



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
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July 27, 2000

-  
Carolina Power & Light Company  
ATTN: Mr. Dale E. Young  
Vice President  
H.B. Robinson Steam Electric Plant  
Unit 2  
3851 West Entrance Road  
Hartsville, SC 29550

SUBJECT: ROBINSON - NRC INTEGRATED INSPECTION REPORT 50-261/00-03

Dear Mr. Young:

On July 1, 2000, the Nuclear Regulatory Commission (NRC) completed an inspection at your Robinson facility. The enclosed report presents the results of that inspection which were discussed with Mr. Moyer and other members of your staff on July 7, 2000.

The inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of a selected examination of procedures and representative records, observations of activities, and interviews with personnel. As discussed in the report, no findings were identified during this inspection.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Public Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC web site at <http://www.nrc.gov/NRC/ADAMS/index.html> (the Public Electronic Reading Room).

Sincerely,

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Brian Bonser, Chief  
Reactor Projects Branch 4  
Division of Reactor Projects

Docket No.: 50-261  
License No.: NPF-23

Enclosure: Inspection Report

cc w/encl: (See page 2)

Enclosure: NRC Integrated Inspection Report

cc w/encl:

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No: 50-261  
License No: NPF-23

Report No: 50-261/00-03

Licensee: Carolina Power & Light (CP&L)

Facility: H. B. Robinson Steam Electric Plant, Unit 2

Location: 3581 West Entrance Road  
Hartsville, SC 29550

Dates: April 2 - July 1, 2000

Inspectors: B. Desai, Senior Resident Inspector  
A. Hutto, Resident Inspector  
F. Wright, Senior Radiation Specialist (Section 20S2)  
J. Blake, Senior Project Manager (Section 1R07)

Approved by: B. Bonser, Chief  
Reactor Projects Branch 4  
Division of Reactor Projects

Enclosure

## **SUMMARY OF FINDINGS**

H. B. Robinson Steam Electric Plant, Unit 2  
NRC Inspection Report 50-261/00-03

The report covers a 13-week period of resident inspection and announced inspections by a regional reactor inspector and a regional radiation specialist. There were no findings identified. The significance of issues is indicated by their color (green, white, yellow, red) as determined by the Significance Determination Process (See Attachment).

## Report Details

### Summary of Plant Status

The plant operated at 100 percent power from April 2 through June 21. On June 21, at approximately 2:57 a.m., the unit was manually tripped from 68 percent power due to an oil leak in the turbine electro-hydraulic control (EHC) system. The reactor trip was uncomplicated and the unit was returned to criticality on June 22 at 3:39 a.m. The unit reached full power operations at 6:44 p.m. on June 26, and operated at 100 percent throughout the remainder of the inspection period.

## **1. REACTOR SAFETY**

### **Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity**

#### 1R01 Adverse Weather Protection

##### a. Inspection Scope

The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and licensee procedure OMM21, "Operation During Adverse Weather Conditions," Revision 20 which is applicable for adverse weather conditions. This review was performed to assess licensee readiness for coping with severe weather conditions prior to the onset of the hurricane season. The inspectors also performed a plant walkdown with emphasis on significant components located outside the auxiliary and turbine buildings. These included the electrical transformers, the refueling water storage tank (RWST), the condensate storage tank (CST), and the dedicated shutdown (DS) diesel generator.

##### b. Issues and Findings

There were no findings identified.

#### 1R04 Equipment Alignment

##### a. Inspection Scope

The inspectors reviewed plant documents and performed partial and complete system walkdowns to verify proper equipment alignment and to identify any discrepancies that could impact the safety function of the system. Partial system walkdowns included:

- Auxiliary Feedwater (AFW) ("A" and "B" motor driven pump, and steam driven pump)
- "A" Service Water (SW) train
- "B" Battery Charger
- "B" Emergency Diesel Generator (EDG)

A complete system walkdown was performed on the Component Cooling Water (CCW) System.

b. Issues and Findings

There were no findings identified.

1R05 Fire Protection

a. Inspection Scope

Following a review of the UFSAR, the inspectors conducted a tour of the following areas in the plant to determine licensee control of transient combustibles and ignition sources, material condition, fire detection and suppression system condition, and fire barrier condition.

