



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

Report No. 50-261/81-26

Licensee: Carolina Power & Light Company
 411 Fayetteville Street
 Raleigh, N. C. 27602

Facility Name: H. B. Robinson Steam Electric Plant

Docket No. 50-261

License No. DPR-23

Inspection at H. B. Robinson Unit 2

Inspector: Ross Butcher 9/22/81
 for S. Weise, Resident Inspector Date Signed

Approved by: C. Julian 9/24/81
 C. Julian, Acting Section Chief Date Signed
 Division of Resident and Reactor Project
 Inspection

SUMMARY

Inspection on August 11, - September 4, 1981

Areas Inspected

This routine announced inspection involved 128 resident inspector-hours on site in the areas of technical specification compliance, plant tour, operations performance, reportable occurrences, housekeeping, site security, surveillance activities, TMI action plan requirements, maintenance activities, quality assurance practices, radiation control activities-outstanding items review, followup on enforcement matters, and independent inspection effort.

Results

Of the 14 areas inspected, no violations or deviations were identified in 13 areas; one violation was found in one area (failure to implement procedures, paragraph 7.c).

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DETAILS

1. Persons Contacted

Licensee Employees

- *R. B. Starkey, Plant General Manager
- J. M. Curley, Manager, Technical Support
- R. Chambers, Maintenance Supervisor Unit 2
- F. Lowery, Operations Supervisor Unit 2
- *F. Gilman, Senior Supervisor Unit 2
- S. Crocker, Manager, Environmental & Radiation Control
- *C. Wright, Specialist, Regulatory Compliance
- W. Dorman, Load Quality Assurance Auditor
- *W. Crawford, Manager, Operations and Maintenance
- *D. Waters, Principal Engineer - Operations
- *R. Connally, Assistant to Plant General Manager
- *W. Flanagan, Project Engineer
- *D. Stadler, Senior Specialist Nuclear Licensing

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

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on September 4, 1981, with those persons indicated in paragraph 1 above. The licensee acknowledged the violation and the areas of inspector concern, and agreed to review the concern and take corrective action, as necessary.

3. Licensee Action on Previous Inspection Findings

(Closed) Unresolved item 80-26-05. This item concerned the licensee's failure to have a procedure for handling and storage of compressed gas cylinders. The licensee has implemented Administrative Instructions Section 11.8 to govern handling, storage, and use of compressed gas cylinders. The instructions appear adequate. Plant tours conducted by the inspector have identified only one incident where one gas cylinder was improperly stored, and the licensee took corrective action to rectify the deficiency. This item is closed.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Technical Specification Compliance

- a. During this reporting interval, the inspector verified compliance with selected limiting conditions for operation (LCO's) and reviewed results of selected surveillance tests. These verifications were accomplished by direct observation of monitoring instrumentation, valve positions, switch positions, and review of completed logs and records. The licensee's compliance with selected LCO action statements were reviewed as they happened.
- b. On August 21, 1981, while reviewing Engineered Safety Feature (ESF) instrumentation surveillance and operability Technical Specification (T.S.) requirements, the inspector determined that licensee startup procedures could allow operation in the hot shutdown mode without having performed T.S. surveillances on ESF instrumentation. T. S. Table 3.5-3 requires the plant to be in the cold shutdown condition if minimum ESF instrumentation channel operability is not maintained. T.S. Table 4.1-1 provides the frequencies for testing of instrumentation to verify operability. While in the cold shutdown condition, licensee surveillance procedures allow postponement of instrumentation surveillance until just prior to plant startup (i.e., pulling control rods to criticality). Plant startup procedures are addressed in GP-2, Cold Solid to Hot Subcritical, and in GP-3A, Normal Plant Startup from 547°F Hot shutdown to critical. Based on T. S. Table 3.5-3 it appears that the surveillance requirements of T.S. Table 4.1-1 should be met either prior to leaving the cold shutdown mode or prior to unblocking applicable ESF instrumentation. Procedure GP-2 governs both the mode change from cold to hot shutdown and the unblocking of ESF instrumentation, however, the surveillance tests associated with the ESF instrumentation (Periodic Tests 5.1, 5.2, 5.6, 5.7, 11.1) are never verified as acceptably performed. Instead, procedure GP-3A requires this verification after the plant is in hot shutdown at 547°F. Thus, it is conceivable that an ESF instrument failure could go undetected and reduce the level of protection. The inspector, however, was unable to find a past case when this had occurred.

