



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

Report No. 50-261/82-06

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

Facility Name: H. B. Robinson Unit 2

Docket No. 50-261

License No. DPR-23

Inspection at H. B. Robinson Unit 2 site near Hartsville, SC

Inspector: B. R. Crowley for 2/24/82
 W. P. Ang Date Signed

Approved by: A. R. Herdt 9/95/82
 for A. R. Herdt, Section Chief Date Signed
 Engineering Inspection Branch
 Engineering and Technical Inspection Division

SUMMARY

Inspection on February 9-12, 1982

Areas Inspected

This routine, unannounced inspection involved 24 inspector-hours on site in the areas of seismic analysis for as-built safety related piping systems (IEB 79-14) and pipe support baseplate designs using concrete expansion anchors (IEB 79-02).

Results

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

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *R. Starkey, Plant General Manager
- *J. Curley, Technical Support Manager
- *M. Page, Engineering Supervisor
- *W. Farmer, Engineer
- *C. Wright, Specialist Regulatory Compliance

Other licensee employees contacted included two engineers.

Other Organizations

- B. Dietz, Supervising Engineer, Piping Stress Analysis, EBASCO
- N. Ghassabian, Structural Engineer, EBASCO

NRC Resident Inspector

- *S. Weise

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on February 12, 1982, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed unresolved item 82-06-01, "Unresolved IEB 79-02 and IEB 79-14 Questions" - paragraphs 5 and 6.

3. Licensee Action on Previous Inspection Findings

- a. (Open) Unresolved Item 79-25-01, OBE/DBE Design Comparison - discussed in paragraph 5.
- b. (Open) Violation 79-25-03, Failure to identify all pipe supports and restraints as specified in IEB 79-14 - discussed in paragraph 5.
- c. (Open) Unresolved Item 80-24-03, Cross reference check on new loads of reanalyzed safety related piping systems - discussed in paragraph 6.

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 paragraphs 5 and 6.

5. Seismic Analysis for As-Built Safety Related Piping Systems (IEB 79-14)

On March 31, 1981, the licensee submitted a final response to IE Bulletin 79-14. A follow-on inspection to those documented on NRC RII inspection reports 50-261/79-25 and 80-24 was performed to verify licensee compliance with IEB 79-14 requirements and licensee commitments. Inspection records, piping stress analysis and pipe support/restraint analysis for the following isometrics were sampled and inspected:

AC-3	-	(Component Cooling System)
SI-10, SI-20	-	(Safety Injection System)
CH-7	-	(Chemical and Volume Control System)
MS-2	-	(Main Steam System)
RC-3	-	(Reactor Cooling System)

This inspection revealed that the IEB 79-14 reanalysis was performed by a static analysis method as described in the FSAR. This method utilized a static OBE analysis and converted the loads to DBE. The licensee stated that the conservatism of this method was confirmed by a comparative dynamic analysis performed on a stress problem. However, this analysis was not available during the inspection. Only "seismic" pipe/support restraints whose OBE loads increased by 10% or more were reanalyzed for the converted DBE loads. The pipe supports/restraints whose OBE loads did not increase by 10% were not evaluated for the DBE loads. The adequacy of this reanalysis was questioned in that the resonance evaluation factor, K, used for the OBE/DBE conversion could not be adequately explained or reproduced. Furthermore, the adequacy of pipe supports/restraints that were not reanalyzed, and whose DBE loads could have increased significantly even if the OBE load increase was less than 10% could not be verified. This subject was originally questioned and identified as unresolved item 79-25-01. Pending inspection of the comparative dynamic analysis previously performed and resolution of the items noted above, the unresolved item shall remain open.

During the inspection it was noted that IEB 79-14 walkdown discrepancies were not always included in the reanalysis. The evaluation for significance of the effect of the discrepancies on the analysis was not available during the inspection. Records for isometric RC-3 showed that the reanalysis did not include all pipe supports/restraints identified by the walkdown. An evaluation of the effect on the analysis of the supports/restraints that were not included was not available. A dimensional discrepancy between the analysis and the walkdown for Points 143 to 145 was also noted. The evaluation for its effect on the analysis was not available. Violation 79-25-03 identified the condition regarding pipe supports/restraints not being identified. The violation shall remain open pending inspection of A/E evaluation for the conditions noted above or inclusion of the information in the analysis.

Walkdown documentation for isometrics RC-3, MS-2 and SI-20 lacked sufficient data to confirm valve weights and centers of gravity used in their respective analysis. The licensee stated that in many instances confirmation that the installed valve data was what was used in the analysis was verified by checking the "valve list". QA documentation that the valve list was verified to correctly list the installed valves was not available during the inspection. Pending confirmation that the valve weights and centers of gravity used on all the piping analysis were verified by actual inspection and corresponding vendor information, or by research of QA documentation that verifies the valve actually installed is correctly listed on the valve list, this item shall be identified as unresolved item 82-06-01, IEB 79-14 and 79-02 questions.

The reanalysis of piping for isometric RC-3 resulting from IEB 79-14 walkdown discrepancies utilized pipe movements generated by the NSSS. The licensee's A/E stated that this information was not checked with the NSSS to verify if they were still correct. Generically, it was further stated that nozzle, anchor, or other applicable loads generated by the NSSS were not re-verified with the NSSS. Conversely, the A/E did not provide any applicable new loads or movements that resulted from the IEB 79-14 reanalysis to the NSSS. Pending verification from the NSSS that data used by the A/E, that was obtained from the NSSS for the original analysis, is still correct, and submittal by the A/E of any applicable new loads or movements to the NSSS for any required reanalysis of NSSS cognizant items, this shall be identified as another question for unresolved item 82-06-01.

The following modification packages were reviewed to verify compliance with IEB 79-14 requirements and licensee commitments:

- R-1 483 SIS and CVCS support mods
- 612 Mods for pressurizer spray valves
- R-2 492 As-Built safety related piping analysis
- R-0 466 SI pipe supports
- R-3 362 Pipe support mods

Modification 612 was still preliminary. Procedural reviews and plant safety committee reviews had not yet been performed. However, the piping analysis had been completed and was reviewed for information only. The licensee was informed that the piping analysis did not conform with the FSAR commitments in that the OBE/DBE conversion factor used was 2 in lieu of the FSAR required factor. The licensee stated that the modification package was preliminary and this item would have been identified during the review process. The licensee was reminded that IEB 79-14 requirement applied to all future modifications.

Pending resolution of all outstanding NRC issues, IE Bulletin 79-14 shall remain open. No violations or deviations were identified.

6. Pipe Support Baseplate Designs Using Concrete Expansion Anchors (IEB 79-02)

A follow-on inspection to those documented on NRC RII inspection reports 50-261/79-25 and 80-24 was performed to verify licensee compliance with IEB 79-02 requirements and licensee commitments.

Calculations for reanalyzed pipe supports/restraints on isometric RC-3 were reviewed. It was noted that in one case adequate walkdown documentation was not available for the reanalysis. It was further noted that concrete expansion anchor capacities were factored for concrete strength and age. However, documentation of actual test results confirming the factors were not available on site. Pending resolution of the above noted conditions, this shall be identified as additional questions for unresolved item 82-06-01.

Unresolved item 80-24-03 identified a lack of cross checking of IEB 79-02 reanalysis with new loads generated by IEB 79-14 reanalysis. The licensee indicated that this was performed but documentation was not available onsite. Pending availability of this documentation, the unresolved item shall remain open.

Pending resolution of all outstanding NRC issues, IE Bulletin 79-02 shall remain open. No violations or deviations were identified.