



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

Report No.: 50-261/84-03

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

Docket No.: 50-261

License No.: DPR-23

Facility Name: H. B. Robinson Unit 2

Inspection at H. B. Robinson site near Hartsville, South Carolina

Inspector: *A.K. Hardin for* 3/16/84
 S. Weise Date Signed

Approved by: *Paul R. Bemis* 3/16/84
 Paul R. Bemis, Section Chief Date Signed
 Division of Project and Resident Programs

SUMMARY

Inspection on February 11 - March 10, 1984

Areas Inspected

This routine, announced inspection involved 135 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, enforcement action followup, Generic Letter 83-28 followup, defueling activities, and independent inspection

Results

Of the 15 areas inspected, no violations or deviations were identified in 13 areas; two violations was found in two areas (Failure to maintain procedures, paragraph 5.b; Inadequate surveillance testing, paragraph 10).

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *G. P. Beatty, Jr., Manager, Robinson Nuclear Project Department
- *R. E. Morgan, General Manager
- *J. Curley, Manager, Technical Support
 - F. Gilman, Project 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 and Radiation Control
 - M. Reid, Construction Project Manager
- *D. Alleman, Engineer - Technical Support
- *J. Benjamin, Project Engineer - Operations
 - W. Farmer, Senior Engineer
- *B. Rieck, Manager, Control and Administration
- *W. Flanagan, Engineering Supervisor - Plant
- *M. Page, Engineering Supervisor - Performance
- *D. Baur, Project QA/QC Specialist

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 March 9, 1984, with those persons indicated in paragraph 1 above. The licensee acknowledged the violations. The inspector indicated that the unresolved item of paragraph 6.c would be resolved by the inspector during the next inspection period. At no time during the inspection period was written material provided to the licensee.

3. Licensee Action on Previous Enforcement Matters

(Closed) Unresolved Item 261/83-27-02. The inspector reviewed the licensee's uniform mixture testing. Initial tests did not pass, and the licensee determined that use of an injection plenum was necessary to get acceptable results. As discussed in paragraph 10.b, this is a further example of a previously identified violation. Licensee corrective action

has been to perform an acceptable test and identify test injection and sample point locations in Revision 2 to surveillance procedure EST-016.

(Closed) Severity Level IV Violation 261/83-26-04. The inspector reviewed CP&L response letter dated December 1, 1983, CP&L Memo 84-157, pertinent training reports, and general employee radiation control training lesson plans. The corrective actions discussed in the response appear adequate and complete.

(Closed) Severity Level IV Violations 261/82-42-01 and -02. The inspector reviewed CP&L response letters dated March 4 and November 2, 1983, memoranda dated January 3 and 31, 1984, and procedure change #7244. Discussions were held with cognizant licensee personnel. Thirteen instruments out of over three hundred checked were identified as having errors in the calibration data sheets. Of these instruments, only one instrument (TM-412K, Loop A T avg/Delta T Protection Temperature Summator) had a nonconservative error which made it out of tolerance by 0.001 volts at the highest value of T hot. This appears insignificant from a safety standpoint. TM-412K will be recalibrated during outage, and instruments with conservative errors will be corrected when their normal calibration occurs.

(Closed) Severity Level V Violation 261/83-32-01. The inspector reviewed CP&L response letter dated December 30, 1983 and procedure changes 8732 and 8576 for General Procedure-008 and Operating Procedure-1101, respectively. These revisions appear adequate to prevent rendering the overpressure protection system inoperable prior to establishing appropriate reactor coolant system vent paths. Additional procedural deficiencies were noted, however, which are discussed in paragraph 6.b.

4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations. New unresolved items identified during this inspection are discussed in paragraph 6.c.

5. Plant Tour (71707/71710/62703)

- a. 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) Diesel Generators
 - 2) Selected Containment Isolation Valves
 - 3) Residual Heat Removal System
 - 4) DC Power System
- b. On February 14 and 16, 1984, the inspector conducted a walkdown of the 'A' Emergency Diesel Generator including fuel oil, lubrication and cooling, and air start subsystems. The inspector reviewed the following controlled documents:
- Operating Procedure (OP)-1606, Revision 3, Diesel Generator 'A' Checkoff List
 - Drawing G-190204A Sheet 1 Revision 4
Sheet 2 Revision 3
 - Drawing G-190204D Sheet 2 Revision 0