Based on the above, the inspector informed licensee management that PT 5.1, Tavg and Δ T Protection Channel Testing (Low Tavg ESF portion), and PT 11.1, Containment Pressure Protection Channel Testing were required prior to the unblocking of the low Tavg ESF feature and prior to exceeding 200°F, respectively. The licensee was responsive and ensured that all five ESF PT's were performed prior to exceeding 200°F. This action required that temporary procedure changes be used on several surveillance tests to provide appropriate dummy input signals. This was necessary since several existing procedures (PT's 5.1, 5.2, 5.7) were not written for performance in the cold shutdown mode. The licensee is evaluating necessary permanent corrective actions, including separate testing procedures for cold shutdown and amendments to the Technical Specifications. Until the licensee fully resolves these concerns, this item is open. (50-261/81-26-01)

6. Plant Tour

The inspector conducted plant tours periodically during the inspection interval to verify that monitoring equipment was recording as required, equipment was properly tagged, operations personnel were aware of plant conditions, and plant housekeeping efforts were adequate. The inspector determined that appropriate radiation controls were properly established, excess equipment or material was stored properly, and combustible material was disposed of expeditiously. During tours the inspector looked for the existence of unusual fluid leaks, piping vibrations, pipe hanger and seismic restraint abnormal settings, various valve and breaker positions, equipment clearance tags and component status, adequacy of firefighting equipment, and instrument calibration dates. Some tours were conducted on backshifts. The inspector performed major flowpath valve lineup verifications and system status checks on the following systems:

- (1) Safety Injection System
- (2) Containment Spray System
- (3) Selected containment isolation valves
- (d) Motor driven Auxiliary Feedwater System.

The inspector noted no violations or deviations.

7. Plant Operations Review

- a. The inspector periodically during the inspection interval reviewed shift logs and operations records, including data sheets, instrument traces, and records of equipment malfunctions. This review included control room logs, auxiliary logs, operating orders, standing orders, jumper logs and equipment tagout records. The inspector routinely observed operator alertness and demeanor during plant tours. During abnormal events, operator performance and response actions were observed and evaluated. The inspector conducted random off-hours inspections during the reporting interval to assure that operations and security remained at an acceptable level. Shift turnovers were observed to verify that they were conducted in accordance with approved licensee procedures. The inspector had no further comments.
- b. The inspector witnessed portions of an audit conducted by licensee corporate personnel to verify conformance to Technical Specification requirements and quality control procedures. The inspector verified that the audit personnel were independent of the audited organization and for a sampling of audit areas verified that the required audit frequency was met. The inspector reviewed several previous audits to verify that audit report was made to management within the required time and that corrective actions had been scheduled and/or taken for selected audit findings. The inspector has a concern in the area of

audit personnel qualification. In discussions with the lead auditor, it appears that written qualification exams are being maintained by contractors (vice the licensee) for lead auditors. This does not appear to conform to ANSI N45.2.23-1978. This matter is being further investigated under IE Inspection Report 50-261/81-25.

