



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

Report No. 50-261/81-22

Licensee: Carolina Power and 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 site near Hartsville, S.C.

Inspector: *Koss Butcher* 8/26/81
 S. Weise, Resident Inspector Date Signed

Approved by: *C. Julian* 8/26/81
 C. Julian, Acting Section Chief, Division of Date Signed
 Resident and Reactor Project Inspection

SUMMARY

Inspection on July 11 through August 10, 1981

Areas Inspected

This routine announced inspection involved 144 inspector-hours onsite 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, IE Bulletin, Circular and Notice review, outstanding items review and followup on enforcement matters.

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 11).

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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 Specialist Regulatory Compliance
- S. Crocker, Manager, E & RC
- *W. Flanagan, Project Engineer
- *C. Wright, Specialist, Regulatory Compliance
- P. Monroe, Stores Foreman
- L. Williams, Senior Specialist - Security
- A. Eaddy, E & C Supervisor

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

Other Organizations

R. Muth Westinghouse

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on July 29, 1981 and August 10, 1981 with those persons indicated in Paragraph 1 above. The licensee acknowledged the inspector's findings. Two commitments were obtained as discussed in paragraphs 10.f(2). and 10.c(2).

3. Licensee Action on Previous Inspection Findings

- a. (Closed) Deviation 81-08-06. This item dealt with the licensee's failure to meet commitments concerning the safety relief valve position indication system. The review of this item is discussed in paragraph 10e. This item is closed.
- b. (Closed) Severity Level IV Violation 81-15-03. This item dealt with inadequacies in the maintenance program which resulted in taping a sample system valve's switch open. The inspector reviewed the licensee's corrective action as described in the CP&L response letter dated June 26, 1981. Corrective actions appear to be adequate and complete. This item is closed.
- c. (Closed) Severity Level V Violation 81-15-01. This item dealt with a breach of containment integrity caused by taping a sample system switch open. The inspector reviewed the licensee's corrective actions as

described in CP&L response letter dated June 26, 1981 and LER 81-11. Training was conducted for chemistry personnel on the operation and safety implications of the sampling system, and revisions were made to CP-3, Systems Sampling Procedure, for operator guidance and clarification. Corrective actions appear to be adequate and complete. This item is closed.

- d. (Closed)Severity Level V Violation 81-15-07. This item dealt with the licensee's failure to perform a required surveillance within the allowed interval. The inspector reviewed the licensee's corrective actions as described in CP&L response letter dated June 26, 1981 and LER 81-12. Corrective actions, including procedure revisions, appear to be adequate and complete. This item is closed.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. 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.

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:

- a. Diesel generator fuel oil, air start, and service water.
- b. Residual Heat Removal
- c. Component Cooling Water
- d. Selected containment isolation valves

The inspector noted no violations or deviations.

7. Plant Operations Review

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.

8. Physical Protection

- a. 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.
- b. The inspector verified by observation that nine individuals achieved acceptable scores on weapons firing qualification and on the preliminary requalification classroom training examination. The inspector also observed the classroom training and verified that it met training objectives and scheduling requirements. No violations or deviations were observed.

9. Steam Generator Outage

On July 30, 1981, while at 96 percent power, the plant experienced a feed system transient when a control valve on a heater drain tank malfunctioned. The resulting secondary system transient was controlled by the operators by reducing turbine load. Reactor power increased about 1% and turbine output dropped about 45 MWE. About an hour later the radiation monitor on the combined steam generator blowdown line alarmed. Blowdown of all three steam generators was secured, and vacuum pump discharge was sent to the plant stack to ensure monitoring. Further investigation of steam generator (S/G) activity and primary leakrates revealed a 0.3 gpm primary-to-secondary leak in B S/G. Technical Specifications allow operation with leakage up to .35 gpm in an individual S/G, however, plant management decided to shutdown the plant to investigate. Chemistry results also indicated that a small leak in C S/G was possible. The plant was shutdown, cooled down and depressurized to permit inspection and eddy current analysis of the S/G tubes in B and C steam generators. Eddy current results for B S/G hot leg showed an increase

in pluggable indications, and the eddy current program was expanded on August 4th to 100% of the hot leg tubes up to the first tube support plate in all three steam generators. Additionally, a small sample of cold leg tubes were probed in B S/G. Westinghouse is providing technical support in such areas as transient analyses, chemistry effects, probing techniques, and S/G tube removal. The licensee has determined that at least two S/G tube samples from the B S/G hot leg will be removed for analysis by Westinghouse. At the conclusion of the reporting period, one tube had been removed for shipment.

