



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 REGION II
 101 MARIETTA STREET, N.W.
 ATLANTA, GEORGIA 30323

Report No.: 50-261/90-19

Licensee: Carolina Power and Light Company
 P. O. Box 1551
 Raleigh, NC 27602

Docket No.: 50-261

License No.: DPR-23

Facility Name: H. B. Robinson

Inspection Conducted: August 20-24, 1990

Inspector: J. J. Lenahan *J. J. Lenahan* 9/11/90
 Date Signed

Approved by: G. A. Beliste *G. A. Beliste* 9/11/90
 Date Signed
 G. A. Beliste, Chief
 Test Programs Section
 Engineering Branch
 Division of Reactor Safety

SUMMARY

Scope:

This routine, unannounced inspection was conducted in the areas of licensee actions on previous inspection findings.

Results:

In the areas inspected, violations or deviations were not identified.

The licensee was responsive to NRC initiatives, although their responses were often delayed. Resolution of technical concerns were conservative and technically adequate.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- S. Billings, Technical Aide, Regulatory Compliance
- W. Farmer, Systems Engineer
- *E. Harris, Manager, Onsite Nuclear Safety
- J. McInnis, Technical Support
- *J. Kloosterman, Director, Regulatory Compliance
- *A. Jones, Civil Engineer, Onsite Nuclear Engineering Department
- *R. Morgan, Plant General Manager

NRC Resident Inspectors

- *L. Garner, Senior Resident Inspector
- *K. Jury, Resident Inspector

*Attended exit interview

2. Action on Previous Inspection Findings (92701)

- a. (Closed) Inspector Followup Item (IFI) 88-24-03, Diesel Load Study Impact from Service Water Pumps Runout Condition and HVH Fans High Air Flow Condition.

Surveillance tests performed on the containment air recirculation (HVH) fans in April 1989 showed that fans HVH 1 and HVH 4 had airflows 15-20 percent higher than required by design. While this was conservative with respect to heat removal, a rough calculation performed by the licensee indicated that higher power was required to obtain the higher air flows. The higher power requirements would place additional load requirements on the emergency diesel generators and emergency buses. The licensee performed a review of the fan test results and the emergency power requirements in Interdiscipline Review Request (IRR) Mechanical BOP-491. The IRR showed that the rough calculation was in error. The fans are designed and selected for use in service because they have a peak in horsepower requirement versus air flow curve which cannot be exceeded for any given air flow and revolutions per minute (RPM). The fan is directly coupled to a constant RPM motor which has a maximum horsepower requirement of 264 HP at the containment design air density value, regardless of what the fan air flow rate is. Therefore, since there is no increase in the horsepower required by the fans, there is no increase in the load to the diesel generator.

Review of test data presented in Sargent and Lundy Report SL-7176, Robinson Unit 2 Service Water System Performance Test, dated July 18,

1989, by licensee electrical engineers disclosed that as a result of service water pump modifications, there is an increase in the horsepower requirements on the pump motors and therefore, on the diesel generators. This is documented in calculation number RNP E-7.004. The increase is being considered in the new diesel generator analysis and the offsite power analysis.

- b. (Closed) IFI 261/88-24-04, Incorporation of Manufacture's Operating Limitations on Service Water System Pumps.

This concern involved the potential for the service water pumps to be operated in the zone of hydraulic instability which could possibly damage the pumps. This could occur at pump flow less than 5600 gpm and pressure exceeding 55 psig. The licensee revised the hot operations log so that service water header pressure is maintained in the 40 to 50 psig range, which is within acceptable limits for pump operation. The service water pressures in the headers are monitored on a hourly basis.

- c. (Closed) Unresolved Item 261/88-24-05, Service Water Flow Analysis to Show Adequacy of Flows to Safety-Related Components.

