U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No:	50-261
License No:	DPR-23
Report No:	50-261/99-06
Licensee:	Carolina Power & Light (CP&L)
Facility:	H. B. Robinson Unit 2
Location:	3581 West Entrance Road Hartsville, SC 29550
Dates:	August 15 - September 25, 1999
Inspectors:	B. Desai, Senior Resident Inspector A. Hutto, Resident Inspector
Approved by:	Brian R. Bonser, Chief Reactor Projects Branch 4 Division of Reactor Projects

Enclosure

EXECUTIVE SUMMARY

H. B. Robinson Steam Electric Plant, Unit 2
NRC Integrated Inspection Report

This integrated inspection included aspects of licensee operations, maintenance, engineering, and plant support. The report covers a 6-week period of resident inspection.

Operations

- The conduct of operations was risk-informed, professional, and safety-conscious (Section O1.1).
- Site preparations for Hurricane Floyd were appropriate (Section O2.1).
- The component cooling water system was appropriately configured and maintained. System parameters were being maintained within Technical Specification (TS) requirements (Section O2.2).
- Overall, plant housekeeping was performed in accordance with licensee procedures. The licensee's plant housekeeping procedure was noted to have some ambiguous guidelines with regards to disposition of unsecured material. The licensee plans further revisions to the procedure (Section O2.4).

Maintenance

- Maintenance activities were conducted in accordance with applicable work documents and procedures. Personnel were properly trained and knowledgeable of their assignments (Section M1.1).

Engineering

- A 10 CFR 50.59 safety evaluation to support a change to TS bases was conducted appropriately (Section E1.1).
- A main steam safety valve was rendered inoperable during setpoint testing when an incorrect differential set pressure was used to calculate the "as left" lift set pressure. A violation was identified related to the failure to follow procedures during this evolution (Section E1.2).
- A review of four recent equipment functional failures indicated that the Maintenance Rule Program was effectively managed (Section E4.1).

Plant Support

- Radiological control practices were properly conducted. Areas observed in the radiological control area were appropriately posted and secured (Section R1.1).

- The inspectors concluded that a personal contamination event did not result in a significant dose to an individual. The licensee's investigation of the event was thorough and effective, and appropriate corrective actions were completed in a timely manner (Section R1.2).

Report Details

Summary of Plant Status

Robinson Unit 2 operated at 100 percent power until August 24 when it started an end-of-life coastdown for refueling outage 19. The unit was at approximately 79 percent power on September 24 prior to being shut down for the outage. The unit entered Mode 5 (cold shutdown) on September 25.

I. Operations

O1 Conduct of Operations

O1.1 General Comments (71707)

The inspectors conducted frequent control room tours to verify proper staffing, assess operator attentiveness and communications, and review adherence to approved procedures. The inspectors routinely attended operations turnover meetings, management review meetings, and plan-of-the-day meetings to maintain awareness of overall plant operations. Operator logs, condition reports (CR), and instrumentation were routinely reviewed. Plant tours were conducted to verify operational safety and compliance with Technical Specifications (TS), as well as to assess plant housekeeping. In general, the inspectors concluded that the conduct of operations was risk-informed, professional, and safety-conscious.

O2 Operational Status of Facilities and Equipment

O2.1 Hurricane Floyd Preparations (71707)

On September 15, the inspectors monitored licensee activities that were conducted in preparation for Hurricane Floyd. The inspectors verified that the licensee had secured all material that had the potential to become missiles as a result of high winds. Additionally, the licensee postponed numerous work activities, allowing personnel to focus on hurricane preparation and response. The licensee conservatively staffed the Technical Support Center (TSC) and the Emergency Operations Facility (EOF) before and during the hurricane. The plant did not experience hurricane-force winds and plant structures and equipment were unaffected. The highest sustained wind speed in the area was approximately 45 miles per hour. The inspectors concluded that the licensee's preparations for Hurricane Floyd were appropriate.