- c. On September 3, 1981, a review of the plant Jumper and Wire Removal Log revealed that activities 722 and 723 (lifted leads) were in effect while in the cold and hot shutdown modes during the period August 1, through September 1, 1981. This modified the auxiliary feedwater relay coils to allow opening of the steam generator blowdown valves with low steam generator water level conditions existing. These two relays are part of the loss of heat sink protection system and were erroneously considered nonsafety-related. Thus, the activities were not performed in accordance with the licensee's procedures. Administrative Instructions, Section 11.11.3 requires the Shift Foreman to determine if the affected component is safety-related (Q-list) by reference to Engineering Procedure-2 (Eng-2), Q List Control. Reference to ENG-2, Sections II.5.10 and II.5.28 should have resulted in a safety related classification. Safety-related circuitry wire removal procedures then require that the operating Supervisor or his designated alternate determine if the component is made inoperable and, if so, must authorize wire removal on the required control form. Wire removal is then approved by the Shift Foreman, and removal accomplished and independently verified by a qualified plant operator. Re-installation is similarly controlled. In this case, reinstallation was independently verified since the same discrepancy had been identified to the particular Shift Foreman by an NRC inspector in July 1981, for activities 691 and 692. The above failure to implement procedures is a violation.
(50-261/81-26-09)

8. ESF Reset Concerns

On August 27, 1981, discussions between NRR, IE, CP&L, and the inspector determined that portions of the Engineered Safety Features circuitry had design deficiencies that under certain circumstances could cause the blocking of both automatic and manual safety system actuation signals. Basically, the reset of the following features with the original actuating signal still present would block other safety signals including the manual pushbutton input:

- a. Phase A Containment Isolation
- b. Phase B Containment Isolation
- c. Containment Ventilation Isolation
- d. Containment Spray Actuation
- e. Feedwater Isolation

The result of these discussions was that prior to plant startup, the licensee would issue administrative controls/instructions to establish

criteria on the use of the above ESF resets and on required operator actions should the reset function be used in error. This guidance was issued as Standing Order-15 on August 29, 1981. Review of the Standing Order was required by all oncoming operators prior to assuming the shift. The inspector reviewed the above procedure and its implementation and had no questions. A cover was also installed over the reset buttons to prevent inadvertent actuation.

The licensee issued a letter to NRR on August 29, 1981, describing the above actions, the affected ESF circuitry, and a plan of action for a permanent fix of the problem. This is an inspector followup item. (50-261/81-26-02)

9. Physical Protection

The inspector verified by observation and interview during the reporting interval that measures taken to assure the physical protection of the facility met current requirements. Areas inspected included the organization of the security force, the establishment and maintenance of gates, doors and isolation zones in the proper condition, that access control and badging was proper, that search practices were appropriate, and that escorting and communications procedures were followed.

10. Personnel Overexposure

On August 21, 1981, the licensee informed the inspector that an individual marking steam generator (S/G) tubes in the B S/G had received an exposure to the head in excess of the licensee's administrative limit and in excess of the 10 CFR 20.101(a) limit. This overexposure had occurred on August 15, 1981. A detailed discussion of this event is provided in IE inspection report 50-261/81-24.

11. Steam Generator Outage

This outage description is a continuation of the discussion in IE inspection report 50-261/81-22. Two S/G tube samples were removed and sent to Westinghouse for analysis, one tube with tube wall degradation and one without. On August 13, 1981 a meeting was held between CP&L, Westinghouse, and NRR concerning analysis of the S/G tube degradation and corrective actions to allow further operation. The hot leg tube degradation was characterized as intergranular in the tube sheet region and caustic stress cracking above the tube sheet. CP&L's proposed corrective action included tube plugging, sludge lancing the secondary side of the S/G, conducting a crevice flushing procedure to remove chemicals from crevice regions, elimination of copper from the secondary system, and operation at about 50% power to achieve a reduction in hot leg temperature. These corrective actions are discussed in CP&L's license amendment request letters dated August 21 and 27, 1981. NRR provided an approved license amendment and safety evaluation by letter dated August 28, 1981.

Prior to plant startup, the licensee conducted tube plugging, sludge lancing, and an extensive special procedure intended to remove undesirable chemicals from the S/G secondary in general and the tube crevices in particular. This special procedure (SP-326) also included phosphate conditioning during heat-up and at power. The plant returned to power operation on September 2, 1981.

