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

Report No. 50-261/83-09

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 site near Hartsville, South Carolina

Inspector: A K Hardin for — 4/25/83
S. Weise — Date Signed

A K Hardin for — 4/25/83
P. Bemis — Date Signed

A K Hardin — 4/25/83
A. K. Hardin — Date Signed

Approved by: A K Hardin for — 4/25/83
P. Bemis, Section Chief, Division of Project and Resident Programs — Date Signed

SUMMARY

Inspection on March 5 - April 10, 1983

Areas Inspected

This routine, announced inspection involved 129 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 Bulletin followup, Salem ATWS issues followup; spent fuel rack modification, training and independent inspection.

Results

Of the 16 areas inspected, no violations or deviations were identified.

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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 Onsite Corporate QA/QC
   *W. MacCready, Radiation Control Supervisor

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

   Other Organizations

   R. Muth, Westinghouse

   *Attended exit interview March 11, 1983.

   +Attended exit interview April 7, 1983.

2. Exit Interview

   The inspection scope and findings were summarized on March 11 and April 7, 1983 with those persons indicated in Paragraph 1 above. The NRC Section Chief was onsite and attended the March 11 exit. The Plant Manager confirmed the commitment dates addressed in paragraphs 14 and 15.d. concerning the supplemental IE Bulletin 80-15 response, and the reactor trip and bypass breaker maintenance controls and instructions, respectively. The Salem ATWS issues findings were discussed and plant management appeared responsive to the need for prompt evaluation and corrective actions.

3. Licensee Action on Previous Inspection Findings

   (Closed) Severity Level IV Violation 261/82-32-02. The inspector reviewed CP&L response letter dated october 29, 1982. During discussions with licensee management, the inspector re-iterated the position that compressor maintenance was treating symptoms and not identifying the root causes. While the response does not appear to reflect an understanding of this concern, licensee corrective actions have responded to the root causes, and compressor reliability has improved. The inspector will continue to monitor the licensee's effectiveness at identifying adverse equipment trends and taking appropriate corrective actions.

(Open) Severity Level IV Violation 261/82-32-03. The inspector reviewed CP&L response letter dated October 29, 1982 and Periodic Test 12.2, Revision 11. While the Periodic Test appears adequate, Standing Order-4 alarm setpoint checks are not addressed as necessary to satisfy Technical Specification Table 4.1-1, Item 19. Until the licensee revises Administrative Instruction-16 to reflect the testing of Standing Order-4, this violation is open.

(Closed) Unresolved Item 261/81-35-03. Based on a Section XI ASME Code subcommittee ruling, personnel performing operational testing of pumps and valves are not required to be qualified as VT-4 visual examiners.

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. Selected containment isolation valves

b. Residual Heat Removal System

c. 'B' Emergency Diesel Generator and associated auxiliaries

d. Component Cooling Water System

6. Technical Specification Compliance

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. During secondary maintenance activities on April 1, 1983, with the reactor critical and main steam isolation valves shut, the inspector determined that defeating of certain auxiliary feedwater (AFW) flow automatic initiation features appeared to conflict with Technical Specification (T.S.) Table 3.4-1. Specifically, the following items from Table 3.4-1 were questioned:

(1) Item 5, Trip of Main Feedwater Pumps Start Motor-Driven Pumps, can be defeated by General Procedure (GP) -5 at about 530°F when subcritical and by GP-6 when below 2% power. Table 3.4-1, including Note 2, implies that this actuation feature is required above 200°F. This apparent Table 3.4.-1 requirement is not consistent with the operating practice of securing main feed pumps when no longer needed during plant shutdown. Failure to defeat the Item 5 feature would result in AFW actuation. Subsequent securing of the AFW pumps by plant operators to prevent overfeeding steam generators would then defeat the Item 1.a. feature of Table 3.4.-1. Defeat of Item 5 is allowed by Westinghouse Standard T.S. below 5% power. Additionally, NRR has been cognizant of the defeat feature through review of TMI Action Item II.E.1.2.