The inspection was conducted to confirm that valve lineups and drawings matched as-built configurations, to identify potential system degradation, to verify that valves were in proper positions and locked if appropriate, and to verify that instrumentation was calibrated, valved-in, and functioning. The following deficiencies were identified:

- 1) Valve tag was missing on valve DG-44A.
- 2) Drawing G-190204A Sheet 1 does not show air compressor valve DA-1A and associated piping, does not label valve DA-15A, and erroneously designates valve DA-13A as locked closed.
- 3) Drawing G-190204D Sheet 2 uses old valve numbers EV 1963 A-1 and A-2 for valves presently labelled FO-27A and 29A and does not indicate FO-31A as locked closed.
- 4) OP-1606 does not address valve checks on valves:
 - FO-15 Diesel Oil Storage Tank Vent
 - FO-34A and 35A Engine Fuel Oil Filter Delta Pressure Isolation
 - FO-38A Dirty Fuel Oil Tank Drain
 - DG-44A Cooling Water to Turbocharger
 - DG-1A Air Compressor Sensing Line Isolation

For those valves above with an A designation, their counterparts on B Diesel Generator Valve Lineup OP-1607 were also not addressed.

The inspector held discussions with cognizant licensee personnel concerning these deficiencies. The drawing deficiencies were minor and, in some cases, previously identified. These deficiencies will be tracked under previous IFI 261/84-02-01. The single missing valve tag is insignificant and is noted only for licensee action. The valve lineup deficiencies appear to have been missed by those individuals responsible for upgrading procedures after as-built walkdowns were conducted and drawings revised. Valve tags were hung on the valves in December 1983, but a procedure change was not initiated. Failure to maintain procedures is a violation. (261/84-03-01).

6. Technical Specification Compliance (71707/61726/92706/61700)

- a. During this reporting interval, the inspector verified compliance with selected limiting conditions for operation (LCOs) 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. The inspector reviewed the adequacy of the reactor coolant system (RCS) vent paths to containment that are established prior to disarming the low temperature overpressure protection (LTOP) system. Technical Specification (TS) 3.1.2.1.d does not define what constitutes an adequate vent path. General Procedure-008, Draining the RCS, establishes five vent paths prior to disarming LTOP:
 1. Three pressurizer loop seal drains.
 2. One reactor vessel level column.
 3. One reactor head vent path.

Review of the apparent limiting restrictions in each path indicated that the total established vent area is less than one square inch. The vent path or LTOP are required to prevent pressurizing the reactor vessel above 10 CFR 50, Appendix G, limits during, for example, inadvertent operation of one safety injection pump (SIP). One train of LTOP is designed to protect the vessel, therefore, it appears that the limiting orifice associated with the power operated relief valve (PORV) may establish the size of an adequate vent path. Based on CP&L drawing 5379-4392 for the PORV, this area is about 3.1 inches. In addition, TS 3.3.1.3 and plant procedures do not prohibit racking in all three SIP breakers when the RCS is vented. Thus, it appears that TS and plant procedures may not provide adequate reactor vessel overpressure protection. The inspector has noted that licensee practice is to leave the SIP breakers racked out below 350°F, unless required by a procedure. Until this issue is resolved, this is an inspector followup item (261/84-03-02).

- c. The inspector reviewed surveillance test OST-154, Safety Injection System High Head Check Valve Test. The portion of the test for the hot leg injection check valves (SI-874A and B) does not appear to meet full

flow inservice test requirements. These check valves are in a nonisolable parallel configuration, such that flow through the hot leg injection line will divide between the two paths. Present testing uses 300 gpm flow, which divides between the two check valves. It appears that each check valve is designed to pass 300 gpm flow, and OST-154 testing would not identify that one check valve was stuck shut. Cognizant licensee personnel indicated that they needed to further investigate the basis for present testing and determine if alternate testing is feasible. Until this data is provided, this is an unresolved item. (261/84-03-03).

7. Plant Operations Review (71707/62703)

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.

No violations or deviations were identified.

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.

No violations or deviations were identified.

