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

Report No.: 50-261/89-10

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: May 11- June 13, 1989

Inspectors: L. W. Garner, Senior Resident Inspector — Date Signed 7/7/89

K. R. Jury, Resident Inspector — Date Signed 7/7/89

Approved by: H. C. Dance, Section Chief, Division of Reactor Projects — Date Signed 7/7/89

SUMMARY

Scope:

This routine, announced inspection was conducted in the areas of operational safety verification, surveillance observation, maintenance observation, engineered safety feature system walkdown, and emergency diesel generator fuel oil quality.

Results:

Breakdowns in the licensee's corrective action program were identified. A violation was issued for failure to promptly identify and correct three conditions adverse to quality, paragraph 2.a and b.

Repair activities of the B component cooling system heat exchanger were well planned and coordinated, paragraph 2.a.

REPORT DETAILS

1. Persons Contacted

*D. Crook, Senior Specialist, Regulatory Compliance
*J. Curley, Director, Regulatory Compliance
C. Dietz, Manager, Robinson Nuclear Project
J. Eaddy, Supervisor, Environmental and Chemistry
R. Femal, Shift Foreman, Operations
W. Flanagan, Manager, Design Engineering
W. Gainey, Supervisor, Operations Support
*E. Harris, Director, Onsite Nuclear Safety
D. Knight, Shift Foreman, Operations
D. McCaskill, Shift Foreman, Operations
R. Moore, Shift Foreman, Operations
R. Morgan, Plant General Manager
*C. Mosely, Corporate Manager, Operations Quality Assurance
D. Myers, Shift Foreman, Operations
D. Nelson, Maintenance Supervisor, Mechanical
R. Powell, Engineering Supervisor, Technical Support
*D. Quick, Manager, Maintenance
D. Seagle, Shift Foreman, Operations
*J. Sheppard, Manager, Operations
R. Steele, Operations Coordinator
D. Winters, Shift Foreman, Operations
*H. Young, Director, Quality Assurance/Quality Control

Other licensee employees contacted included technicians, operators, mechanics, security force members, and office personnel.

*Attended exit interview on June 21, 1989.

Acronyms and initialisms used throughout this report are listed in the last paragraph.

2. Operational Safety Verification (71707)

The inspectors evaluated licensee activities to confirm that the facility was being operated safely and in conformance with regulatory requirements. These activities were confirmed by direct observation, facility tours, interviews and discussions with licensee personnel and management, verification of safety system status, and review of facility records.

To verify equipment operability and compliance with TS, the inspectors reviewed shift logs, operation records, data sheets, instrument traces, and records of equipment malfunctions. Through observations of work and discussions with operations staff members, the inspectors verified the staff was knowledgeable of plant conditions, responded properly to alarms,

adhered to procedures and applicable administrative controls, cognizant of in-process surveillance and maintenance activities, and aware of inoperable equipment status. The inspectors performed channel verifications and reviewed component status and safety-related parameters to verify conformance with TS. Shift changes were routinely observed. Access to the control room was controlled and operations personnel carried out their assigned duties effectively.

Plant tours and perimeter walkdowns were conducted to verify equipment operability, assess the general condition of plant equipment, and to verify that radiological controls, fire protection controls, physical protection controls, and equipment tagging procedures were properly implemented.

a. CCS Leakage Into The SW System

On June 2, 1989, while conducting a survey on closed cooling systems, the inspectors identified that the CCS surge tank was being made-up on an abnormally frequent basis. Water is normally only added to the CCS after maintenance which requires partial system draining. Operations personnel informed the inspectors that the surge tank was being made-up (i.e., reaching 45% low level alarm set-point and being filled to approximately 50% level) every two weeks. Upon questioning the effect these additions had on CCS chemistry, the inspector contacted the Chemistry Department; the Chemistry Department was unaware of these additions. The CCS chemistry was then analyzed and found to be out of specification for both chromates (corrosion inhibition) and ph. These two parameters are monitored to prevent corrosion and fouling of the CCS piping and components, which could result in decreased CCS heat removal capability. Upon investigation, it was determined that approximately 100 gallons were being added to the CCS approximately every 2 1/2 days since April 30, 1989. The unusual number of additions indicated that there was leakage from the CCS. The inspectors questioned Operations about possible CCS leakage pathways. The inspector and an SRO walked down portions of the CCS piping outside of Cv; however, the leakage source was not located. Chromates were not identified in the waste hold-up tank, which would have indicated a leak inside of Cv.

