



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

Report No. 50-261/82-23

Licensee: Carolina Power and Light Company
411 Fayetteville Street
Raleigh, NC 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: A. K. Harden for
S. Weise

7/27/82
Date Signed

Approved by: C. N. Burger
C. Burger, Section Chief, Division of
Project and Resident Programs

7/28/82
Date Signed

SUMMARY

Inspection on June 11- July 10, 1982, 1982

Areas Inspected

This routine, announced inspection involved 134 resident inspector-hours on site in the areas of technical specification compliance, plant tour, operations performance, reportable occurrences, housekeeping, site security, surveillance activities, maintenance activities, quality assurance practices, radiation control activities, outstanding items review, IE Notice Followup, TMI Action Item review, and refueling activities and maintenance.

Results

Of the 14 areas inspected, no violations or deviations were identified in 14 areas.

DETAILS

1. Persons Contacted

Licensee Employees

- R. B. Starkey, Plant General Manager
- J. Curley, Manager Technical Support
- *F. Gilman, Senior Specialist, Regulatory Compliance
- F. Lowery, Unit 2 Operations Supervisor
- *W. Crawford, Manager, Operations and Maintenance
- R. Chambers, Unit 2 Maintenance Supervisor
- *C. Wright, Specialist, Regulatory Compliance
- S. Crocker, Manager, Environmental & Radiation Control
- *J. Young, Director Corporate QA/QC

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

Other Organizations

- *J. Blake, NRC

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on July 13, 1982 with those persons indicated in paragraph 1 above.

3. Licensee Action on Previous Inspection Findings

(Closed) Severity Level V Violation 81-26-09. This item concerned the licensee's failure to implement jumper control procedures. The inspector reviewed CP&L's response letter dated October 23, 1981. The keylock switches and procedures described in this response were implemented by Modification 518. The inspector reviewed the modification and the procedure changes. The licensee's corrective actions appear adequate.

(Closed) Severity Level V Violation 82-04-01. This item concerned a failure to follow equipment clearance procedures. The inspector reviewed the CP&L response letter dated April 15, 1982, Plant Operating Experience Report 82-01, and routing records. The licensee's corrective action appears adequate and complete.

(Closed) Severity Level V Violation (82-04-05). This item concerned failure to turnover and log abnormal conditions. The inspector reviewed the CP&L response letter dated April 15, 1982 and a memorandum to all Operations personnel dated April 8, 1982. Licensee corrective action appears adequate and complete.

(Closed) Severity Level V Violation 82-11-02. This item concerned high radiation area posting discrepancies. The inspector reviewed the CP&L response dated May 21, 1982 and Robinson MEMO/82-239 dated June 10, 1982. The licensee's corrective action appears adequate and subsequent plant tours have not identified additional posting deficiencies.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. 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:

- a. Diesel generator air start, cooling water, and fuel oil systems.
- b. Containment isolation valves for refueling operations.

No violation or deviations were noted.

6. Plant Operations Review

The inspector periodically during the inspection interval reviewed shift logs and operation records, including data sheets, instrument traces, and records of equipment malfunctions. This review included control room logs, auxiliary logs, operating orders, standing orders, jumper log 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.

7. Technical Specification Compliance

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.

8. 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. The inspector attended security force retraining to observe course content, knowledge level of the guard force, and that requirements were met. Lesson plan objectives appeared to be met and a comprehensive examination was administered. No violations or deviations were observed.

9. Calibration Program for Safety-Related Instruments

This item was previously open item 79-19-09 and has been addressed in inspection reports 50-261/79-19, 80-06, 80-22, 80-25, and 81-25 and CP&L response dated November 25, 1981. The licensee was committed to establishing a safety related instrument calibration program in Maintenance Instruction (MI)-4 by March 1, 1982. The calibration program established by MI-4 requires inclusion of plant instrumentation and control equipment listed in Technical Specifications or used to verify Technical Specifications (T.S.) and active safety-related instrumentation. The inspector reviewed the master calibration list, Appendix A to MI-4, applicable system flow drawings, Periodic Tests (PT) 30.0 and 30.1, and preventive maintenance calibration sheets, and conducted plant tours to verify instrumentation existence and controls.