10. TMI Action Plan Requirements

- a. TAP No. II.E.4.2, Item 7, NUREG 0737, Containment Isolation Dependability. This item required that the inspector verify that containment purge and vent isolation valves must close on a high radiation signal. The inspector reviewed the licensee's response letter to NRR of June 30, 1981, and plant wiring diagrams for the Containment Ventilation Isolation portion of the Safeguards system and the individual valve control circuitry. Based on this review, the inspector is satisfied that the containment purge supply and exhaust valves (V12-6, 7, 8, 9), the containment vacuum relief valves (V12-12, 13), and the containment pressure relief valves (V12-10, 11) are designed to shut on a high radiation signal from the containment and plant vent air particulate and radioactive gas monitors (R-11 and R-12). This item is closed.
- b. TAP No. II.E.1.2, Item 1b, NUREG 0737, Auxiliary Feedwater (AFW) Automatic Initiation. This item required that the licensee verify that the automatic start AFW system signals and associated circuitry are safety grade. The licensee has stated in letters dated October 31, 1979, December 31, 1979, and May 15, 1980, that the present AFW system automatic initiation signals are safety grade. These submittals are still under review by NRR, as discussed in NRR letter to CP&L dated December 2, 1980. The inspector will review this item further after the NRR review is completed.
- c. TAP No. II.E.4.2, Items 1 through 4, NUREG 0737, Containment Isolation Dependability. The inspector reviewed the following references:
 - Ref. (1) NUREG 0578, Section 2.1.4
 - Ref. (2) Denton's letter (NRR) dated October 30, 1979
 - Ref. (3) CP&L's response to reference (2) dated December 31, 1979
 - Ref. (4) CP&L's second response to reference (2) dated March 31, 1980
 - Ref. (5) CP&L's third response to reference (2) dated April 4, 1980
 - Ref. (6) NRR letter evaluation of references (3), (4), and (5) dated April 18, 1980
 - Ref. (7) CP&L's response to reference (6) dated July 22, 1980
 - Ref. (8) NUREG 0737, II.E.4.2
 - Ref. (9) CP&L letter dated December 31, 1980

- (1) Reference (1) requires that containment isolation system design comply with Standard Review Plan (SRP) Section 6.2.4 in regard to diversity of sensed parameters. Reference (6) states that CP&L meets the requirement on diversity for containment isolation valves in non-essential systems originally designed to close on receipt of an automatic isolation signal. The inspector noted that the switch for the radiation monitor system containment isolation valves was replaced as committed in the CP&L letter of April 4, 1980, with a single failure proof switch. The inspector had no further questions.
 - (2) The licensee was required to define and identify essential and non-essential systems, describe their basis for selection, make any required modifications, and report their results. The licensee responded to this item in reference (3). Table 1 of reference (3) provides an identification of mechanical penetrations as essential or nonessential. The inspector questioned the classification of the following penetrations:
 - (a) Penetrations 68, 69, 70 for Containment Pressure Sensing Lines are listed as nonessential and required to be closed post-LOCA. In further discussions, the licensee stated that this penetration should be considered essential and remain open post-LOCA to monitor containment pressure.
 - (b) Penetration 71, Penetration Pressure Air Supply is listed as nonessential and required to be closed post-LOCA. The penetration pressure air supply is used to pressurize the space between certain containment isolation valves above post-LOCA peak pressure to ensure containment integrity. In further discussions, the licensee determined that this penetration should be considered essential and remain open post-LOCA to provide sealing air.
- NRR has stated that Revision 2 to Regulatory Guide (RG) 1.141 will contain guidance on the classification of essential versus nonessential systems and that requirements for operating plants to review their systems will be issued in conjunction with this guide. The licensee committed to correcting the above errors in a letter to NRR by September 1, 1981.
- (3) For postaccident situations, each nonessential penetration (except instrument lines) must have two isolation barriers in series that meet the requirements of General Design Criteria (GDC) 54, 55, 56, 57 as clarified by SRP Section 6.2.4. Isolation must be performed automatically. Manual valves must be sealed closed as defined by SRP Section 6.2.4 to qualify as an isolation barrier.