- CCW Room
- Safety Injection (SI) and Charging Pump Rooms
- Cable Spreading Room
- Electrical Relay Room
- Emergency Diesel Generator Rooms
- AFW Rooms
- 4.16 kw Rooms
- Electrical Transformer Areas
- Control Room
- Turbine Deck and Main Steam Isolation Valve ( MSIV) Area
- Containment Spray (CS) Tank Room
- Control Rod Power Cabinet Room

b. Issues and Findings

There were no findings identified.

1R06 Flood Protection Measures

a. Inspection Scope

The inspectors reviewed the UFSAR to identify areas that could be affected by internal or external flooding and reviewed the risk analysis that identified the plant areas with greatest contribution to core damage frequency due to flooding concerns. The inspectors walked down the auxiliary building first floor and the station battery rooms to assess any degradation in plant equipment that would induce flooding.

b. Issues and Findings

There were no findings identified.

1R07 Heat Sink Performance

a. Inspection Scope

The inspectors reviewed the methods and results of performance inspections of risk-significant heat exchangers. The results reviewed were for the previous two inspections of each of following heat exchangers:

- CCW heat exchangers "A" and "B"
- SI "A", "B" and "C", bearing cooler heat exchangers
- EDG "A" and "B", jacket water, lube oil, and after cooler heat exchangers

The history of chemical treatment of the service water supplied to the selected heat exchangers was also reviewed.

The inspectors also reviewed the closure of condition reports, CR 98-02440, CR 98-02441, and CR 98-02443, which were generated as a result of a licensee self-assessment.

As part of the annual review, the inspectors observed the licensee's performance of corrective maintenance procedure CM-201, "Safety Related and Non-Safety Related Heat Exchanger Maintenance," Revision 4, for the "B" EDG heat exchangers. Specifically, the inspectors observed the engineering "as-found" and "as-left" inspection and documentation, and verified that the inspection results were appropriately categorized against pre-established acceptance criteria. The inspectors verified that the heat exchanger inspection acceptance criteria were met.

b. Issues and Findings

There were no findings identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

The inspectors observed two licensed operator requalification training activities which included two simulator scenarios involving two licensed crews. The two training scenarios involved a small break loss of cooling accident (LOCA) and a large break LOCA complicated with an anticipated transient without scram (ATWS). The inspectors assessed licensed operator performance during the scenarios and observed the evaluator's critique.



b. Issues and Findings

There were no findings identified.

1R12 Maintenance Rule Implementation

a. Inspection Scope

The inspectors assessed the effectiveness of the licensee's maintenance efforts by evaluating several conditions that occurred during the inspection period. The inspection determined the risk significance of the condition, licensee implementation of the maintenance rule (10 CFR 50.65), and licensee utilization of the corrective action program. The specific conditions evaluated by the inspectors included:

- Failure of valve SI-870A
- Failure of the Emergency Response Facility Information System (ERFIS) computer
- Problem with the control rod position indicator
- Functional failure of radiation monitor R-20
- Review of EDG unavailability during surveillance testing
- "A" EDG air start solenoid valve problem during post maintenance testing
- Functional failure of two control rod bottom indicating lights following the manual reactor trip on June 22.

b. Issues and Findings

There were no findings identified.

1R13 Maintenance Risk Assessment and Emergent Work Control

a. Inspection Scope

The inspectors reviewed licensee risk assessments for removal of the following components from service:

- Valve SI-870A for failure to close during the performance of OST 151-1
- "A" charging pump
- DS diesel generator for scheduled maintenance
- "A" EDG and BKR 52/34 "MCC-5 Alternate Feed" out of service concurrently

b. Issues and Findings

There were no findings identified.

1R14 Personnel Performance During Non-routine Evolutions and Events

a. Inspection Scope

The inspectors reviewed operator performance, operator logs, plant computer data, and control room instrumentation and annunciator panels for the following non-routine evolutions/events:

- Manual reactor trip (non-planned event)
- Reactor startup from criticality
- Reactor power escalation from 65 percent power to 100 percent power following a turbine valve test
- AOP-1 "Rod Control System Malfunction" due to unwanted rod motion

b. Issues and Findings

There were no findings identified.