12. TMI Action Plan Requirements

- a. TAP No. II.E.4.1, NUREG 0737; Section 2.1.5.a, NUREG 0578, Dedicated Hydrogen Penetrations.

This item required the inspector to verify that any needed modifications to these penetrations had been made. The inspector reviewed the NRR letters of October 30, 1979, and April 18, 1980; the CP&L letters of December 31, 1979 and March 31, 1980; and the applicable System Description (SD-39) and Emergency Instruction (EI-16) of the plant operating manual. The original design of the Robinson Post-Accident Containment Venting System appears to meet the present requirements and, therefore, no system modifications were needed. This item is closed.

- b. TAP No. II.E.1.1, NUREG 0737, Auxiliary Feedwater System (AFWS) Evaluation. This item required the inspector to verify that the short term actions required by NRR for increasing the reliability of the AFWS have been accomplished. The following references were reviewed:

Reference 1	NRR Requirements letter dated September 21, 1979
Reference 2	CP&L response letter GD-79-2764 dated October 31, 1979
Reference 3	NRR letter dated March 31, 1980
Reference 4	CP&L response letter NO-80-746 dated May 15, 1980
Reference 5	NRR Interim Safety Evaluation dated December 2, 1980
Reference 6	CP&L response letter No-81-063 dated January 9, 1981
Reference 7	CP&L letter NO-81-937 dated June 8, 1981

- (1) Generic recommendation GS-1. This required the licensee to propose modifications to their Technical Specifications on AFWS pump and its associated flow train and essential instrumentation operability to be consistent with current Technical Specifications. In reference 4, the licensee proposed Technical Specifications not in compliance with the NRR recommendations. References 6 and 7 further stated the licensee's justification for taking their position on operability. NRR is continuing to review this item. This is an open item (50-261/81-26-03).
- (2) Generic recommendation GS-2. References 2 and 4 state that the valves in the supply piping between the condensate storage tank

(CST) and the suction of each of the three AFW pumps are maintained in a locked open position. Plant Operating Procedure OP-14A requires the valves to be locked open and independently verified, and the keys are maintained under Shift Foreman's control. Monthly verification is not provided by OP-14A. Periodic Tests (PT) 22.1A, B, and C, AFW Component Test, conducted monthly, verify that the suction flowpath is available by requiring each pump to provide flow through a recirculation path. Actual valve position is not verified in this test by physically checking the valve. This test also does not verify the position of the individual pump discharge valves since the recirculation line is located between the pump discharge and the discharge valve. The discharge valves, however, are locked in a throttled position and independently verified in accordance with OP-14A. Reference 5 is incorrect in stating that OP-14A provides for a monthly verification of the position of specific suction valves, however, the system testing conducted appears to meet the intent of this requirement.

- (3) Generic recommendation GS-3. Not applicable.
- (4) Generic recommendation GS-4. This item concerns providing emergency procedures for transferring to alternate sources of AFW supply. OP-14 and EI-17 (Station Blackout) provide criteria to inform the operator when and in what order the operator should transfer to alternate water sources when the primary water supply is being depleted.

The Precautions, Limitations, Setpoints PLS-15 procedure provides guidance in the case in which backup water supply is deemed necessary. The inspector is concerned that the procedures do not specifically address the desired valve lineup for AFW suction supply should the CST be declared inoperable. The licensee agreed to review this concern and take corrective actions as necessary. This is an open item . (50-261/81-26-04)

- (5) Generic recommendation GS-5. This item required the as-built plant to be able to provide required AFW flow independent of any alternating current power source. In references 2 and 4, the licensee indicated that while the turbine driven AFW pump can run for two hours independent of AC power, manual operator action is required to realign the cooling water valves for the lube oil cooler, open the main steam admission valves to the turbine, and open the pump discharge isolation valves. Emergency Instruction EI-7, Station Blackout Operation, has been implemented and incorporates the manual actions, as required.