O2.2 Safety System Walkdown

a. Inspection Scope (71707)

The inspectors conducted a walkdown of the component cooling water (CCW) system in order to assess the general condition of system components, including labeling, and to verify that system valve positions matched the system drawings and station operating

procedures. The inspectors also assessed plant housekeeping conditions around system components.

b. Observations and Findings

No misaligned valves were identified. The inspectors noted that drain valves associated with the CCW pump discharge pressure indicators were not shown on the system drawings. This minor discrepancy was brought to the attention of the system engineer. The inspectors also reviewed the applicable sections of the Updated Final Safety Analysis Report (UFSAR) and TS and identified no discrepancies. A review of the Maintenance Rule database was also performed and the inspectors found that the appropriate performance criteria data were being collected.

c. Conclusions

The CCW system was appropriately configured and maintained. System parameters were being maintained within TS requirements.

O2.3 Clearance Walkdown (71707, 62707)

The inspectors verified proper implementation of clearance 99-00957 during a walkdown on September 9. The clearance was to isolate service water valve V6-12A-MO for limitorque inspection. The inspectors verified that valves, electrical breakers, and control switches were aligned appropriately to provide an adequate boundary for the scheduled maintenance activity. No discrepancies were identified during inspection of the clearance. The inspectors verified that the clearance was implemented in accordance with plant procedures.

O2.4 Plant Housekeeping

a. Inspection Scope (71707, 62707, 71750)

The inspectors routinely performed plant walkdowns to review housekeeping, general system conditions, conformity to fire protection requirements, and radiological conditions.

b. Observations and Findings

During a walkdown on September 20, the inspectors noted that a wheeled cart containing resistor banks for battery load testing had been staged in the E1/E2 emergency electrical bus room. The cart was equipped with integrated chocking devices on two of its wheels; however, it was difficult to determine by visual inspection whether the chocks were engaged. The inspectors noted that there was no unsecured material storage tag attached to the cart. The inspectors notified the control room of this condition. The licensee subsequently attached "C" clamps to two of the wheels for additional chocking and also tied the rig to a permanently installed hand rail.

The inspectors reviewed procedure AP-010, "Housekeeping Instructions," Revision 28, to determine applicable requirements. Previously, in NRC Inspection Report 50-261/99-03, the inspectors had found that this procedure contained some confusing guidelines with regard to temporary material storage. Though the licensee had made subsequent revisions to the procedure, there was still some ambiguity with respect to whether a safe configuration determination and an unsecured material tag were required. The licensee plans to rewrite this procedure, clarifying any potentially confusing or conflicting information regarding safe configuration determinations and tag requirements.

c. Conclusions

Overall, plant housekeeping was performed in accordance with licensee procedures. The licensee's plant housekeeping procedure was noted to have some ambiguous guidelines with regards to disposition of unsecured material. The licensee plans further revisions to the procedure.

II. Maintenance

M1 Conduct of Maintenance

M1.1 Observation of Maintenance Activities (62707)

The inspectors observed all or portions of the following work requests (WR):

- WR/JO 98-AHDB1, Replace Low Voltage Power Supplies N-32
- LP-702, "Nuclear Instrument System Source Range," Revision 12
- WR/JO ABIT 008, Calibrate the SDAFW Discharge Pressure Switches
- PIC-301, "Pressure Switches and Vacuum Switches, " Revision 5
- WR/JO 99-ACNG1, Inspect the SDAFW Pump Inlet Strainer

The inspectors found that the maintenance observed was properly approved and was included in the plan of the day. The inspectors also found that the work was performed thoroughly, and with the work package present and in use. Accompanying documents such as procedures and supplemental work instructions were properly followed. Personnel were properly trained and knowledgeable of their assignments. The inspectors noted that supervisors and system engineers monitored the jobs on a frequent basis.