After returning chromate concentrations and ph to within specifications, Chemistry monitored chromate concentrations in the CCS on a daily basis for the next five days. It was determined that the chromate concentration was continually decreasing, verifying the presence of a leak. On June 6, Operations isolated the A and B CCS heat exchangers and discovered that B heat exchanger was, in fact, leaking into the SW system. On June 13, during repairs to the B CCS heat exchanger, six tubes were found to be leaking and were subsequently plugged. This repair effort was well planned and coordinated effectively between Operations, Maintenance and Chemistry.

The Chemistry Department was prompt in responding to the inspectors' concerns and communicated effectively with Operations concerning this matter. Since the repair, there has been no further indications of CCS leaks.

This situation resulted in several problems being identified. The first has to deal with operator recognition that there was a leak from the CCS. The licensee's operation shift schedule is not conducive to one particular shift recognizing the unusual number of times additions were made to the CCS; all but two of the required log entries were recorded into the CO's log book. At the end of each shift the shift foreman initials the log entries for that respective shift, acknowledging cognizance of the evolutions performed. Additionally, as part of shift turnover, the oncoming CO documents that he/she has "reviewed previous shifts logs". As a result, each time a CCS addition was logged, at least three individuals were acknowledging each respective make-up that was logged. Between April 30 - June 2, 1989, there were at least thirteen make-ups to the CCW system; thus, there were thirty-nine instances (sometimes the same operators) of implicit acknowledgement of CCS make-ups occurring. Additionally, there is not evidence that these additions were verbally communicated between shifts. There was not an investigation/corrective action initiated until June 2, 1989, when the possibility of a CCS leak was raised by the inspectors. The failure to promptly identify and correct the CCS leak is a violation: Failure to Promptly Identify and Correct Conditions Adverse to Quality, 89-10-01.

The fact that there was not a control mechanism triggering Operations to notify the Chemistry department when a CCS addition was performed, resulted in CCS chemistry being driven out of specification and delaying prompt leakage identification. Chemistry samples the CCS on a monthly basis, and if not notified when the system chemistry is diluted, has no control over maintaining chemistry specifications. Corrective action for this violation should address this problem.

b. Inadequate and Untimely Corrective Action on Valves TCV-144 and CC-832

As part of the CCS walkdown, the non-regenerative heat exchanger piping and valves were inspected to verify the absence of potential leakage sources. The inspector noted a deficiency tag written on TCV-144, the non-regenerative heat exchanger outlet TCV, indicating that the valve had a packing leak. Upon inspection (by the inspector,

an SRO, and regulatory compliance) it was determined that the valve was not leaking. Review of the past year's WRs on this valve revealed the following sequence of events:

WR/JO#	Date	Problem Identified	Corrective Action Implemented (Date)
88-AJHC1	09/07/88	Valve failed stroke test	New packing installed (9/12/88)
88-AKHJ1	10/02/88	Valve has a packing leak	Adjusted packing to stop leak (10/17/88)
89-AEGC1	04/07/89	Valve failed stroke test	Shaft lubricated and packing glands loosened (04/08/89)
89-AFCM1	05/13/89	Valve has a packing leak	Adjusted packing to stop leak (05/31/89)
89-AFMJ1	05/31/89	Valve failed stroke test	Lubricated stem and loosened packing glands (06/13/89)

Based on the above sequence of events, it appears that the corrective action implemented for each respective WR had an adverse effect on the valve, resulting in the subsequent WR being initiated. In addition, after the packing was adjusted to stop the leak on October 17, 1988, there was not a post-maintenance test performed to verify the valve would stroke in the required time. The failure to take adequate corrective action to preclude this situation from recurring (i.e., failing to stroke, packing leak, failing to stroke, etc....) is considered an example of Violation 89-10-01, Failure to Promptly Identify and Correct Conditions Adverse to Quality.

While reviewing the CCS leak discussed in paragraph 2.a, the inspectors noted that Valve CC-832, the CCS surge tank make-up valve, did not always fully close (with the PW pump running) after the CCS was made-up; thus, allowing an excessive amount of PW to enter the surge tank. This condition could mask a leak out of the system, exacerbated chromate concentration dilution of the system, and prevented an accurate leakage rate from being determined. The failure of this valve to fully close was first identified in February 1988. Subsequent to this identification, WR 88-AEKC1 was written on April 9, 1988. On April 13, 1988, EWR 324 was written by maintenance addressing the fact that no torque switch setting was provided in the WR nor in procedure CM-111 Rev. 5, Limitorque Limit Switch and Torque Switch Maintenance. Maintenance requested Engineering action by

May 1, 1988, as the "leaking valve could possibly cause the CCS surge tank to overfill." As of June 8, 1989, the Technical Support Department had not dispositioned this EWR for resolution, as it was not considered a priority work item. However, after discussions with several operators, it became apparent that this valve had not fully closed on several occasions, resulting in the CCS surge tank reaching its high level alarm setpoint. The operators have had to perform the abnormal evolution of closing this valve after stopping the PW pump (versus closing the valve then stopping the pump) for the past sixteen months. According to the operators, this evolution was not always performed correctly or the valve would not fully close, resulting in the overfills described above. The fact that Engineering did not perform an evaluation of this valve's inability to close for over sixteen months is considered another example of Violation 89-10-01, Failure to Promptly Identify and Correct Conditions Adverse to Quality.