- a. The inspector determined that a program had been established, but was not complete in that the following safety-related instrumentation was not included in the program:
 1. Level transmitters, alarms, and indicators LT-1453 and LT-1454 series for providing condensate storage tank (CST) level indication at the reactor control board and remote operating stations. These alarms and indications are used during normal operation to verify the Technical Specification (T.S.) 3.4.1.c requirement of at least 35,000 gallons in the CST. They are also used to trigger emergency instruction operator actions during a loss of feedwater.
 2. Isolation Valve Seal Water (IVSW) tank pressure and level transmitters PT-1911 and LT-1912 which provide reactor control board indication and alarms for verifying operability of the system as required by TS 3.3.6. These instruments also provide local indication.

3. Penetration Pressurization System (PPS) header flow transmitters FIT-1712 A, B, C, D which provide reactor control board individual header flow indication and high flow alarms utilized to initiate corrective action when containment boundary leakage rates exceed the requirements of TS 4.4.1.2.b.

These items were brought to the attention of the licensee and immediately added to the MI-4 program.

- b. The inspector identified the following instruments as performing important functions on safety-related systems, although their effect on reactor protection appeared to be of low safety significance:
 1. Auxiliary feedwater (AFW) system pumps low lube oil pressure low discharge pressure, and low service water flow switches PSL-1992 A and B, -1993, -1474 A1, A2, B1 and B2, -1476 -1 and -2 and FSL -1633 A and B.
 2. Service Water header pressure transmitters PT 1616 and 1684.
 3. PPS header pressure transmitters PT 1708 A, B, C, D.
 4. PPS air receiver pressure switches PSL-1706 A, B, C, D.
 5. PPS nitrogen pressure switches PSL-1709 A, B, C, D.
 6. Service water booster pump pressure switches PSL-1602 A and B.

Through discussions with the licensee, the inspector determined that these items are to be incorporated in MI-4 by December 31, 1982.

- c. The inspector noted that the informal preventive maintenance program was used for scheduling of calibration of some instruments in safety-related systems. Specifically, those instruments on route sheets E-Q-3 and E-Q-4. These items should be considered for inclusion in the MI-4 program. A similar situation exists with respect to some calibration in PT 30.0.

Based on the above review of the establishment of a calibration program, the inspector feels that the bulk of the actions required by item 79-19-09 have been completed and this item is closed. The need to address the above instruments as per the November 25, 1981 response letter commitment will be tracked as a new inspector followup item 82-23-01.

10. Refueling Activities

The inspector reviewed various activities concerned with core reload and preparations for core reload. The inspector reviewed selected surveillance testing data to ensure equipment operability prior to fuel handling. Fuel handling procedures and refueling checkoff sheets were periodically reviewed

and conduct of refueling operations were periodically observed in the control room, spent fuel pit, and containment. The inspector verified that licensee staffing during core reload was in accordance with Technical Specifications and plant administrative instructions.

- a. On June 22, 1982, while attempting to transfer the first fuel assembly (K-29) from the spent fuel pit to the containment, operations personnel were unable to obtain a Frame Down indication on the fuel transfer system. Investigation revealed that the fuel element was not fully into the frame (about half an inch from the bottom) and that the source rod in the assembly had rested on the carriage stop and bent slightly. Further investigation revealed that a piece of incore thimble tubing had inadvertently been dropped into the frame during thimble disposal activities and had been caught under the fuel assembly. A portion of the tubing had stuck in the fuel assembly just below the second grid strap, but did not break any fuel pins. The licensee decided not to use K-29, and will instead use H-series assemblies in the source assembly positions. The damaged source rod will not be used, but the other undamaged source rod will be loaded as planned. Procedure changes and applicable analyses have been or are being conducted to support cycle 9 fuel loading. The inspector monitored licensee corrective actions and noted no violations or deviations. Fuel reload commenced on June 23, 1982.
- b. The inspector reviewed procedure FT 3.0 Revision 7 for refueling prerequisites and periodic checkoff and compared the procedure with Technical Specification 3.8. The procedure appeared adequate to ensure compliance with the exception of the following items:
 1. Technical Specification 3.8.1.b requires that the containment purge valves and radiation monitors which initiate isolation be tested and verified operable immediately prior to refueling operations. FT 3.0 does not verify that a high radiation alarm will shut the purge valves. The licensee agreed to test this feature as required and revise the procedure accordingly. Periodic Test 12.2 does test this feature biweekly.
 2. FT 3.0, Table 3.3, Step 3.I requires checking the containment manometer isolation valve shut. For clarity, the inspector feels the valve number (VCT-13) should be included as is consistent with the other valves checked.
 3. FT 3.0, Table 3.4 Step 2.a requires verifying spent fuel pit (SFP) water level in relation to distance down from the SFP operating deck. The height of water is measured on a scale of feet and inches from SFP bottom and does not extend to the top of the SFP. For clarity, the feet and inches allowable height range should be provided, and the licensee should consider logging the value for trending rather than initialing that the level is adequate.