1R15 Operability Evaluationsa. Inspection Scope

The inspectors evaluated the technical adequacy of the following Engineering Service Requests (ESR) and Condition Report (CR) evaluations affecting mitigating systems and barrier integrity, to ensure that operability was properly justified and the component or system remained available, such that no unrecognized increase in risk occurred.

- CR19566, EDG 'B' automatic voltage control potentiometer
- CR18706, Spray additive tank level scaling error
- CR18825, SI-870A failed to close during OST-151-1

b. Issues and Findings

There were no findings identified.

1R16 Operator Workaroundsa. Inspection Scope

The inspectors performed a review of existing operator workarounds and assessed their impact on plant safety. Additionally, the inspectors periodically reviewed CRs to determine if any conditions existed that should have been identified by the licensee as operator workarounds.

b. Issues and Findings

There were no findings identified.

## 1R17 Permanent Plant Modifications

### a. Inspection Scope

The inspectors performed a review of the following permanent plant modifications to verify that the design bases, licensing bases and performance capability of the affected risk significant structures, system and components (SSCs) had not been degraded as a result of the modifications. The inspectors also, where applicable, verified that the modifications performed during risk-significant configurations did not place the plant in an unsafe condition.

- ESR 99-00046 Dedicated Shutdown UPS Battery Modification
- ESR 99-00114 Containment Spray Pressure Initiation Setpoint Change

### b. Issues and Findings

There were no findings identified.

## 1R19 Post Maintenance Testing

### a. Inspection Scope

The inspectors witnessed the following post maintenance test activities and/or reviewed the test data to verify that the systems or components met the design/licensing basis requirements and commitments, and demonstrated that the systems or components were capable of performing their intended safety functions.

- Stroke time of SI-870B, (Torque switch repair on SI-870B)
- OST-202, "Steam Driven AFW System Component Test," Revision 46, (SDAFW pump scheduled maintenance)
- OST-302-2, "Service Water System Component Test Train 'B' (Quarterly)," Revision 23, (Low suction pressure trip relay replacement "B" SWBP)
- OST-910, "Dedicated Shutdown Diesel Generator Test (Monthly)," Revision 25, (DS diesel outage)
- OST-302-1, "Service Water System Component Test Train 'A' (Quarterly)," Revision 23, ("A" SWBP breaker corrective maintenance)

b. Issues and Findings

There were no findings identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors witnessed the following surveillance tests and/or reviewed test data to verify the selected SSCs met the Technical Specifications, UFSAR, and licensee procedure requirements; and demonstrated that the SSCs were capable of performing their intended safety functions.

- OST-151-3, "Safety Injection System Components Test - Pump 'C' (Quarterly)," Revision 14
- OST-151-1, "Safety Injection System Components Test - Pump 'A' (Quarterly)," Revision 13
- OST-401-2, "EDG 'B' Slow Speed Start," Revision 13
- OST-302-2, "Service Water Component Test Train 'B' (Quarterly)," Revision 23
- OST-751, "Control Room HVAC R-1 initiation and ERF15 Part Test (Quarterly)," Revision 5

b. Issues and Findings

There were no findings identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed existing temporary modifications to determine their impact on safety functions. In particular, a temporary modification involving a furmanite repair on main steam valve MS-3 was reviewed to determine adequacy of 10 CFR 50.59 screening and post modification testing. There were no safety significant temporary modifications implemented during the report period.

b. Issues and Findings

There were no findings identified.

### **Cornerstone: Emergency Preparedness (EP)**

#### 1EP6 Drill Evaluation

##### a. Inspection Scope

The inspectors evaluated the licensee's conduct of EP drills conducted on June 15 and June 20 and evaluated the licensee critique of drill performance. The inspectors reviewed the scenarios and identified licensee opportunities for event classification, notification and protective action recommendations (PAR) development, and verified that the licensee successfully demonstrated these activities or identified any deficiencies or weaknesses during the post-drill critiques.

##### b. Issues and Findings

There were no findings identified.