The inspector noted the following discrepancy in reference (3): Penetration 21, Excess Letdown Heat Exchange Cooling Water In, is said to be automatically isolated on a "T" signal. However, the valve outside containment (CCW-737A) is manual with an attendant check valve (CCW-738) inside containment. Licensee representatives stated that this check valve could be considered as an automatic isolation valve under the plant's original licensing criteria. This position apparently does not meet GDC 57. Reference (9) documents CP&L's exception to the requirements of GDC's 54, 55, 56, 57. A clarification of this difference in interpretation should be included in the letter committed to under (2) above.

The inspector reviewed administrative and operating procedures and physically inspected all manually operated containment isolation valves on nonessential lines to verify that they have been lock closed and will be administratively controlled when open by assigning a dedicated person to close them in the event of an emergency. The inspector had the following concerns:

- (a) Penetration 21, valve CCW-737A, as discussed above, is neither locked closed nor required to be closed post-LOCA by existing procedures. Controls or modifications for this penetration appear to require further review by NRR considering the licensee's position that this penetration is automatically isolated via check valve CCW-738.
- (b) Penetrations 34A, B, C, D, Nitrogen Supply to Hydrogen Vent System Valves. Each of the four lines involved contains two locked shut manual valves in series (PAV 31 through 38), however, the shut and capped valves in between the isolation valves (PAV-31A, 33A, 35A, 37A) are neither locked shut nor controlled administratively by Operating Procedure-52 when opened. Licensee representatives stated that NRR had verbally approved this arrangement, however, the inspector could neither confirm nor deny this acceptance with NRR. This item appears to require further NRR review.
- (c) Penetration 67, Containment Test Controlled Leakage. When inspected this penetration had a locked closed pipe cap at the end of one line segment and a locked shut manual valve (VCT-13) in a parallel line segment. The valves downstream of VCT-13 are not locked closed and controlled administratively by Operating Procedure-52 when opened. The penetration did appear to meet the original FSAR Section 5 licensing criteria for Class 3 penetrations. On June 29, 1981, the licensee placed an additional blind flange inside containment pending resolution of the question. This item appears to require further NRR review.

- (d) Penetration 68, 69, 70, Containment Pressure Sensing Lines, were discussed above as being essential vice nonessential as reported in reference (3). The inspector noted that this penetration appeared to have some nonessential features associated with the post-accident sampling system. Several normally closed valves (VCT-18, 19, 20 and PAS-1 through -6) and shut and capped valves (VCT-21,22,23) appear to require being locked shut to meet the intent of the requirement. The licensee does not agree, therefore, further NRR review appears warranted.
- (4) The design of control systems for automatic containment isolation valves shall be such that resetting the isolation signal will not automatically reopen these valves. Reopening of containment isolation valves shall require deliberate operator action. Ganged reopening of isolation valves is not acceptable and reopening must be performed on a valve-by-valve or line-by-line basis provided single failure criteria are satisfied. Partial inspection documentation of this item is in IE Inspection Report 50-261/81-08. CP&L's position on unganging of containment isolation valves is documented in reference (9)

Salient points are:

- (a) Steam generator blowdown valves will be modified during the late 1981 refueling outage to allow them to be opened on a line-by-line basis. This is an inspector follow-up item (50-261/81-22-01).
- (b) CP&L takes exception to unganging the reopening of the containment air sampling valves (RMS-1, 2, 3, 4) and the containment purge valves (V12-6, 7, 8, 9) and plans no modification.

Due to the inspector's concerns and questions under items (2), (3), and (4) and due to CP&L exceptions to NUREG-0737 requirements, the inspector will transmit these matters to NRR for resolution. These matters constitute an open item (50-261/81-22-02). TAP No. II.E.4.2, Items 1 through 4 are closed.