- (6) Generic recommendation GS-6. This item requires the licensee to confirm flowpath availability of an AFWS flow train that has been out of service for testing or maintenance. General Procedure (GP)-2 and OP-14 require that the two motor driven (MD) AFW pumps and the steam driven (SD) AFW pump be used to individually feed the steam generators on any heatup from cold shutdown. OP-14 requires that each MD AFW pump be used to individually feed the steam generator following pump maintenance. The AFWS valve lineup procedure OP-14A requires a second operator to independently verify proper valve position of all AFW valves. The Operations Work Procedures for the AFWS require two independent verifications of affected valve and breaker positions prior to and following maintenance.
- (7) Generic recommendation GS-7. This item requires the upgrading of the automatic start AFWS signals and associated circuitry. The inspector reviewed references 1 through 5 and CP&L's letter dated December 31, 1979. The inspector had no further questions.
- (8) Generic recommendation GS-8. Not applicable.
- (9) Plant specific recommendation 7. This item requires periodic testing of the normally locked closed service water and deep well manual valves. In references 4 and 6, the licensee committed to demonstrate operability of these valves quarterly by manually cycling the valves. These actions are implemented by PT 40.0, Quarterly Inservice Inspection Valve Test. The inspector had no further questions.
- (10) Plant specific recommendation 8. This item requires Technical Specifications to provide for monthly testing of all steam admission valves to the SD AFW pump. All motor operated steam admission valves are to be tested on a monthly basis by PT 22.1 in accordance with Technical Specification 4.8.2.
- (11) Additional short term recommendation 1. This item requires redundant condensate storage tank (CST) level indications and low level alarms in the control room, and for the long term, instrumentation should be upgraded to safety grade. The existing CST is equipped with redundant level indication and one low level alarm which allows about 35 minutes for operator action. The licensee committed in reference 6 to install a separate low level alarm system by January 1, 1982, This is an inspector followup item (50-261/81-26-05).

Additionally, on August 21, 1981, the inspector toured the area of the CST, inspected its instrumentation, and reviewed applicable procedures. The following deficiencies were noted:

- (a) Precautions, Limitations, Setpoints (PLS)-13 stated that the high level alarm LSH-1453 occurred at 8' 7" and the low level alarm LSL-1453 occurred at 7' 11". The as-built condition and CP&L drawing 5379-1581 revealed that the high level alarm taps were about 18 feet above and the low level alarm taps about 2 feet below the respective PLS-13 values. This was confirmed by the licensee and the PLS-13 values promptly corrected. This correction did not affect the licensee's calculation on available CST water, since the Technical Specification limit of 19% (35,000 gallons) was used vice the erroneous low level alarm value.
 - (b) Wiring for low level alarm LSL-1453 was not contained in its conduit. The spliced wires were pulled out of the conduit and directly exposed to the weather. The licensee corrected this deficiency promptly.
 - (c) The level indication for the CST was not redundant at the time of the inspection due to the failure of LT-1454B on May 28, 1981. The licensee is awaiting parts, with no expected delivery date. This is inspector followup item (50-261/82-26-06).
 - (d) Plant Operating Manual, Volume 16, page C-1-39 of the Annunciator Procedures was reviewed. This document stated that LSL-1453 alarmed at 95% CST level and LSH-1453 showed no alarm value. Based on (a) above, this was erroneous. The licensee confirmed the error and promptly corrected this procedure to reflect a high level alarm of 97% and a low level alarm of 19%.
 - (e) The CST low level alarm LSL-1453 is a magnetic float switch whose actuation level is governed by the fixed piping attached to the CST. While calibration per se is not possible, a functional test to verify operation is not performed and appears necessary. Operation could be verified periodically by isolating the level switch and draining the water column to verify receipt of the alarm. This is an open item (50-261/81-26-07) pending licensee review.
- (12) Additional short term recommendation 2. This item required the licensee to perform an endurance test on all AFWS pumps. Endurance testing was conducted on the steam driven pump in August 1980 and on the motor driven pumps in August - September 1980. The inspector reviewed the test report package and the special procedure, SP-251. The data package contained the required information as discussed in reference 5. A review of this data indicated that the pumps operated within design limits during the test. The inspector had no further questions.