M2.1 Surveillance Testing (61726)

The inspectors reviewed test package documentation and observed performance of all or portions of the following surveillance tests:

- OST-206, "Steam Driven Auxiliary Feedwater Pump Flow Test (Prior to Shutdown, or at Power Following Each Cold Shutdown If Not Performed Within the Previous 92 Days or Prior to Exceeding 5% Reactor Power (Mode 1) When the Unit Has Been in Cold Shutdown (Mode 5 or 6) for Greater Than 30 Days)," Revision 31
- SP-1469, "South Service Water to WCCU-1A/1B Flow Test," Revision 0
- EST-25, "Post Accident Containment Venting System PACV "B" (Once Each Operating Cycle and Filter Change)," Revision 8
- CM-111, "Limitorque Limit Switch and Torque Switch Maintenance ," Revision 31

No problems were identified. Completed surveillance test packages demonstrated acceptable test results.

M2.2 Verification of Alternating Current (AC) and Direct Current (DC) Electrical Distribution System Voltages (61726, 71707)

TS surveillance requirement (SR) 3.8.9.1 requires that proper voltage and correct breaker alignments to the AC, DC, and AC instrument bus electrical power distribution systems be verified weekly. The inspectors noted that the licensee's procedure for meeting this TS SR – Operations Surveillance Test OST-022, "Weekly Surveillances," Revision 3 – did not provide for verification of the voltage for the AC and DC electrical power distribution systems. However, the intent of the surveillance had been met by the licensee, as this data was captured in the performance of OST-013, "Weekly Checks and Operations," Revision 43. The licensee wrote CR-01821 to document the discrepancy. The recommended corrective action was to consolidate the voltage verifications into OST-022.

III. Engineering

E1 Conduct of Engineering

E1.1 Engineering Service Request (ESR) Clarifying Regulatory Guide (RG) 1.97 Category Boundaries (37551)

The inspectors reviewed ESR 98-00020, "Clarification of Regulatory Guide 1.97 Category Boundaries," which provided the justification for revising the TS bases to incorporate RG 1.97, "Instruments for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," guidelines. This revision related to one of the reactor coolant system cold leg temperature channels that is used for post-accident monitoring. The inspectors reviewed the ESR and TS bases change, including the accompanying 10 CFR 50.59 safety evaluation. The safety evaluation was performed appropriately to support the change to the TS bases and was

produced in accordance with the licensee's procedures. No unreviewed safety question existed.

E.1.2 Main Steam Safety Valve (MSSV) Testing

a. Inspection Scope (37551)

The inspectors reviewed and assessed the licensee's actions surrounding an erroneous setpoint adjustment on a MSSV valve during the performance of engineering surveillance test EST-028, "Main Steam Safety Valve Testing (Refueling Shutdown Interval and as Needed After Maintenance)," Revision 20.

b. Observations and Findings

While conducting EST-028, an incorrect differential set pressure was used to calculate the "as left" lift set pressure for the "A" steam generator MSSV SV1-1A. This was a result of using the wrong safety valve orifice type conversion table provided in the procedure. A note in the procedure specifies whether the MSSVs have a "Q" or "R" type orifice and a conversion data table is provided for each type. MSSV SV-1A was specified as having a "Q" orifice; however, the table for the "R" orifice was used. As a result, MSSV SV-1A was adjusted incorrectly and could have lifted at a lower pressure than desired. This condition rendered the valve inoperable. Had the correct table been used, no setpoint adjustment would have been necessary. The licensee discovered the error after the valve was returned to service and testing on the next valve, SV1-3B, had commenced. The lift setpoint for SV1-1A was readjusted using the correct data table and the valve was retested and declared operable within the allowed outage time specified by TS 3.7.1.

TS Section 5.4.1.a requires that written procedures be established, implemented, and maintained covering the applicable procedures recommended in RG 1.33, Revision 2, Appendix A. Appendix A of RG 1.33 includes procedures for surveillance tests and inspections listed in the TS, which includes MSSV testing. The failure to use the correct data table provided in EST-028 is considered a violation. This Severity Level IV violation is being treated as a Non-Cited Violation (NCV) consistent with Appendix C of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as CR 99-01847. This violation is identified as NCV 50-261/99-06-01, Failure to Follow Procedures During Main Steam Safety Valve Testing.

c. Conclusions

An MSSV was rendered inoperable during setpoint testing when an incorrect differential set pressure was used to calculate the "as left" lift set pressure. A violation was identified related to the failure to follow procedures during this evolution.