(2) Items 1.a and 1.b., Steam Generator Low Low Level AFW Pump Start, can be defeated by GP-6 when reactor coolant system temperature is below 350°F. Table 3.4-1 implies these actuation features are required above 200°F. This apparent Table 3.4-1 requirement is not consistent with T.S. 3.4.1 in that AFW pumps are not required to be operable below 350°F. T.S. 3.4.1. is consistent with Westinghouse Standard T.S.

Based on the above, the installed defeat features and their procedural controls are consistent with safe plant operation. However, Table 3.4-1 needs licensee review and revision to clarify the above discrepancies. Until T.S. Table 3.4-1 is revised, this is an inspector followup item (261/83-09-01).

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

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.

9. Reactor Trip

On March 22, 1983, the plant tripped from 95% power due to low low level in B steam generator. The trip occurred during Reactor Protection System (RPS) logic testing on train A. Instrument and control technicians had completed the nuclear instrumentation trips portion and were setting up to perform the overtemperature delta T portion. One or more power range detectors apparently sensed a 5% negative rate power change which initiated a turbine runback of 30%. Control rods were in manual for the testing. During the runback, steam dumps tripped open and steam generator levels decreased until the reactor trip setpoint was reached. Safety systems performed as required, and an unusual event was decalred and reported to the NRC. With plant conditions stabilized, the licensee evaluated the event and commenced troubleshooting of the RPS rotary test function selector switch and associated test pushbuttons. The licensee determined that a high resistance in a test pushbutton caused a spike in the associated instrument bus during pushbutton operation. The instrument bus spiking transient caused a power range instrument to initiate the negative rate runback. The sequence of events computer log appears to validate this conclusion. The licensee checked test pushbuttons and replaced those having high resistances. The function selector switches were cleaned and checked, and the plant returned to power operation the following day. The licensee is evaluating the need for a preventive maintenance program to prevent future occurrences of this type, and the inspector will followup on licensee actions during a future inspection. (261/83-09-02)

10. Target Axial Flux Difference Calculation (61711)

The inspector reviewed Periodic Test 1.8, Revision 8, and results from performing this surveillance for January through March, 1983. The inspector verified that updating of the target flux difference conformed to Technical Specifications and that the current values were being utilized by the operations personnel. The inspector observed portions of one startup during the above and noted that target flux difference limitations were observed. No violations or deviations were noted.

11. Steam Generator Tube Lane Blocking Device (92706)

A Part 21 report was issued on September 29, 1981 reporting damage to steam generator (SG) tubes which apparently resulted from improper installation of a tube lane blocking device. The event occured in a Model 51 SG. Although HBR-2 utilizes a Model 44 SG, the Model 44 also uses a Westinghouse designed tube lane blocking device. The potential for tube damage due to improper installation was discussed with licensee representatives. The licensee stated their SG devices were being installed in accordance with the suppliers recommendations. Installation of tube lane blocking devices at HBR-2 is done in accordance with Maintenance Instruction-10 Procedure No. 35, "Removal and Reinstallation of the Sleeve and Split Plate Assembly in the Steam Generator Handholes", Revision 1, date August 1981. The licensee has not experienced any known damage to the steam generators due to the tube lane blocking devices as of the present date. The inspector reviewed the licensees installation procedure and discussed installation practices with both the on-site Westinghouse representative and licensee representatives. The inspector concluded the licensee has exercised adequate engineering and maintenance control in installation of these devices.