One violation, with three examples, was identified.

3. Monthly Surveillance Observation (61726)

The inspectors observed certain safety-related surveillance activities on systems and components to ascertain that these activities were conducted in accordance with license requirements. For the surveillance test procedures listed below, the inspectors determined that precautions and LCOs were adhered to; the required administrative approvals and tagouts were obtained prior to test initiation; testing was accomplished by qualified personnel in accordance with an approved test procedure; test instrumentation was properly calibrated; the tests were completed at the required frequency; and that the tests conformed to TS requirements. Upon test completion, the inspectors verified the recorded test data was complete, accurate, and met TS requirements; test discrepancies were properly documented and rectified; and that the systems were properly returned to service. Specifically, the inspectors witnessed/reviewed portions of the following test activities:

- OST-10 (revision 9) — Power Ranger Calorimetric During Power Operation
- OST-051 (revision 10) — Reactor Coolant System Leakage Evaluation
- OST-905 (revision 4) — Reactor Coolant Flow Protection Channel Testing

No violations or deviations were identified.

4. Monthly Maintenance Observation (62703)

The inspectors observed safety-related maintenance activities on systems and components to ascertain that these activities were conducted in accordance with TS, approved procedures, and appropriate industry codes and standards. The inspectors determined that these activities did not violate LCOs and that required redundant components were operable. The inspectors verified that required administrative, material, testing, radiological, and fire prevention controls were adhered to. In addition to those WRs discussed in paragraph 2, the inspectors also observed/reviewed the following maintenance activities:

- MST-006 (revision 4) — Reactor Coolant Flow Protection Channel Testing
- WR/JO 89-AETP1 — Repair FT-436C Instrument Loop

No violations or deviations were identified, except as noted in paragraph 2.

5. ESF System Walkdown (71710)

The inspectors performed a field walkdown of selected portions of the SW system shown on drawings G-190199 sheets 3,5,6,7,9,10, and 11. Specifically, the inspectors examined selected components in the SI pump room, CCS room, auxiliary building, and turbine building. Items examined included pumps, valves, piping, pipe supports, instrument tubing, and component tagging. The inspectors verified that major valves were in their correct position, manual valves were locked as required, and instrumentation was valved into service.

No violations or deviations were identified.

6. Proper Receipt, Storage, and Handling of EDG Fuel Oil (255100)

In reviewing the EDG fuel oil controls, the inspectors reviewed the licensee's Operations QA/QC Surveillance Report 89-019, Proper Receipt, Storage, and Handling of Emergency Diesel Generator Fuel Oil. This surveillance verified compliance to FSAR and TS requirements and commitments concerning EDG fuel oil. The inspectors also reviewed the ONS OEF Evaluation of IEN 87-04, Diesel Generator Fails Test Because of Degraded Fuel. The surveillance report adequately detailed how the licensee addressed the questions contained in TI 2515/100 Appendix A. The QA/QC surveillance appeared to be very thorough and all discrepancies identified were documented and tracked within the licensee's corrective action program.

No violations or deviations were identified.

7. Exit Interview (30703)

The inspection scope and findings were summarized on June 21, 1989, with those persons indicated in paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection findings listed below and in the summary. Dissenting comments were not received from the licensee. Proprietary information is not contained in this report.

Item Number	Description/Reference Paragraph
89-10-01	VIO - Failure to Promptly Identify and Correct Conditions Adverse to Quality (paragraph 2.a and b)

8. List of Acronyms and Initialisms

CCS	Component Cooling System
CFR	Code of Federal Regulations
CM	Corrective Mainteance
CO	Control Operator
Cv	Containment
EDG	Emergency Diesel Generator
ESF	Engineered Safety Feature
EWR	Engineering Work Request
IEN	Inspection & Enforcement Information Notice
LCO	Limiting Condition for Operation
MST	Maintenance Surveillance Test
NRC	Nuclear Regulatory Commission
OEF	Operational Experience Feedback
ONS	Onsite Nuclear Safety
OST	Operations Surveillance Test
PH	Hydrigen ion concentration
PW	Primary Water
SI	Safety Injection
SRO	Senior Reactor Operator
SW	Service Water
TCV	Temperature Control Valve
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
VIO	Violation
WR/JO	Work Request/Job Order