(13) Additional short term recommendation 3. This requires the licensee to install safety grade indication of AFW flow in the control room. This area was addressed under TAP No. II.E.1.2, Item 2c, NUREG 0737 in IE inspection report 50-261/81-22.

(14) Additional short term recommendation 4. Not applicable.

13. Licensee Event Report (LER) Followup

The inspector reviewed the following LER's to verify that the report details met license requirements, identified the cause of the event, described appropriate corrective actions, adequately assessed the event, and addressed any generic implications. Corrective action and appropriate licensee review of the below events was verified. The inspector had no further comments.

LER	Event
81-17	'A' Auxiliary Feedwater Pump Trip
81-18	Throttled Instrumentation Root Valve
81-19	'A' Service Water Booster Pump Trip

14. Outstanding Items Review

- a. (Closed) Inspector Followup Item 80-29-01. This item concerned failures of the containment personnel hatch door. Further investigation of this item was discussed in inspection report 50-261/81-22 under LER 80-24, and is being tracked as item 81-22-05. This item is closed.
- b. (Closed) Open item 81-02-01. This item concerned the licensee's failure to include the status of retraining requirements of 10 CFR 55, Appendix A, Section 3.c. in the monthly training status report. The inspector reviewed the monthly training reports for 1981. As of March, 1981, the status of Section 3.c requirements were being listed on the report. The inspector noted on the July report that five of the sixteen overdue required reading items were five months overdue. This appears excessive and will be re-inspected. This item is closed.
- c. (Closed) Inspector Followup Item 81-15-08. This item concerns the adequacy of the licensee's housekeeping procedures. The licensee issued Administrative Instruction Section 11.12 on August 14, 1981. The inspector reviewed this instruction and the requirements of ANSI N45.2.3-1973. The inspector reviewed the CP&L plant inspection reports file (2-0-19) for the required documentation of housekeeping status. Adequate housekeeping inspections and associated deficiency lists were recorded, and corrective actions had been initiated. The inspector had no further questions.

15. Independent Inspection Effort

Due to the inconsistencies found between as-built alarm setpoints and licensee procedures discussed in paragraph 12.b, the inspector observed conditions at the Refueling Water Storage Tank (RWST) and Spray Additive Tank (SAT) and then reviewed the licensee's drawing CP 200-5379-1082, Annunciator Procedures, Calibration sheets, and Precautions, Limitations, Setpoints (PLS) procedures. The RWST has three level alarms associated with it. Level comparator LC-948 provides a low level alarm at 27% and a low-low alarm at 9%. Level comparator LC-948A provides a high level alarm at 95%. Level indicator LI-947 provides local level indication and LI-948 provides control board indication.

The following discrepancies were noted:

- a. PLS-7 states that LI-947 provides a 27% low level alarm. There is no low level alarm associated with LI-947.
- b. Annunciator Procedure page A-2-3 states that LC 948A provides a 27% low level alarm vice LC 948 and that LC 948A provides a 94% high level alarm. Calibration sheets for LC-948A provide a 95% alarm point.
- c. Annunciator Procedure page A-2-11 states that LC 948B provides a 9% low low level alarm vice LC-948. the inspector could find no LC-948B.

Based on the above findings, the inspector is concerned that licensee procedures are not being maintained accurate and consistent. The licensee plans to complete a review of his procedures by September 30, 1981. This item is open pending completion of this review (50-261/81-26-08).

No discrepancies were noted for the Spray Additive Tank instrumentation.