4. FT 3.0, Table 3.4, Step 5.e requires verifying that the refueling cavity water level is normal. Normal is not defined. Technical Specification (T.S.) 3.8.1.e requires that the cavity water level be greater than plant elevation 272 feet 2 inches when fuel assemblies are moved within the reactor vessel. Normally, SFP level will be the same, however, if a pressure builds up in containment, it is possible to violate this T.S. Additionally, there is no measurement scale available in the cavity comparable to that in the SFP.
5. FT 3.0, Table 3.3, Item J through M requires checking manual isolation valves shut in the Post-Accident Hydrogen Venting System. To completely ensure containment integrity, vent valves V12-26A and 26B need to be included or valves V12-15 and V12-19 need to be verified shut. The licensee made a temporary change to FT 3.0 to answer this concern.

The licensee agreed to review these items and take appropriate permanent corrective action. (IFI 50-261/82-23-02).

11. Refueling Maintenance - Pressurizer Relief Valves

The inspector reviewed Periodic Test 25.1, Maintenance Instruction 10 Procedure 30, and associated work requests. These procedures appeared adequate to control the maintenance activities. Valve RC-551B had its disc insert replaced and the spindle rod straightened. All valves tested satisfactorily and were not calibrated after the valve testing due to being misplaced. The licensee should consider tighter controls on the gauge used during testing in the future.

12. TMI Action Item II.B.2.3 NUREG 0737, Equipment Qualification

This area was previously reviewed by the inspector in Inspection Report 82-04 paragraph 11.d. The inspector reviewed NUREG 0737 and CP&L letter dated December 31, 1980. The licensee's investigation, documentation, and position appeared adequate with the exception noted as open item 82-04-10. In response to this item, the licensee reviewed the susceptibility of B Diesel Generator to radiation deterioration of parts. The results were presented in Robinson memorandum 82-372 which the inspector reviewed. The review appears adequate to satisfy the inspector's concerns and requires no corrective action. TAP Item II.B.2.3. and open item 82-04-10 are closed.

13. Degradation of Main Steam Check Valve (MSCV)

On June 28, 1982 with the plant in a refueling shutdown, 'B' MSCV was discovered in a degraded condition by the licensee during work to stamp the end of the rockshaft with a position scribe. Specifically, one end of the rockshaft had partially slipped out of its bushing and had deformed the bushing retainer such that the shaft had dropped about one inch. Disassembly and inspection of the valve revealed that the set screws which lock the disc tail-piece to the rockshaft had loosened and backed out

sufficiently to allow the rockshaft to move axially until it contacted the inner surface of one endcap, thus slipping out at the other side.

The licensee reported the event in Licensee Event Report (LER) 82-05 dated July 12, 1982. The inspector reviewed the LER and revision 4 to Plant Modification 372, the modification the licensee feels caused the failure. Based on the review, the inspector determined that significant pertinent facts were not presented in the LER which cast doubt on the licensee's conclusion that the problem is not generic:

- a. The discovery of the condition was not made in preparation for the In-Service Inspection (ISI) of the MSCV's. That inspection had been completed by opening 'C' MSCV and having maintenance personnel crawl the pipes to visually verify that the MSCV's were seated. A previous attempt to air test the valves had been unsuccessful. Having verified the valves to be seated, the licensee then intended to scribe the rockshafts with a vertical mark so that future ISI could be accomplished by endcap removal and verification of shaft orientation. Had the licensee not decided to scribe the shaft, the degradation would not have been identified. This raises the concern as to whether the inspection methods of other licensees can be depended on to identify degradation.
- b. The licensee concluded that their modification to the bushing and bushing retainer assemblies of the 26 inch Schutte-Koerting MSCV were responsible for the degradation, but did not provide any pre-and post-modification valve component measurements or specifications to allow independent NRC assessment. Based on the inspectors understanding, Schutte-Koerting (S-K) has told the licensee that the original design of the bushing retainer and shaft assembly would provide one half inch of shaft to bushing interface with the shaft slid fully to the other side. This one half inch is considered by S-K to be sufficient to support the shaft without bushing and retainer deformation of the type experienced. The plant modification to the bushing retainers was precipitated by an Ebasco Services, Inc. letter of December 3, 1976, which recommended that the bushing retainer be shimmed to afford a snug fit to the valve body. The licensee apparently opted in 1978, for an undocumented reason, to cut the bushing retainer off the integral endcap-bushing retainer assembly and install a modified bushing retainer. The inspector performed field measurements on the MSCV and found that the shaft to bushing interface with the shaft slid to one side was about one-quarter inch or half the S-K value. While the modification appears to be responsible for the failure, CP&L has not obtained S-K documentation to substantiate that a half-inch interface is sufficient while a quarter inch is not. Also, the inspector is concerned that other licensees may have improperly modified S-K MSCV's.
- c. The licensee discovered that the tail link to rockshaft set screws were loose on all three MSCV's. Their corrective action does not document that the old set screws were too short to stake without damaging the