12. Procurement, Receipt, and Storage of Equipment and Materials (38700 and 71713)

The followig documents related to Robinson-2 procurement practice were reviewed:

- QAP-203 Procurement Document Review, Rev. 5, dated April 12, 1982
- QAP-204 Nonconformance Control, Rev. 5, dated February 18, 1983
- QAP-205 Receipt Inspection, Rev. 0, dated April 2, 1982
- QAP-103 Indoctrination, Training, Qualification, and Certification of QA/QC personnel, Enclosure 4 - Receipt Inspector Qualifications
- Administrative Procedure - SR-1, Procurement of Plant Material and Equipment
- Administrative Procedure - SR-2, Receiving Plant Material and Equipment
- Administrative Procedure - SR-3,Storing Plant Material and Equipment

Site procurement and related practices were also compared to the requirements of ANSI N45.2.2-1972 and ANSI N45.2.13-1976. Twenty purchase requisitions and accompanying purchase orders were selected for review. The inspector verified that, where applicable, quality requirements were specified and approved vendor were used. Documentation for receipt inspection of the items purchased under the above twenty requisitions and

five nonconformance reports were selected for review. Receipt Inspection records conformed to regulatory requirements and to the licensee's procedure. Items of nonconformance reviewed by the inspector were considered to have been disposed of properly. QA/QC inspector qualification records were examined for those personnel authorized to perform receipt inspections. Of the five sets of records reviewed, all personnel were shown as qualified to perform receipt inspection. A tour was conducted with licensee personnel of the site storage warehouses. Observations were made to ascertain the material and equipment was identified, stored in protected, temperature and humidity controlled areas if required, that storage area access was controlled and that fire protection and housekeeping was adequate.

No violations or deviations were identified in the areas of site related procurement activities.

13. IE Bulletin 82-04 Followup

The inspector reviewed the Bulletin and CP&L responses dated March 3 and 15, 1983. CP&L does not use the Bunker Ramo design. This bulletin is closed.

14. Emergency Notification System (ENS) Power Supply (92706)

On March 18, 1983, the licensee determined that the ENS red phones were not powered from a vital power supply. The phone system had been powered from Unit 2 vital power, but in January 1982, system modifications altered this. The NRC, in January 1982, ordered the telephone company to replace the existing ENS with a new ENS package. Ths ENS was to have been supplied vuital power from the Technical Support Center (TSC). Due to inadequacies in the TSC building, the licensee decided to build a new TSC, and the vital power hookups were never made to the existing interim TSC. The result is that the ENS is presently powered from 115 KV offsite power with no vital backup power. This is inconsistent with the requirements of IE Bulletin 80-15. Additionally, Health Physics Network phones and the Corporate microwave phone system are also affected. The following conditions and licensee actions are pertinent:

a. Until additional power requirements to the ENS can be evaluated and equipment installed, the licensee will rely on eight onsite phone lines which revert to telephone system power on loss of interim TSC power. The Resident Inspector's phones are also powered off the phone system.

b. The licensee is taking immediate action to research power requirements and procure necessary equipment to provide reliable power to the ENS. This power will be provided by Unit 1 vital Power. The licensee should also review the reliability of the normal and backup power supplies.

c. Long-term, the ENS system power will be transferred to the new TSC when completed. The new TSC will provide backup power supplies to maintain system operability.

Until additional power sources are provided for the ENS, as discussed in b. above, this is an inspector followup item (261/83-09-03). The licensee was also informed that a supplemental response to IE Bulletin 80-15 was necessary to document the long and short term corrective actions to satisfy the bulletin requirements. The licensee committed to submit this response by May 1, 1983.

15. Salem ATWS Events Action Items

The inspector conducted this inspection in conjunction with IE Bulletin (IEB) 83-01 requirements and the actions directed by Region II memorandum date March 18, 1983. The inspector performed the following reviews and presented the findings discussed below:

a. The inspector reviewed Periodic Test (PT)-19A/B, Reactor Protection Logic Train Test, Revision 14, conducted on February 26, 1983. Each reactor trip breaker was tripped once using a reactor protection logic actuation signal which operates only the undervoltage device. Breaker response time was not measured, as it was not required by IEB 83-01 or facility Technical Specifications.

b. The inspector reviewed the adequacy of the following surveillance procedures for the reactor trip breakers:

- PT-19A/B, Monthly Reactor Protection Logic Train Testing, Revision 15

- PT-19.2, Zero Power Reactor Protection Logic Train Testing, Revision 6

Additionally, updated FSAR Table 15.0.6-1, Instrument Line Delays for Reactor Trip, and Westinghouse Instruction Booklet 33-850-3C of March 1966, Instructions for Type DB-50 Air Circuit Breakers, were reviewed. The following deficiencies were identified:

(1) Trip breaker response time and instrument line delays are not checked by licensee surveillance procedures. Technical Specifications do not specifically require this testing. Breaker response time acceptance criteria were not available in the Westinghouse Instruction Booklet.