E1.3 Inadequate Core Cooling Margin (ICCM) Monitors (37551, 71707)

The inspectors reviewed the circumstances related to the ICCM date problem that occurred on September 9, 1999 (9/9/99). The ICCM monitors are displayed in the control room and monitor core subcooling margin, core exit thermocouple temperatures, reactor vessel water level, wide range reactor coolant temperature, and reactor coolant system pressure.

During the year 2000 "Y2K" readiness test that was conducted on December 12, 1998, the licensee identified that the "month" data for ICCM trains A and B would need to be reset on September 9, 1999. The licensee had also determined that the functionality of the monitors would not be impacted. A work request was generated and I&C was in standby on midnight of September 8. The ICCM monitors continued to work on September 9. However, per the work request, instrumentation and control (I&C) personnel removed train A from service at approximately 1:14 a.m. to correct the expected problem with the date. As expected, the date was incorrect. I&C personnel attempted to fix the error, but the system would not accept the September 9 date. The ICCM was returned to service with the intent of correcting the problem in October.

The inspectors verified that the subcooling margin, reactor vessel water level, thermocouple temperatures, and time data were valid. The ICCM monitors provide no long-term trending data; they are utilized to get an instantaneous reading of the measured parameters. The ICCM system had been tested satisfactorily during the Y2K testing that was conducted in December 1998. An NRC audit of the licensee's readiness for the Y2K transition is documented in NRC inspection report 50-261/99-04.

E4 Engineering Staff Knowledge and Performance

E4.1 Maintenance Rule Implementation (62707, 37551)

The inspectors conducted a risk-informed, performance-based review and assessment of recent functional failures for the following systems and components to determine compliance with 10 CFR 50.65, the Maintenance Rule:

- 125 Volt Battery System
- Emergency Diesel Generator
- Charging Pumps
- Radiation Monitoring Systems

The inspectors reviewed completed CRs for each equipment failure and interviewed applicable system engineers as well as the Maintenance Rule Coordinator. The inspectors also reviewed availability and reliability performance indicators and criteria for each system, as well as recent expert panel meeting minutes. For each system or component, the inspectors concluded that the process for identifying, trending, and evaluating equipment failures was consistent with the Maintenance Rule and the licensee's program. Appropriate decisions were made in each case regarding classification of systems and components as (a)(1) or (a)(2), and for establishing

corrective actions and performance goals. This review indicated that the Maintenance Rule Program was effectively managed.

E8 Miscellaneous Engineering Issues (37551)

E8.1 (Closed) Unresolved Item (URI) 50-261/99-05-01: Service Water Temperature Notice of Enforcement Discretion

The inspectors reviewed the circumstances leading to the licensee's request for a Notice of Enforcement Discretion (NOED). This issue was discussed in detail in NRC Inspection report 50-261/99-05. TS 3.7.8 limits plant ultimate heat sink (UHS) temperature to 95 degrees Fahrenheit (F). However, this TS allows the licensee to exceed this limit for up to an 8-hour "allowed outage time" (AOT). On both July 31 and August 1, this AOT was exceeded by approximately 4 hours. However, the licensee had requested and received the NOED (99-6-006) that changed the AOT from 8 hours to 72 hours prior to the licensee violating TS 3.7.8 requirements. The inspectors concluded that the root cause which led to the NOED request was meteorological conditions beyond the control of the licensee. Subsequent to the NOED, the licensee submitted and received an exigent TS change (amendment 184). This exigent TS change also specified an AOT of 72 hours after exceeding the UHS temperature limit of 95 degrees F, and was effective until September 30, 1999. The AOT of 72 hours was never exceeded. The licensee has submitted a permanent TS change request, which is now under NRC staff review. The prevailing cooler weather that is expected until the summer of 2000 should adequately maintain the UHS temperature below the TS limit until that time. Based on review of this issue, the inspectors concluded that no violation of NRC requirements occurred.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 General Comments (71750)