threads, so longer set screws were obtained and machined to fit for staking. While staking the set screws may or may not be adequate due to the forces experienced by the valve, the set screws require periodic inspection, and other licensees may need this information to take corrective action.

Based on the above deficiencies in the LER, the inspector requested a supplemental LER from plant management. The licensee agreed to provide such a response. The above concerns plus the information from the supplemental response will be used to determine if further dissemination of this event is necessary.

14. Review of IE Notices (IEN's)

The inspector verified that IEN's had been received onsite and reviewed by cognizant licensee personnel. Selected applicable IEN were discussed with licensee personnel to ascertain the licensee's actions on these items. The inspector also verified that IEN were reviewed by the Plant Nuclear Safety Committee in accordance with facility administrative policy. Licensee action on the following IE Notices were reviewed by the inspector and are closed.

IE Notices

80-11 82-01 and Revision 1

15. Outstanding Items Review

(Closed) Inspector Followup Item 81-22-01. This item concerned the need to ungang the steam generator blowdown and sample valves on reset of containment phase A isolation. Modification 573 has been installed which changes the reset function to a line-by-line basis from an auxiliary building panel.

(Closed) Open item 79-03-02. This item concerned some valve number errors on a Q-list drawing. The licensee is currently updating the Q-list drawing to reflect the current Q-list. Q-list drawings are treated as for information only and are to help determine Q-list boundaries. The Q-list, Engineering Procedure ENG 2.0, takes precedence for Q-list determinations. In light of the current drawing program corrective actions, this item appears to be of no safety significance.

(Closed) Open Item 82-07-04. This item concerned starting failures of 'A' Safety Injection pump. The inspector reviewed LER's 80-20 and 81-23 and a CP&L memorandum dated April 23, 1982. The licensee has taken corrective action to replace faulty electrical components. The historical review determined that different electrical problems had been responsible for past failures. The inspector will continue to monitor 'A' pump performance to ensure no safety concern exists.

(Closed) Inspector Followup Item 81-27-36. This item concerned the licensee's need to include all shelf-life applicable items in their control

program. This item was reviewed in Inspection Report 50-261/82-20. The licensee had not followed up on the corrective action discussed with the inspector in Report 50-261/81-05 (PAS). This resulted in violation 82-20-09.

(Closed) Inspector Followup Item 82-07-03. This item concerned the need to complete Periodic Test 2.1 on the containment ventilation isolation valves. This testing has been completed satisfactorily.

(Closed) Open item 82-14-01. This item concerned a design problem on the redundant valve position indication on specific Emergency Core Cooling System (ECCS) valves. The inspector reviewed Modification -469 Revision 2, which ran separate position indication cabling to separate limit switches on each valve. The necessary modification has been completed on all required ECCS valves. The inspector reviewed the revision 2 testing procedure and observed portions of the valve tests. All valves tested satisfactorily. The inspector verified that system testing was conducted in accordance with reviewed and approved procedures, that test results were within acceptance criteria and any deviations were resolved, and that quality control verification was performed.

(Closed) Inspector Followup Item 82-22-03. A revised local leak rate test on the containment airlock was conducted in accordance with Special Procedure-434. Leakage was measured at about .21 SCFM. The inspector reviewed the test procedure and results and was satisfied the airlock was properly tested.

(Closed) Inspector Followup Item 82-22-04. A revised local leak rate test on the containment manometer line was conducted in accordance with revision 2 to Periodic Test 16.3. No leakage was detected. The inspector reviewed the test procedure and results and was satisfied that the penetration was adequately tested.

(Closed) Open item 82-14-03. The local leak rate test on the containment fire-water lines was conducted in accordance with Special Procedure-435. The inspector reviewed the test procedure and results and was satisfied the penetrations were adequately tested.