes that lead to modifications are primarily requested and processed through the plant Technical Support Department located onsite.

The licensee has a corporate program that addresses modifications for all three nuclear sites. This program was described in the "Carolina Power & Light Company Nuclear Plant Modification Program" manual (NPMP), Revision 4, dated October 21, 1991. The modification manual provides complete and detailed instructions for plant modifications. Several site specific modification

procedures were reviewed by the inspectors to determine the adequacy of the modification program. The Modification And Design Control Procedures reviewed were:

- \* MOD-001 Engineering Evaluations
- \* MOD-002 Design Calculations
- \* MOD-005 Plant Modifications
- \* MOD-010 Design Verification and Technical Review
- \* MOD-011 Declaration of Operability and Closeout of Plant Modifications

NED receives "Request for Engineering Tasks" (RETs) from the plant to authorize small engineering tasks (less than 250 manhours) to be performed within NED. NED procedure NED Guideline Number A-47, Release for Engineering Tasks (RETs) at H.B. Robinson, Revision 0, dated October 12, 1992, requires that the status of the RETs be updated on a weekly basis. The updated status of the RETs should then be entered in the MAPS (computer tracking system) on a weekly basis. The inspectors examined the NED RETs Status Report printed on November 17, 1993, listing the outstanding RETs. Seventeen high priority RETs were examined as being overdue. The status of each of the following RETs had not been updated as required:

RET-RG93-AG, AX, BC, BK, BN, BR, CC, DB, DD, FB, FM, FR, GC, GL, HH, HP, and HT

Discussions with NED confirmed that RETs were not being updated. NED reviewed each of the RETs with the inspectors to determine if there was any immediate safety concern. The NED review indicated there was no immediate safety concern; however, NED had not been updating the RETs' status as required. The failure of NED to update the status of the RETs as required in NED Guideline A-47 was identified as one example of Violation 50-261/93-31-01, Failure to Update Design Documents. A second example of Violation 50-261/93-31-01 is discussed in Section 2.d. of this report.

The inspectors concluded that the modification program contained adequate requirements to implement design changes in a timely and satisfactory manner.

b. Plant Modifications

The inspectors reviewed the plant modifications listed below to: (1) determine the adequacy of the general safety evaluations and the 10 CFR 50.59 safety evaluation; (2) verify that the modifications were reviewed and approved in accordance with TS and applicable administrative controls; (3) verify the modifications were installed and had proper signoffs; (4) verify that applicable

design document were included and design drawings were revised; (5) verify that the modifications were properly turned over to operations; and (6) verify that both installation testing and post modification test requirements were specified and that adequate testing was performed. The following plant modifications were examined:

- \* MOD NO. 994, Control Room Habitability
- \* MOD NO. 1017, Eliminate RHR Pump Common Mode Failure
- \* MOD NO. 1052, Fire Barrier Penetration Mod
- \* MOD NO. 1074, Electrical Penetration Replacement Project
- \* MOD NO. 1086, Relocation of SI-858A, B, & C
- \* MOD NO. 1145, FW-V2-6A Cable Replacement
- \* MOD NO. 1151, Activation of Emergency Bus E2 Undervoltage Trip Function for "C" CCW Pump Supply Breaker

The inspectors reviewed in detail and verified that both the design package and installation package were included in the plant modifications. Included in the modification packages were added features and requirements that provided a complete easy to follow description of the work. Several of these additional features were items as:

- The detailed scope of the design problem
- Recommended Solution
- History/root cause
- Design-basis
- Impact evaluations for design and systems
- List of priority drawings for the control room

The modification packages reviewed were complete, detailed, contained a design package, contained a work instructions package, contained additional information such as the design-basis and required that control room drawings be completed (revised) before turnover to operations. The modification packages were easy to follow since they were logically arranged and contained complete details. The inspectors identified no findings for the modifications reviewed and concluded the modifications packages were satisfactory.