9. Generic Letter 83-28 Followup (25564)

The inspector reviewed the inspection guidance TI 2515/64, Generic Letter 83-28, and CP&L response dated November 7, 1983.

a. Post Trip Review

The inspector reviewed CP&L procedure OMM-010, Post Trip/Safeguards Review, Revision 0 for content of the post-trip review program. This procedure delineates the criteria for determining the acceptability of restart, requires review by the Plant Nuclear Safety Committee either prior to restart or at the next regular meeting, delineates who will

perform the review and analysis of events, requires verification of reactor trip and safeguards automatic actions, delineates those parameters which always should be reviewed, requires availability of strip chart and event sequence data, and provides guidance for comparing event information with known or expected plant behavior. For those individuals which are assigned review and analysis responsibilities (by job title), the TS and Administrative Procedure-027, Section 2 provide training and qualification requirements which appear adequate to ensure quality implementation. Training on the new procedure was verified to have been conducted for all Shift Engineers and licensed operators. The procedure also is preserved as a permanent quality assurance record. With respect to data and information capability, the licensee's description in their response to the Generic Letter appears accurate and adequate. The P-250 plant process computer is not required by TS and may not be available for sequence of events printout. Because the process computer is an old system, the licensee is planning to upgrade the system in 1986 and is evaluating the need to refurbish the P-250 during the present outage and prior to the 1986 ERFIS installation.

b. Reactor Trip System (RTS) Reliability

The licensee review of past and present Westinghouse recommendations concerning the RTS was completed in July 1983 and reviewed by the inspector. All modifications/recommendations prior to July 1983, appear to have been incorporated in the trip breakers or plant procedures, respectively. Presently, CP&L has the following surveillance procedures:

- MST-010, Monthly Reactor Protection Logic Testing
- MST-011, Monthly Reactor Protection Logic Testing for Zero Power
- MST-012, Annual Test and Inspection of Reactor Trip and Bypass Breakers

MST-010 and -011 test the undervoltage device on all four breakers and the shunt trip feature on the bypass breakers monthly. MST-012 independently tests the shunt and undervoltage trip devices annually on all four breakers. Operability of the manual reactor trip pushbuttons was last tested in May 1983, using Special Procedure-473. The licensee has not yet approved permanent procedures for control of this testing. This is a previously identified inspector followup item (261/83-05-02). Additionally, the licensee indicated in his November 7, 1983 letter that automatic reactor trip system actuation of the shunt trip attachment is scheduled to be incorporated by modification during the current steam generator repair outage. Until this modification is installed and reviewed, this is an inspector followup item. (261/84-03-04)

10. HEPA and Charcoal Filter Testing (61726/61700/92706)

- a. Spent Fuel Building Exhaust Ventilation Filter System, HVE-15A. The inspector reviewed licensee surveillance procedure EST-022, Revision 1 for in-place filter and ventilation fan HVE-15A testing pursuant to TS 4.12 requirements and ANSI N101.1-1972. Previous test results of a uniform mixture test conducted in 1983 were reviewed for acceptability. The inspector observed in-place DOP and freon leak testing on HVE-15A conducted February 15, 1984 and held discussions with responsible licensee personnel. Based on the above reviews and field observations, the inspector had the following findings:
- 1) Data from the uniform mixture test appeared adequate to allow single sample point testing using those injection and sample points delineated in EST-022.
 - 2) During leakage testing of HVE-15A, the inspector conducted a visual inspection of the ventilation fan, housing, and ducting. The inspector identified about a nine inch tear in the flexible connection on the suction of the fan. Based on this finding, the inspector informed the licensee the acceptable leak test results appeared invalid due to the dilution of the downstream sample by outside air entry through the tear. Through further discussions with the licensee, the inspector determined that the licensee's testing program does not include a formalized visual check of system integrity prior to testing. Failure to establish a visual inspection requirements to ensure valid leakage testing is a violation. (261/84-03-05) The licensee took prompt corrective action to develop visual inspection guidance, inspect the system, repair identified system deficiencies, and re-test the system.
 - 3) Procedure EST-022 appeared deficient in several areas. Quality assurance documentation described in paragraph 3.2 does not include certification that the DOP particle detector meets the requirements of ANSI N101.1-1972, paragraph 5, laboratory test conditions and results for methyl iodide oval efficiency testing, certification of the freon generator to ANSI N510-1975, Section 12.4.3 requirements, certification of the gas chromatograph to ANSI N510-1975, Section 12.4.2, and strip charts showing freon leak test results. Document review of the previous test of HVE-15A indicated that methyl iodide quality assurance documentation was attached, and the licensee promptly revised his procedures to require appropriate documents. The licensee's contractor provided such documentation, which showed test equipment met TS and ANSI N510-1975 requirements.