- d. TAP No. II.E.4.2, Item 5, NUREG-0737, Containment Isolation Dependability. This item required the inspector to verify that the containment setpoint pressure that initiates containment isolation for nonessential penetrations is the minimum compatible with normal operating conditions. CP&L letter dated December 31, 1980 provided a detailed justification and the licensee's position appears to meet the requirements. This item is closed.
- e. TAP No. II.D.3, Item 1 NUREG 0737; NUREG 0578, Section 2.1.3, Valve Position Indication, Relief and Safety Valves. The inspector reviewed inspection report 50-261/81-08 and CP&L letters dated December 10, 1980

and April 30, 1981. The inspector verified that the licensee was implementing his corrective action for deviation 81-08-06.

Specifically:

- (1) Daily bias checks were initiated on May 13, 1981 for the safety relief valve (SRV) monitor system during hot operations.
- (2) The maintenance procedure for the control of accelerometers is to be implemented prior to the next refueling.
- (3) The modification to make the low noise level alarm feature operable, which was scheduled for May 1981, will be made after receipt of parts.

The inspector reviewed the status of the power operated relief valves (PORV) position indication. The position indicators are powered from auxiliary panels DC and GC off the station batteries. An alarm has been added that will alert the operator when a PORV is not fully shut. The inspector had no further questions.

The inspector reviewed modification package M 502 which installed the SRV monitors. The inspector noted that the procedures and drawings did not identify the power supplies for the three channels. A field inspection revealed that the three monitors are powered from instrument bus 2, circuit 12.

The licensee's human factors analysis on the PORV and SRV position indication was conducted as part of the modification. Use was made of existing annunciators. Discussion of the SRV monitor appeared to have been added to the operator requalification program. The inspector noted that mention of the SRV/PORV alarms and indications were in EI-1, RCS Depressurization Incident, but mention of the SRV monitor was not in AP-19, Malfunction of RCS Pressure Control System.

To facilitate the environmental and seismic qualification of the SRV monitor system, CP&L joined a Qualification Owner's Group. In reviewing the proposed testing program, the group determined that revisions were necessary to reach full compliance with IEEE 344-1975 and 323-1974. The test program is now scheduled for completion in the third quarter of 1981. This item and items (2) and (3) of the first paragraph are an inspector followup item. (50-261/81-22-03). The TMI Action Item and deviation 81-08-06 are closed.

- f. TAP No. II.E.1.2 Items 2a and 2c, NUREG 0737, Auxiliary Feedwater System (AFW) Flow Indication. This item required the inspector to verify that the licensee satisfied the short term and long term requirements for flow indication. A review of the CP&L letter of December 31, 1979 and the NRR letter of December 2, 1980 revealed that CP&L meets the control grade requirements. NRR is reviewing the AFW flow indication against the safety grade requirements.

Based on a review of the licensee action, the installed flow indication, and the requirements of NUREG 0737, the inspector noted the following:

- (1) The AFW flow indication appears to meet the requirements for environmental qualification, power supply, display, and quality assurance.
- (2) In a letter dated February 17, 1981, CP&L reported that their testing methods were not fully adequate and that the procedures and techniques associated with periodic testing required revision. Improved testing and system checking methods were to be implemented by July 1, 1981. Discussions with the licensee revealed that the contractor testing methods required excessive equipment and manhours more appropriate to calibration than testing. In order to provide more frequent reliability testing, changes were made to Periodic Tests (PT) 22.1A, B, C. This testing of the flow indication only verifies operability of the computer and acoustic transducer vice the transmission of reliable flow data. Plant procedures GP-2 and OP-14 require that the AFW pumps be used individually to feed the steam generator on a startup from cold shutdown or after maintenance. The inspector expressed concern that verification of flow indication was not incorporated into these operations, since, unlike PT 22.1, flow past the transducers was available. The licensee committed to implement procedure changes to GP-2 and OP-14 to address the concern by September 1, 1981.
- (3) The test procedure for the flow indicator system, other than that performed in conjunction with the plant modification, has not been approved and incorporated into the plant operating manual. The licensee stated that the procedure would be issued prior to the next refueling outage, which is the periodicity of the calibration.
- (4) A human factors analysis has been performed and is continuing to be reviewed and refined. The analyses resulted in the relocation of the flow indicators to a more prominent location on the control board and in the proximity of other AFW indications. The inspector noted that mention of this new indication was incorporated in EI-1, RCS Depressurization Incident and EI-6, Loss of Feedwater.

