



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report No. 50-261/80-32

Licensee: Carolina Power and Light Company
411 Fayetteville Street
Raleigh, NC 27602

Facility Name: H. B. Robinson, Unit 2

Docket No. 50-261

License No. DPR-23

Inspection at H. B. Robinson Steam Electric Plant near Hartsville, S.C.

Inspector: *D. R. Quick for* 11-21-80
P. T. Burnett Date Signed

Approved by: *D. R. Quick* 11-21-80
D. R. Quick, Section Chief, RONS Branch Date Signed

SUMMARY

Inspection on October 20-24, 1980

Areas Inspected

This routine, announced inspection involved 35 inspector-hours on site. The areas inspected included preparation for Unit 2 restart, initial criticality, and zero-power physics tests.

Results

No items of noncompliance or deviations were identified.

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DETAILS

1. Persons Contacted

Licensee Employees

- *R. B. Starkey, Jr., General Plant Manager
- C. W. Crawford, Manager of Operations and Maintenance
- *H. S. Zimmerman, Manager of Technical and Administrative Services
- *F. Lowery, Operations Supervisor
- *J. M. Curley, Engineering Supervisor
- *D. S. Crocker, E&RC Supervisor
- L. N. Williams, Security Specialist

Other licensee employees contacted included three shift foremen, two technicians, six operators, and three office personnel.

Other Organizations

- I. Stone, Exxon Corporation
- L. Warren, Yeargin Corporation
- D. Harris, EX-Yeargin Corporation employee

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on October 24, 1980 with those persons indicated in Paragraph 1 above.

3. Licensee Action on Previous Inspection Findings

(Closed) Deficiency (79-27-01): Changes were made to procedure CPL-R-C.0 without prior review and approval. The inspector examined properly reviewed and approved changes to the procedure and had no further questions.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Preparations for Unit 2 Restart

a. Control Rods

At the beginning of this inspection the reactor was at hot shutdown. Control rod drop-time tests required by technical specification table 4.1-3 were being conducted to meet the requirements of technical specification 3.10.4.1 at the conditions required by that specification.

It was determined that rod L-11 in shutdown bank B would not insert fully. The situation was reviewed on site by a specialist representative of the NSSS vendor. It was concluded that the problem was a mechanical interference within the pressure boundary and was not associated with the external rod drive system. Because part of the video portion of the core mapping TV tape had been lost, full seating of the fuel assembly could not be reverified. The licensee reported that no mention of problems was heard on the audio portion and that review of fuel movement sheets indicated no problems in placing the fuel assembly in L-11. The licensee further asserted that two experienced engineers had visually inspected the core and had not noted any deviations from the expected appearance.

The licensee and fuel supplier each began independent recalculations of core performance under normal, transient and accident conditions with one inoperable rod. (Technical specification 3.10.6 authorizes continuing reactor operation with one inoperable rod). The licensee also started design of a modification to provide uninterrupted power to rod L-11 once it was fully withdrawn.

In a telephone conversation with Region II supervision the licensee committed to remain shutdown until their calculational results and the proposed modifications had been reviewed and approved by the PNSC. Further, power escalation would not begin before acceptable, confirmatory calculational results were received from the fuel vendor.

While these calculations were in progress the inspector reviewed and compared the recorder traces for hot rod-drop-time measurements made in June 1979 for the previous cycle with those for the current cycle. No discernable change in the shape of the traces was observed for any rod other than L-11. Eighteen of the traces from the two sets of measurements were re-analyzed by the inspector. None of the drop-time results were significantly different from those reported by the licensee. Comparison between the two sets of measurements did not indicate any systematic changes in the times for dashpot entry or from dashpot to fuel in from one set to the other. The inspector concluded that the difficulty with rod L-11 was unique to that rod and not an omen of problems to come with other rods.

It should be noted that for drop-time purposes and in this discussion the rods are identified by core position or drive unit only. There is no requirement that a given rod cluster control assembly (RCCA) always be associated with a given drive unit, and it is quite possible that the relationships were changed during refueling. Actual RCCA locations can be obtained from the core maps made during refuelings. Since no changes in curve shapes were apparent to the eye when the two tests for one rod were compared side-by-side (a comparison made for all rods), RCCA location records were not examined.