#### c. Temporary Modifications

The inspectors reviewed the licensee's temporary modification program to determine its adequacy for controlling and tracking temporary work. Modification And Design Control Procedure

MOD-018, "Temporary Modifications", was reviewed to determine its requirements. Since temporary modifications are used to track and control on-line leaks, Technical Management Manual Procedure TMM-031, "Evaluation of On-Line Flowable Packing", was reviewed to determine the requirements for on-line leak sealing. The inspectors considered the use of the temporary modification for controlling and tracking leak repairs as a strength since closeout requires that permanent repairs are implemented. The requirements listed previously in Section 2.b. for modifications are also applicable to temporary modifications and were reviewed accordingly. The following temporary modifications were examined to verify: (1) a safety evaluation was performed; (2) there was a work plan; (3) a technical review was performed; (4) the cause was listed; (5) testing was specified; and (6) there was a restoration plan.

- \* TM 93-710 Leak Repair of 1-CR-152N-20
- \* TM 93-711 Installation of Blind Seal on Thimble Guide Tubes
- \* TM 93-712 Service Water System 20-CW-301 Pipe Repair
- \* TM 93-713 Temporary Mod to Allow Contents of MWT Neutralization Tk to be Pumped to CP Neutralization Tk CP-Condensate Polishing
- \* TM 93-733 Installation of Temporary Temperature Probe in Spent Fuel Pool
- \* TM 93-734 Pressurizer Surge Line Instrument System
- \* TM 93-714 CVC 312A and B Leak Repair (The temporary modification package was satisfactory. However, during a later walkdown the valves were found leaking and had to be repaired).

The inspectors conducted a walkdown to verify that the control room had a copy of the Temporary Modification Log. The inspectors concluded the licensee has an effective program for temporary modifications. The use of temporary modifications to control and track leak repairs was considered a strength.

d. Drawing Control

The inspectors reviewed the licensee's program and procedures that were developed and implemented to maintain drawing control. The program and procedures were examined to ensure that design control was maintained and drawings were updated in a timely manner to reflect the as-built plant. The procedures and systems reviewed for drawing control included the following:

- \* NED Guideline E2, "Preparation and Revision of Sketches and Drawings", Revision 3, dated June 19, 1992.
- \* Modification and Design Control Procedure MOD-004, "Plant Drawing Preparation, Revision, and Approval", Revision 9, dated October 28, 1993.
- \* Nuclear Revision Control System (NRCS) (computer system for document control and tracking).

Onsite NED was responsible for implementing and maintaining drawing control. NED implements all changes and revisions to the drawings for both design changes and modifications. However, in certain areas, Technical Support drawing approval is required. All other onsite groups provide support and initiate requests to NED for drawing changes. The NED drawing control group tracks the status of the drawings using the NRCS. The inspectors reviewed the NRCS "Overdue Priority A B & C Drawing Status" computer printout sheets. Priority A drawings are required to be in the control room to reflect the as-built plant configuration. Overdue drawings listed for Technical Support effective November 11, 1993, included 33 Priority A, nine Priority B, and 19 Priority C drawings. MOD-004 procedure requires that Priority A drawings shall be updated within 28 working days. Failure to update the 33 overdue Priority A drawings is identified as another example of Violation 50-261/93-31-01, Failure to Update Design Documents. The licensee informed the inspectors that none of these 33 drawings were associated with plant modifications.

For the following plant modifications, the inspectors verified the Priority A drawings were updated as required:

MOD 93-994	MOD 93-1017	MOD 93-1086	MOD 93-1142
MOD 93-1128	MOD 93-1145	MOD 93-1151	MOD 93-1133
MOD 93-1110			

The inspectors concluded that the NED drawing control program was adequate. The requirement that modification package Priority A drawings be revised before turnover to operations was considered a strength. However, the area where Priority A drawings in Technical Support were not updated needs to be addressed and corrected.

In the areas inspected one violation with two examples was identified.

### 3. Engineering and Technical Support Activities

The inspectors reviewed activities performed by the various engineering and technical support departments in an effort to assess the effectiveness of the support being provided to the plant.

a. Organization and Staffing

Engineering and technical support are provided by both site and corporate organizations. The inspectors reviewed site support activities provided by Nuclear Engineering Department (NED) site unit, onsite Technical Support (TS) (which includes system engineers), and the Maintenance Department (includes the Component Engineering Group). The corporate and site engineering organizations have been undergoing a reorganization and resultant personnel changes were in progress. The interface duties and responsibilities of the engineering organizations are described in various customer/supplier interface agreement memorandums.