The inspector examined Sargent and Lundy Report SL-7176. This report summarizes the results of service water system tests which were conducted in accordance with Special Procedure SP-814, Revision 1, to determine flows to components during various modes of operation. One significant finding during the initial series of service water system flow tests was that the service water (SW) pumps were operating at more that ten percent below their rated capability. This was the result of an inadequate maintenance procedure which specified an incorrect method for adjusting the pump shafts, causing the pump to operate in a degraded mode for several years. This problem was identified as Violation 261/89-02-01, Inadequate Corrective Maintenance Procedure, Service Water Pump Overhaul. The procedure was corrected, the pumps were properly adjusted, and further tests were conducted to determine flows in the SW system. Portions of the tests were witnessed by NRC inspectors during inspections documented in NRC Inspection Report numbers 50-261/88-38, 89-02, and 89-03. After adjusting the pump impeller clearance, subsequent performance of SP-814 indicated that flow to certain components was below design values. Examples of those include: 564 to 591 gpm flow to emergency diesel generator heat exchangers versus design value of 600 gpm, 36 to 39 flow to HVH 1-4 motor coolers versus 50 gpm design flow, and 6 gpm flow to steam-driven auxiliary feedwater pump coolers, versus design flow of 15 gpm. The licensee evaluated these reduced flows in Engineering Evaluations 89-19 and 89-22. Review of the engineering evaluations disclosed that the flow results were either found to be acceptable, or corrective actions were completed to increase the flow values to within acceptable limits. Where appropriate, the licensee amended FSAR Table 9.2.1-2 to show changes in design flow values based as the SP 814 test results.

- d. (Closed) Unresolved Item 261/88-30-04: Review Special Report and Related Corrective Action Regarding Unreinforced Masonry Block Walls.

During modifications performed in November 1988 and April 1990, the licensee discovered that blockouts in reinforced concrete walls contained unreinforced masonry block or brick. Prior to this time, the licensee assumed that the blockouts were grout filled because a thin veneer hid the existence of the masonry materials. The licensee initiated Significant Condition Report (SCR) 90-030 to document and evaluate the problem. The licensee has identified more than 400 penetrations in reinforced concrete walls in safety-related structures at the site. The location of the blockouts is shown on the original reinforced concrete construction drawings. Repairs have been completed in some of the questionable areas. This process normally involved removal of the masonry materials and filling the openings with grout. Core borings were performed in some of the blockouts to determine the quality of masonry block construction. The inspector examined cores obtained from three blockouts. The inspector noted that voids were present in some sections of the cores. Since the quality of workmanship is unknown in the masonry blockouts, and it is unknown if there is a solid seven inches of block/brick/mortar to meet Appendix R requirements for rating the blockouts as three hour fire barriers, the licensee will perform a detailed inspection of all blockouts. The licensee has prepared Project No. RET-R-90-069 to walkdown all blockouts and determine their "as built" configuration. This will include performance of core boring in some of the masonry filled blockouts to determine the quality of workmanship and possible testing to determine if the "as constructed" materials in the blockouts meet requirements for a three-hour fire rating. Any attachments to the blockouts will be evaluated and relocated as required to meet design requirements. The blockouts will also be evaluated to determine if they conform to IEB 80-11, Masonry Wall Design, requirements. The licensee has assembled an eight man inspection team to start the walkdown in September during the upcoming refueling outage. Repairs to the blockouts will be determined on a case-by-case basis. NRC Region II will perform a followup inspection on the results of the licensee's walkdown inspections and evaluations. This was identified to the licensee as IFI 261/90-19-01, Evaluate Licensee's Inspection Program for Openings in Reinforced Concrete Walls with Respect to Appendix R and IEB 80-11 Requirements.

3. Exit Interview

The inspection scope and results were summarized on August 24, 1990, with those persons indicated in paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection results listed below. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

IFI 261/90-19-01, Evaluate Licensee's Inspection Program for Opening in Reinforced Concrete Wall with Respect to Appendix R and IEB 80-11 Requirements.