The inspectors periodically toured the radiological control area (RCA) during the inspection period. Radiological control practices such as RCA entry and exit controls, survey postings, locked high radiation area controls, and radiological area material condition were observed and discussed with radiological control personnel. The inspectors concluded that radiation control practices were being conducted in accordance with procedures. The inspectors also toured the radwaste building and found that radwaste storage containers and laundry bags were in good condition and appropriately labeled. In addition, outside radwaste storage areas and structures were properly posted and exhibited correct labeling and effective housekeeping. The inspectors found that housekeeping throughout the plant was effective in maintaining areas free of unnecessary equipment and debris. Contaminated areas were kept to a minimum and posted locked high radiation areas were properly secured against unauthorized entry.

R1.2. Personal Contamination Event (PCE)

a. Inspection Scope (71750)

The inspectors reviewed the completed and planned corrective actions that resulted from the PCE that occurred on August 12. This event was briefly mentioned in NRC Inspection Report 50-261/99-05.

b. Observations and Findings

As a result of the PCE, the licensee initiated significant CR 99-01600. This CR resulted in the development of a chronological list of events leading to the PCE, as well as a root cause evaluation. The licensee determined that the employee received a skin dose of 108 mrem from the gamma-emitting cobalt-60 isotope, with 50,000 mrem being the annual regulatory limit. The contributing factors leading to the PCE were the lower sensitivity to gamma radiation of the personnel monitor located at the exit of the RCA, as well as the lower efficiency of one of the exit portal monitors. The licensee revised the calibration procedure associated with the RCA exit monitor and replaced a faulty foot detector on the exit portal monitor. The inspectors verified that the licensee had completed the corrective actions prior to the start of refueling outage 19.

c. Conclusion

The inspectors concluded that a PCE did not result in a significant dose to an individual. The licensee's investigation of the event was thorough and effective, and appropriate corrective actions were completed in a timely manner.

S1 Conduct of Security and Safeguards Activities

S1.1 General Comments (71750)

During the period, the inspectors toured the protected area and noted that the perimeter fence was intact and not compromised by erosion or disrepair. Isolation zones were maintained on both sides of the barrier and were free of objects which could shield or conceal an individual. Lighting of the perimeter and of the protected area was acceptable.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on September 27, 1999. The licensee acknowledged the findings presented at the exit meeting. Dissenting comments were not received from the licensee. The licensee did not identify any materials used during the inspection as proprietary information.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

J. Boska, Electrical Engineering Superintendent, Robinson Engineering Support Section (RESS)
T. Cleary, Operations Manager
H. Chernoff, Licensing/Regulatory Programs Supervisor
J. Clements, Site Support Services Manager
R. Duncan, Robinson Engineering Support Services Manager
A. Eaddy, Environmental and Radiological Controls (E&RC) Superintendent
W. Farmer, Emergency Core Cooling Systems Supervisor, RESS
J. Fletcher, Maintenance Manager
M. Millinor, E&RC Supervisor
J. Moyer, Director of Site Operations
R. Steele, Outage Management Manager
D. Stoddard, Mechanical Engineering Superintendent, RESS
T. Walt, Plant General Manager
R. Warden, Regulatory Affairs Manager
A. Williams, Training Manager
P. Yandow, Licensing Engineer
D. Young, Vice President, Robinson Nuclear Plant

NRC

B. Desai, Senior Resident Inspector
A. Hutto, Resident Inspector

INSPECTION PROCEDURES USED

IP 37551:	Onsite Engineering
IP 61726:	Surveillance Observations
IP 62707:	Maintenance Observation
IP 71707:	Plant Operations
IP 71750:	Plant Support Activities

ITEMS OPENED AND CLOSED

Opened

50-261/99-06-01	NCV	Failure to Follow Procedures During Main Steam Safety Valve Testing (Section E1.2).

Closed

50-261/99-06-01	NCV	Failure to Follow Procedures During Main Steam Safety Valve Testing (Section E1.2).
50-261/99-05-01	URI	Service Water Temperature Notice of Enforcement Discretion (Section E8.1).