(2) PT-19A/B steps 2.3.2 and 2.3.3 do not specify a time limit on reactor trip bypass breaker use. Only one train of reactor protection is available during surveillance with a bypass breaker in use. Discussions with maintenance personnel indicated that each train of testing nominally takes 45 minutes to 1½ hours. However, technicians indicated that occassionally during maintenance/troubleshooting a bypass breaker has been used for several hours. While Technical Specifications provide no maximum time that a bypass breaker can be used, in the interest of minimizing

such single channel operation, the licensee should revise the procedure to provide a time limit. Until the licensee evaluates and provides a maximum time limit for bypass breaker use, this is an inspector followup item (261/83-09-04).

(3) PT-19A/B and 19.2 each trip each reactor trip breaker twice during logic train testing. While the time from event actuation to reactor trip breaker opening is not specifically monitored, the times are available on the plant computer. While PT-19A/B has the technician check for a computer printout of the test, there is not documented review of the computer printout values against any acceptance criteria, and the printout is not part of the surveillance documentation package. PT-19.2 does not require any computer verification or check. In order to document satisfactory reactor protection system/trip breaker response during monthly testing, the licensee should establish response time acceptance criteria for those surveillance steps which actually trip the breaker open. The computer printout used to establish this response time should be attached to the surveillance. Until the licensee incorporates the above in the surveillance procedures, this is an inspector followup item (261/83-09-05). The inspector's review of the most recent reactor trip indicated the trip breakers both responded in under 100 msec.

The inspector also noted that PT-19A/B and PT-19.2 test only the undervoltage trip device. The licensee is developing an annual preventive maintenance procedure to clean and inspect the breakers and trip components, and test the shunt trip feature. The shunt trip devices on the reactor trip breakers were last independently tested in December, 1982. The need for shunt trip testing was addressed in IE Report 82-35, open item 261/82-35-05. The licensee should develop a surveillance procedure for independent shunt trip testing.

c. The inspector reviewed Engineering Procedure (ENG)-2, Q-List Control Procedure Revision 22 to determine if the scram breakers are Q-List, equipment. ENG-2 does not explicitly state that the breakers are Q-List, although Section II.4.3.C appears to imply this. The inspector also reviewed work requests for the trip and bypass breaker maintenance for November 1982 to February 1983 and reviewed breaker procurement parts. Breakers, for the above period, have been treated as Q-List items, however procurement parts are ordered as non-Q material. Due to the lack of a harsh environment and the off-the-shelf nature of the parts, the ordering of Non-Q parts appears acceptable. The inspector concluded that the breakers have been treated as safety-related equipment, and the licensee agreed to revise ENG-2 to specifically list the reactor trip and bypass breakers. Until ENG-2 is revised, this is an inspector followup item (261/83-09-06).

d. The inspector reviewed the following documents to ensure that the breakers are treated as safety-related equipment:

- Work requests: OP7-01 dated November 29, 1982, TR1-01 dated December 22, 1982, IC-624 dated December 22, 1982, AK8-01 dated December 21, 1982, and FN2-01 dated February 26, 1983.

- Standing Order-9, Operations Work Procedures (OWPs), Revision 9 and associated permanenet OWPs for the reactor protection system.

- Westinghouse Instruction Booklet 33-850-3C of March 1966.