The licensee's corporate staff reported acceptable results from core-preformance calculations with one inoperable rod, and the

approval modifications to provide uninterruptable power to L-11 were initiated. Upon attempting to withdraw rods it was found that another rod (K-14) would not withdraw. Investigations showed that rod drive shared a fuse with L-11. The fuse was in the moveable gripper circuit. The licensee had no explanation for this oversight in planning and reviewing the modification other than to say that shared fuses were unexpected and uncommon in the rod drive system. From discussions with the control room staff and by review of the test engineers log book the inspector confirmed that after all operable rods were withdrawn, and prior to dilution of reactor coolant systems (RCS) boron, all rods fully inserted on a manual trip.

Near the end of the inspection the engineering supervisor reported that the fuel vendors calculations were in substantial agreement with those performed by CP&L. Adequate shutdown margin was assured throughout core life; the highest-worth stuck rod (in addition to L-11) had changed in location and magnitude, but not beyond FSAR limits; and the power distribution following the steam-line break accident was changed, but again not beyond the analysis in the FSAR. The supervisor agreed to have the reports of these calculations available onsite for review in concert with the inspection of the post-refueling startup test results.

b. Containment Cleanliness

The issue of containment cleanliness and integrity of the safeguards sump screens was identified in an earlier inspection as inspector followup item 80-30-04. In the company of the reactor supervisor and a health physics technician the inspector toured the containment building prior to unit restart. All screens were in place and an acceptable level of cleanliness had been attained. This item (80-30-04) is closed.

c. Procedure Review

The following procedures which were to be implemented prior to or during unit restart were reviewed:

- (1) PT-R-4.10.2, "Control Rod Drop Time Test"
- (2) PT-R-4.11, "Rod Position Indication" and
- (3) PT-R-6.0, "Refueling Startup Procedures"

The latter procedure included changes approved on October 23, 1980. Those changes in addition to providing the corrective action responding to an item of non-compliance (see paragraph 4) also provided the necessary additional procedural detail to satisfy inspector followup item 79-27-02. Numerical acceptance criteria for calibration of the reactimeter was added to step 4.11. This item is closed.

6. Initial Criticality

The inspector observed the initial criticality of the reactor for the new fuel cycle. Test personnel maintained plots of inverse multiplication rate versus boron concentration and versus time, for constant dilution rate. No anomalies were observed.

In the course of the dilution process, the inspector observed one analysis of RCS boron concentration as it was performed in the chemistry laboratory. No unanswered questions arose from any of these observations.

7. Zero Power Physics Tests

The inspector observed the calibration of the reactimeter. The acceptance criterion for agreement between the reactivity indicated by the reactimeter and that obtained using stop-watch measured doubling times and the inhour curve was met at all six test reactivities.

Some preliminary results of other zero power physics tests were:

Parameter	Measured	Predicted
All-Rods-out Boron Concentration	1266 ppm	1279 ppm
Isothermal Temperature Coefficient (ARO)	0.71 pcm/ F	0.34 pcm/ F
Moderator Coefficient (ARO)	2.37 pcm/ F	2 pcm/ F
D-Bank Worth	797 pcm	791 pcm

The inspector had no further questions concerning these preliminary results.

8. Miscellaneous Activities

In moving about the facility the inspector observed two instances of hoisting activities not conforming to good industrial safety practice. These were reported to the licensee for correction.

A former employee of a contractor reported to the inspector that he had been dismissed for refusing to work in a contaminated area, after being once extensively contaminated himself. He further alleged that his former employers escort practices violated both security and health physics requirements.

The employee stated that the individual was dismissed for violating security escort requirements and for leaving his assigned work place.

The licensee stated that no record of the individual being contaminated exists. It is the licensees policy to maintain such records. The licensee

stated that the individual's TLD indicated 39 millirem total from ten entries into the radiation control area. Further the licensee interprets the whole body count given the allegor on termination to indicate no body burden of radioactive material. A copy of the whole body count output was obtained for in-office review. The issue was referred to Region II investigators for followup.