## **2. RADIATION SAFETY**

### **Cornerstone: Occupational Radiation Safety**

#### 2OS2 As Low As Reasonably Achievable (ALARA) Planning and Controls

##### a. Inspection Scope:

The inspectors reviewed policies, procedures, and records regarding plant ALARA activities. The inspectors focused on the ALARA program effectiveness during the 1999 refueling outage (RFO). Specific program elements reviewed included:

- The plant collective exposure history, current exposure dose trends, annual dose goals, and radiation exposure tracking.
- Source term reduction initiatives.
- Selected ALARA work planning packages reviewed included work on Motor Operated Valves, Reactor Head Work and Steam Generator Sludge Lancing.
- The Robinson RFO-19 ALARA Report and several post job ALARA critiques.
- Temporary shielding installation and removal, and schedules for scaffold erection and removal.
- Several problem identification records and associated resolutions by the Health Physics and ALARA work groups.

##### b. Issues and Findings

##### b. Issues and Findings

There were no findings identified.

#### 4. OTHER ACTIVITIES

##### 40A1 Performance Indicator (PI) Verification

###### a. Inspection Scope

The inspectors verified the accuracy of the following PIs through discussions with the licensee, review of licensee event reports, review of system engineer note books, security logs, and operator logs for the period of April, 1999, through April, 2000.

- Unplanned Scrams per 7000 Critical Hours
- Scrams with Loss of Normal Heat Removal
- Transients per 7000 Critical Hours
- Safety System Unavailability of (High Pressure Safety Injection System, Auxiliary Feedwater System, Residual Heat Removal System, and Emergency A/C Power System)
- Safety System Functional Failures

###### b. Issues and Findings

There were no findings identified.

##### 40A3 Event Followup

###### a. Inspection Scope

The inspectors reviewed the licensee actions following the June 22, manual reactor trip following a leak in the electro-hydraulic line serving the "2IL" main steam reheat turbine intercept valve. The inspectors verified that mitigating systems performed as required and whether required notifications had been made. For the two control rod bottom lights that did not illuminate, the inspectors verified that the operators used alternate means to verify that the rods had fully inserted into the core.

###### b. Inspection Scope

There were no findings identified.

##### 40A5 Other

(Closed) Temporary Instruction 2515/144, Performance Indicator Data Collecting and Reporting Process Review. The inspectors reviewed the licensee's PI data collecting and reporting process to determine whether the licensee was appropriately implementing the NRC/Industry guidance. The inspectors discussed the process with the lead licensee staff responsible for the coordination of the PI data. The inspectors determined that the licensee process was commensurate with industry guidance

document NEI-99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 0. At the time of the inspection, the licensee was in the process of developing an administrative procedure for the PI reporting program. The information and understanding demonstrated by the licensee was adequate to accurately capture and report PI data.

4OA6 Management Meetings

Exit Meeting Summary

The inspectors presented the inspection results to Mr. Moyer and other members of licensee management on July 7, 2000. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

**PARTIAL LIST OF PERSONS CONTACTED**

**Licensee**

T. Cleary, Operations Manager  
C. Martin, Site Support Services Manager  
S. Collins, Radiation Protection Superintendent  
D. Stoddard, Robinson Engineering Support Services Manager  
J. Fletcher, Maintenance Manager  
J. Moyer, Director of Site Operations  
R. Steele, Outage Management Manager  
T. Walt, Plant General Manager  
R. Warden, Regulatory Affairs Manager  
A. Williams, Training Manager  
D. Young, Vice President, Robinson Nuclear Plant

**NRC**

J. Blake, Senior Project Manager  
B. Desai, Senior Resident Inspector  
A. Hutto, Resident Inspector  
S. Vias, Senior Reactor Inspector  
F. Wright, Senior Radiation Specialist  
J. Coley, Reactor Inspector



**ITEMS OPENED, CLOSED, AND DISCUSSED**

Closed

TI 2515/144 PI Data Collecting and Reporting Process Review

# NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

## Reactor Safety

- Initiating Events
- Mitigating Systems
- Barrier Integrity
- Emergency Preparedness

## Radiation Safety

- Occupational
- Public

## Safeguards

- Physical Protection

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: <http://www.nrc.gov/NRR/OVERSIGHT/index.html>.