Further testing of HVE-15A was successfully conducted on February 19, 1984, after licensee procedural revisions (Revision 2 to EST-022) and system maintenance.

b. Containment Purge Filter System, HVE-1A and -1B

The inspector reviewed licensee surveillance procedure EST-016, Revision 1 for in-place filter and ventilation fan HVE-1A and -1B testing pursuant to TS 4.12 requirements and ANSI N101.1-1972. On February 14, 1984, the inspector observed uniform mixture testing to verify that the licensee injection and sample points were adequate. As established by EST-016, the uniform mixture test failed. Licensee personnel determined that in order to obtain acceptable results, a sample injection manifold was necessary and the downstream sample had to be taken with HVE-1A running (due to duct configuration). Leakage testing subsequent to the mixing test showed that the HEPA and charcoal filters needed replacing. Based on the reviews, field observations, and discussions with responsible licensee personnel, the inspector had the following findings:

- 1) Failure of the uniform mixture test without any system modification indicates that previous upstream and downstream single sample points did not provide representative samples and is a further example of previously identified violation 261/83-27-01. Establishment of proper test configuration constitutes corrective action for this violation.
- 2) Licensee procedures do not require a formal visual inspection of system integrity prior to the testing. The inspector conducted a visual inspection of HVE-1A and -1B and identified a one inch tear and several smaller leaks on the flexible connection on the suction side of HVE-1A. This is a further example of violation 261/84-03-05.
- 3) The procedural deficiencies identified in paragraph a.3) were also applicable to EST-016 and were corrected by Revision 2 of the procedure.

HEPA and charcoal filter replacement and flexible connection repairs were completed and leakage retests were successfully conducted on February 22, 1984.

c. Control Room Emergency Ventilation Filter System, (HVE-19)

The inspector reviewed completed surveillance test, EST-023, Revision 0, dated December 18, 1983, for in-place filter and ventilation fan HVE-19 testing pursuant to TS 4.15 requirements and ANSI 101.1-1972. A uniform mixture test was conducted which indicated that previous injection and sample points were not adequate. This deficiency is discussed in IE Report 261/83-27. The inspector reviewed the uniform mixture test data and new sample points and identified no deficiencies. The inspector reviewed the quality assurance documents associated with the replacement charcoal absorber installed in October 1983 and system testing. The inspector noted that no visual inspection was documented with the testing and conducted a tour of the

HVE-19 fan and filter area. No equipment integrity or operability deficiencies were identified.

11. Refueling Activities (60710)

- a. On February 18, 1984, the inspector observed licensee activities associated with removal of the reactor vessel head. The inspector reviewed fuel handling procedures FHP-036, Refueling Outage Operations and Activities, and FHP-014, Reactor Vessel Head Lifting Rig. The inspector observed crane hook-up to the lifting device, crane operation and control, health physics preparation and coverage, and staff communications. Containment integrity was established and maintained during the lift. The lift appeared to be conducted in accordance with FHP-036, and no violations or deviations were observed.
- b. The inspector reviewed procedure EST-030, Fuel Handling Equipment Interlock and Operation Test, to verify determined that this excessive suspended weight switch described in updated FSAR Section 9.1.4. Cognizant licensee personnel stated that the switch was tested by a vendor representative and would be documented in his trip report. The as found trip setpoint for this switch (2650 pounds) appeared to meet FSAR requirements. However, the procedure is deficient in that it does not require testing the switch and recording the trip setpoint or acceptance criteria. Until the licensee revises the procedure to include this testing, this is an inspector followup item. (261/84-03-06)
- c. The inspector observed defueling activities on February 24, 1984, including review of appropriate checksheets and defueling procedure. Containment integrity appeared to be maintained, staffing was as required by TS, activities observed were conducted in accordance with procedures, and housekeeping in the refueling area of containment was adequate. Defueling was completed on February 26, 1984.

No violations or deviations were identified.