The inspectors reviewed trending plots of TS open items and Site Work Tracking System (SWTS) backlog items to determine if the engineering workloads are maintained at manageable levels and issues processed in a timely manner. TS open items are tracked as active work or backlog items. The total number of TS open items in 1993 has remained fairly constant (approximately 1200). With contractor assistance, the overall trend of TS backlog items has shown a reduction during this year. In January 1993, the number of backlog items was about 225. As of November 1993 the number had reached 123.

In general, the staffing levels appeared to be adequate to provide support to the plant. The technical staff was knowledgeable, competent and exhibited an attitude of providing maximum effort in performing their engineering duties. The quality of communications between engineering and the plant staff was effective. TS management's implementation of the prioritization and tracking process for open and backlog items was adequate. The overall trend of TS backlog items has shown a reduction during 1993.

b. Support

The inspectors interviewed licensee personnel, reviewed records, and observed plant activities to evaluate the engineering involvement and technical support of day-to-day plant operations.

An example of engineering and technical support observed by the inspectors involved efforts to reduce Penetration Pressurization System (PPS) leakage during plant restart following the recent outage. The PPS is a four header compressed air system that provides positive pressure for containment integrity on containment electrical, mechanical, and airlock door penetrations. On November 14, 1993, header A leakage increased to near the maximum allowed, and the TS system engineer was called to investigate the source of the leak. Leakage at the personnel airlock door was determined to be the source. The inner airlock door outer seal was replaced and on November 16, after engineering consultations with the door vendor, new adjustments were made to



the door latch mechanism capscrews (per vendor recommendations) to tighten the door fit and latch engagement. Following these repairs header A leakage was reduced approximately 50% and the total PPS leakage remained constant within permissible limits. Monitoring of the PPS leakage of service water piping containment penetrations associated with MOD 1113 and ACR 93-273 continued.

Other examples of engineering and technical support included the following:

- Interface for implementation of a design document correction program.
- Development of Engineering Evaluations (EEs) by engineering to support a bellows repair procedure allowing the use of silicone rubber RTV adhesive sealants for repair of containment penetration bellows leaks.

In addition to the above examples of engineering support, the inspectors reviewed a sample of Adverse Condition Reports (ACRs) and the active ACR summary list, dated November 18, 1993, to evaluate engineering involvement in plant problem identification and resolution. The review indicated that the engineering organizations (TS and NED) were involved in the initiation of about 30% of the ACRs listed in 1993.

ACRs are one method of identifying plant problems for engineering review to determine operability and problem resolution. To evaluate the adequacy of the operability assessments and problem resolutions, the inspectors reviewed the following:

<u>ACR No.</u>	<u>Problem Subject</u>
93-028	Configuration discrepancies for service water valves.
93-066	Isolation valve FP-249 operability.
93-081	Jockey fire pump shaft too long.
93-168	MOV SI-866A failed to close against the SI pump pressure.
93-175	Valve SI-845B would not operate due to locked up motor, after maintenance.
93-222	MOD 1052 breached fire barrier penetration CP-2653-00-FB-06/25 to install a new seal type.

The inspectors also examined ACR 93-212 dated October 18, 1993. ACR 93-212 identified that the cables for radiation monitors R-32A and R-32B were not Environmentally Qualified (EQ) and the original

splices were not documented. The inspectors reviewed the licensee's corrective action and determined it was acceptable. Work Requests WR/JO 93-AKPB1 and WR/JO 93-AKPB2 were implemented and completed November 9, 1993, to correct cables for R-32B. Work Requests WR/JO 93-AKNZ1 and WR/JO 93-AKNZ2 were implemented and completed November 8, 1993, to correct the cables for R-32A. The corrective action taken was the installation of EQ splices and cable connectors.

The inspectors concluded that the engineering groups are actively involved in the identification and resolution of problems in support of reliable plant operations. Management has been supportive of engineering's active role in the identification of plant system configuration problems as evidenced in the number of ACRs initiated by the Technical Support Unit and NED. The operability assessments and proposed problem resolutions for the ACRs reviewed were adequate.