Based on the above review, Items 2a and 2c are closed. The inspector will followup on sub-paragraph (3) above and any concerns NRR may develop on Item 2c. (50-261/81-22-06).

11. Storage Inspection

The inspector reviewed the storage areas for various safety-related or quality controlled equipment or materials. The building for the storage of

a spare service water pump motor (safety-related) had no provisions for cooling the building to maintain the 40-140°F range required by Storeroom Procedure 3. The service water pump motor is used as a replacement on a rotating basis to allow the licensee to perform preventive or corrective maintenance on service water motors. The building had a roof vent and an unused roof fan. There is no installed temperature monitoring equipment to verify the 40-140°F range, and the inspector questioned the ability of the small oil-fired heating unit to maintain storage area temperatures above 40°F in the winter. Additionally, a number of gallons of flammable phenoline floor finisher were stored in the building. A fire hose station was available. The licensee later reported that the fan had been placed in service.

A second building used for storage of hazardous and flammable chemicals such as sulfuric acid, nitric acid, and hexane, had no equipment for ventilation as required by storeroom Procedure-3. Additionally, these materials were in proximity to quality controlled hydrogen peroxide. The inspector questioned the open storage of bottles of hexane and the storage of sulfuric acid directly above nitric acid (a potential explosive mixture). In that the building temperature range could not be controlled, the inspector is also concerned that hydrogen peroxide stored in this building may be degraded.

The above examples of failure to implement procedures to properly control storage and preservation of materials and equipment to prevent damage or deterioration is a violation. (50-261/81-22-04).

12. Followup on IE Bulletins

For the following Bulletins, the inspector verified that the response was timely, included the required information, contained adequate commitments and that corrective action as described in the written responses was completed.

- a. IE Bulletin 81-02, Failure of Gate Valves to Close Against DP. The inspector reviewed the licensee's May 15, 1981 response which stated that Robinson had no such gate valves in service or spares. The inspector had no further questions. This Bulletin is closed.
- b. IE Bulletin 80-12, Decay Heat Removal (DHR) System Operability. The inspector reviewed the licensee's response letters of June 3 and October 27, 1980. The inspector verified that the licensee promulgated administrative controls as committed in these letters. The inspector reviewed the precautions required for removing an RHR loop from service (Standing Order #9) and the procedure for combating a loss of DHR (Abnormal Procedure-20). The inspector verified that the licensed operators had reviewed this Bulletin and IE Notice 80-20. A records review by plant personnel found that no similar events had occurred at Robinson. Additionally, the inspector reviewed the licensee's proposed Technical Specifications (TS) letter of September 26, 1980. This request was submitted in response to NRR letters dated June 11 and August 15, 1980 which requires the licensee to provide for redundancy

in decay heat removal capability in all modes of operations. The proposed TS change is still under NRR review. The inspector had no further questions. This Bulletin is closed.

13. Licensee Event Report (LER) Followup

- a. 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.

<u>LER</u>	<u>EVENT</u>
80-12	Runbacks and Blown Control Power Fuses on Power Range Detector N-42
80-14	No Certification of Qualification on Electric Cable Pigtails
80-16	Inoperable Grinnell Snubbers
81-11	Breach of Containment Integrity
81-12	Failure to Perform RHR Surveillance

- b. LER 80-24, Breach of Containment Integrity. This item requires the licensee to rebuild all major operating parts of the personnel access hatch to containment during the next extended cold shutdown and is an inspector follow-up item (50-261/81-22-05). The LER is closed.

14. Review of IE Circulars and Notices (IEC's and IEN's)

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

<u>IE Circulars</u>	<u>IE Notices</u>
81-04	81-04
81-05	81-06
81-07	80-20
80-16	

15. Review of outstanding Items

(Closed) Inspector Followup Item 78-21-01. This item was to re-inspect the ISI pump and valve program following final program approval by NRR. The licensee was allowed to implement their submitted program, but official NRR approval has not been provided. The licensee has since submitted a new ISI program to NRR. This item is closed.