12. Reactor Vessel Weld Material Sampling (92706)

Due to the pressurized thermal shock (PTS) concerns associated with the Robinson 2 reactor vessel, CP&L has established a multifaceted program to develop technical data for and solutions to the PTS issue. Of major concern is the copper content of welds performed during the fabrication of the beltline region of the reactor vessel. Due to a lack of chemical analysis of the weld metal/flux combination used, CP&L decided to obtain weld samples from reactor vessel head welds which are representative of the weld material in the beltline region. Based on reactor vessel record review, the weld material in the dome plate to torus weld was determined to be representative of the weld material in the lower girth weld. The inspector reviewed Special Procedure-552 for sample removal and surface cavity blending. This procedure called for removing weld samples from the head area at four locations about 90 degrees apart. On February 28, 1984, the inspector

observed the prepared sample areas with the licensee's vendor. Even after etching, there was not a clear distinction between the weld and base metal. The licensee postponed taking samples until the weld metal could be positively identified. On March 2, 1984, after additional polishing and etching with nitric acid solution, weld samples were obtained at angular locations of about 45 and 225 degrees. These samples will be analyzed for copper content, and data provided to the NRC.

13. Licensee Event Report (LER) Followup (92700/92706)

- a. The inspector reviewed the following LERs 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. When licensee identified violations were noted, they were reviewed in accordance with the enforcement policy. The inspector had no further comments.

<u>LER NO.</u>	<u>EVENT</u>
84-001	Reactor Shutdown Bank Trip
83-20	Heatup and Cooldown Curve Error
83-24	Iodine Gas Release

- b. (Closed) LERS 81-31 and 82-09. This item concerns the failure of several motor operated valves (MOV's) and the licensee's programmatic corrective actions to prevent recurrence. CP&L supplemental letters dated February 28 and November 9, 1983, were reviewed. The inspector reviewed the following licensee procedures for valve corrective maintenance (CM) and preventive maintenance (PM):

- CM-111, Limitorque Limit Switch and Torque Switch Maintenance
- CM-113, SMB-000 and 00 Motor Operator Overhaul
- CM-114, SMB-0 through -4 Motor Operator Overhaul
- PM-112, -113, and -423, Limitorque Valve Inspections

and held discussions with the cognizant maintenance engineer. The licensee has developed PM scheduling documents for all MO's, which require use of the above procedures. These procedures and tracking documents include data sheets with valve name plate and field conditions, vendor manual information, and equipment history files for each valve. The licensee utilized detailed technical information from INPO Report 83-037 on maintenance of MOV's. While the program is newly established, performance of PM activities on MOV's has been initiated with work conducted on the pressurizer block valves. Based on the above reviews and discussions, the inspector found that the program appears to be comprehensive and attuned to maintaining operability of safety-related valves. The licensee indicated that a special maintenance team effort was being considered to conduct MOV preventive maintenance during the present outage. Programmatic corrective actions

appear adequate if implemented. A previous vendor identified problem, concerning MOV pinion key shearing due to use of improper material, has also been addressed by the licensee. Motor operators supplied during the period 1980 to 1982 that are installed in the plant (about ten safety-related valves) are having their pinion keys replaced with keys of known material. About half the valves had been completed at the time this inspection was conducted.

Additionally, the inspector conducted a review of MOV testing to ensure ability to perform its safety function against a pressure differential. This review was conducted due to the MOV problems described in IE Notice 84-10 and due to the inspector's knowledge of CP&L difficulty in obtaining valve design and torque data from valve manufacturers. Due to the potential uncertainty as to MOV torque switch setting validity, the inspector reviewed plant operating, general operating, and surveillance procedures in order to determine if MOVs are periodically cycled against a pressure differential which is similar to that experienced under accident conditions. Based on this review, the inspector identified three valves which are not required to be operated against a differential pressure:

CVC-381 Seal Injection Return Line Isolation Valve
 SI-867B Boron Injection Tank Inlet Valve
 SI-870B Boron Injection Tank Outlet Valve

SI-867B and -870B could be tested against safety injection pump discharge pressure by minor revision to surveillance test OST-154. OST-154 presently tests valves SI-867A and -870A which are parallel flowpath isolation valves. CVC-381 may not be testable against a differential pressure due to the potential to damage a charging pump. If so, the licensee should expend additional effort to obtain design data that will validate the present torque switch settings. Until the licensee resolves the concerns of IE Notice 84-10 with respect to the above three valves (or any other valves the licensee may identify), this is an inspector followup item. (261/84-03-07)

14. Outstanding Item Review

(Closed) Inspector Followup Item 261/83-36-03. The inspector reviewed Revision 2 to procedure FHP-005. Paragraph 3.20 incorporates the necessary requirement.

(Closed) Inspector Followup Item 261/83-21-03. The inspector reviewed Revision 3 to Calibration Instrument List MMM-006, Appendix A. The discrepancy has been corrected.