However, the inspectors noted that TS engineering staff active workload in support of resolutions of emergent plant configuration problems identified in ACRs was increased. The inspectors discussed this area with licensee management who indicated that in the past, engineering follow-through in the update of drawings and vendor information following plant modifications had been inconsistent resulting in drawing and vendor manual configuration control discrepancies. These discrepancies have led to: (1) Identified safety problems during the implementation of new modifications (refer to Violation 93-18-03 discussed in NRC Report 50-261/93-18); (2) Increased engineering workloads in support of resolution of the resultant emergent issues; and, (3) Additional ACRs identifying configuration problems (examples noted included ACRs 93-028, 93-081, and 93-212). Problems in the timeliness and resolution of these ACR issues have been identified by the licensee and are being addressed through the development of new standards of time requirements in the governing procedures.

Violations or deviations were not identified in the areas inspected.

#### 4. Quality Assurance (QA) Assessment and Oversight

The inspectors reviewed QA Program assessments, TS group performance evaluations, and assessments of the H. B. Robinson Nuclear Engineering Department and Site TS Engineering's safety related activities conducted by the Nuclear Assessment Department (NAD) organization. The assessments and audits were part of the overall CP&L quality assurance program at Robinson. The inspectors reviewed results of the following quality assurance activities that were either completed or in progress:

- \* C-NED-92-01, September 1992, NAD Assessment of the Nuclear Engineering Department
- \* R-ES-92-01, October 1992, NAD Assessment of Robinson Nuclear Project Technical Support
- \* R-MC-93-01, June 1993, NAD Assessment of Robinson Nuclear Project Procurement Engineering
- \* C-NED-93-01, September 1993, NAD Assessment of the Nuclear Engineering Department
- \* R-ES-93-01, October 1993, NAD Assessment of Robinson Nuclear Project Technical Support

In addition to reviewing results of the above activities, the inspectors reviewed several Engineering Program self-assessments (Inservice Testing Program, Motor Operated Valve Program, Check Valve Program) and response memorandums to NAD assessment observations and recommendations.

Based on these reviews, the inspectors' concluded that the NAD organization had been actively involved in assessing Engineering activities. NAD assessments have been more aggressive in identifying engineering program areas that need improvement. Corrective actions in response to NAD assessments are generally being implemented, however, issues related to plant configuration (vendor manual and drawing updates), Engineering backlog reduction, and MOV Program weaknesses remained open after one year (NAD followup in Report Number R-ES-93-01).

Another aspect of the license's assessment effort is the TS Engineering performance self-assessments. Several engineering attributes are evaluated by TS managers and a "report card" status report is issued monthly. The inspectors reviewed the TS Monthly Status Reports for August to October, 1993. The report cards showed that the TS group was generally meeting management goals and the overall performance trend of TS remained constant over the most recent three month time period.

The inspectors considered the NAD assessment and TS self-assessment activities to be improved in identifying engineering program problem areas. The Technical Support Managers Report Card system is a good tool for self-assessment of performance.

Violations or deviations were not identified in the areas inspected.

#### 5. Exit Interview

The inspection scope and results were summarized on November 19, 1993, with those persons indicated in paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection results. Proprietary information is not contained in this report. No dissenting comments were received from the licensee.

<u>Item Number</u>	<u>Description and Reference</u>
50-261/93-31-01	Violation - Failure to Update Design Documents - Section 2.

## 6. Acronyms and Initialisms

ACR	Adverse Condition Report
CCW	Component Cooling Water
CFR	Code of Federal Regulations
CP&L	Carolina Power and Light
EE	Engineering Evaluation
EQ	Environmental Qualification
FW	Feedwater
MOD	Modification
MOV	Motor Operated Valve
NAD	Nuclear Assessment Department
NED	Nuclear Engineering Department
NRC	Nuclear Regulatory Commission
NRCS	Nuclear Revision Control System (computer)
PPS	Penetration Pressurization System
QA	Quality Assurance
RET	Request for Engineering Tasks
RHR	Residual Heat Removal
SI	Safety Injection
SWTS	Site Work Tracking System
TK	Tank
TM	Temporary Modification
TS	Technical Support
WR/JO	Work Request/Job Order