The inspector had the following findings:

(1) The above work requests require that maintenance personnel use Westinhcuse Instruction Booklet (I.B.) 33-850-3C as a guide for breaker inspection and preventive/corrective maintenance. The above I.B. has not been reviewed and approved by plant management for use during maintenance activities. No other approved maintenance instructions have been developed for work on the reactor trip breakers. Review of the work requests indicated that formal controls were not required or documented on use of bypass breakers or post-maintenace testing. Specifically, use of bypass breakers and appropriate precautions were not addressed and testing requirements were either unstated, different among the work requests, or were ambiguously stated (i.e., that applicable surveillance steps should be performed.).

(2) Standing Order-9 does not require the use of an OWP for reactor trip and bypass breaker maintenance. Because Robinson Technical Specifications do not have a reactor trip breaker limiting condition for operation, breaker maintenance does not meet the licensee's OWP major maintenance criteria. This in conjunction with item (1) above result in no formal controls on reactor trip and bypass breaker maintenance.

(3) Preventive maintenance instructions on the reactor trip and bypass breakers do not presently exist, but the licensee is developing such a procedure in response to IEB 83-01.

In response to items (1) and (2), the licensee committed to provide approved OWPs for breaker maintenance control by May 10, 1983, and approved maintenance instructions for the trip and bypass breaker by May 31, 1983. This commitment is an inspector followup item (261/83-09-07).

e. The inspector reviewed licensee procedures and held discussions with operations and training personnel to determine licensee procedural commitments to conduct post-trip review and transient evaluation and to determine if the licensee training program includes post-trip evaluation.

Administrative Instruction (AI)-4.1.12 requires that the cause of the trip be determined and corrected prior to taking the reactor critical and that operations management be notified. A reactor trip form is required to be filled out by the Shift Foreman for subsequent routing to plant management. General Procedure-3B, Reactor Trip Recovery, Revision 12, also requires that the cause of the trip to be determined. Neither procedure specifically requires operations or engineering personnel to evaluate transients to verify that safety-related equipment performed correctly. Based on the inspectors reviews of past trips, evaluations have been conducted with significant licensee management involvement. Selected licensed operator lesson plans were also reviewed in conjunction with discussions with operations personnel. Training is provided on transient analysis both in class and at the simulator. Training is also held on basic plant computer features and operation. Most operators indicated that the licensing process and operations experience provide most transient evaluation tools. Formal training specifically on post-trip evaluation is not conducted.

The inspector also noted that while licensee management is involved with plant trip/transient followup, the Plant Nuclear Safety Committee (PNSC) does not review all plant safety system challenges. PNSC does review safety system challenges that are reportable, have Technical Specification violations, or involve unreviewed safety questions. Until the licensee evaluates the adequacy of PNSC reviews on all safety system challenges, this is an inspector followup item (261/83-09-08).

f. The inspector reviewed plant Emergency Instructions to determine if automatic scram initiation is immediately followed up with a manual scram actuation. Based on the inspectors review, a followup manual scram is only required if the automatic initiation has failed to trip the reactor control rods.

16. Spent Fuel Rack Modification (50095)

The inspector reviewed Special Procedure (SP)-453, Revision 6, for control of underwater diving work with respect to previous findings in IE Report 261/82-41, paragraph 14.b. SP-453, Revision 6, provides new attachments 5 and 6 for the conduct of spent fuel pit surveys and irradiated object inventory, respectively. The attachments appeared to provide adequate instructions and documentation to support safe diving operations.

17. Training (71713)

The inspector attended several training lectures for licensed personnel to verify that lesson plan objectives were met and that training was in accordance with the approved operator requalification program. Additionally, the inspector held discussions with a sampling of various plant personnel to verify the extent and adequacy of general employee training and craft technical training. No violations or deveiations were noted.

18. Outstanding Items Review

(Closed) Inspector Followup Item 261/83-05-06. The inspector reviewed Revision 7 to Periodic Test 5.8. The identified deficiencies have been corrected and the surveillance test was successfully performed on March 22, 1983.

(Closed) Inspector Followup Item 261/82-20-08. The licensee has revised the appropriate Curve Book curves to incorporate the 40°F subcooling curve with the Appendix G operating curves.