



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

Report No.: 50-400/86-06

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

Docket No.: 50-400

License No.: CPPR-158

Facility Name: Harris Unit 1

Inspection Conducted: January 28-31, 1986

Inspector: _____

J. J. Lenahan

2/26/86

Date Signed

Approved by: _____

F. Jape, Section Chief
Engineering Branch
Division of Reactor Safety

Frank Jape

2/26/86

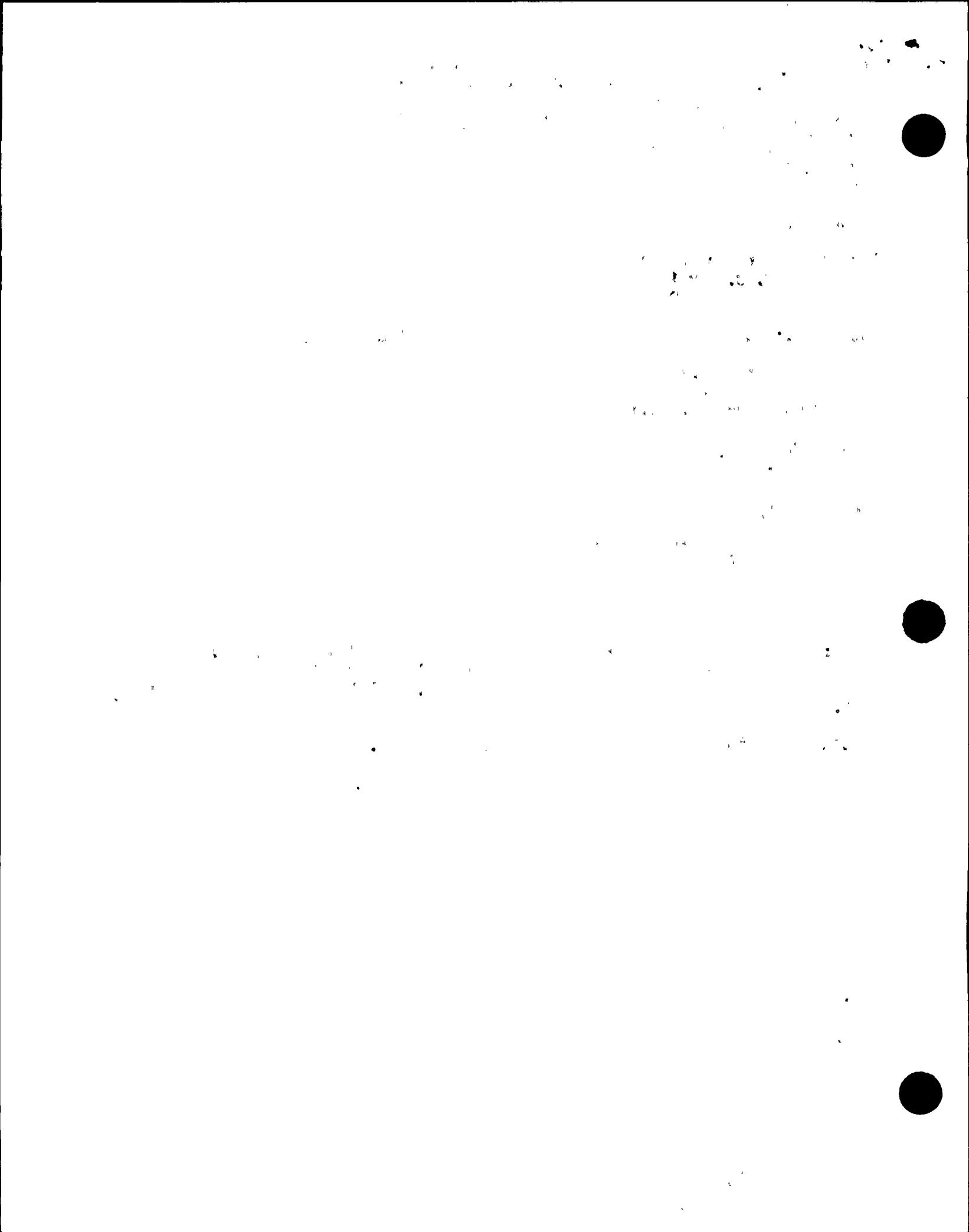
Date Signed

SUMMARY

Scope: This routine, unannounced inspection involved 26 inspector-hours on site in the areas of piping thermal expansion, IE Bulletin 80-11, design analysis of buried piping, and procedures for the containment building structural integrity test.

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *N. J. Chiangi, Manager, QA/QC, Harris
- *G. L. Forehand, Site Director, QA/QC Construction
- P. M. Inman, Design Specialist, Start-up
- *R. S. Lamb, Senior Engineer, Start-up
- *D. L. Tibbitts, Director, Regulatory Compliance
- *M. J. Thompson, Manager, Engineering Management
- L. Williams, Supervisory Engineer, HPES

Other licensee employees contacted included six design engineers and three civil QC inspectors.

NRC Resident Inspectors

- *S. P. Burris, Resident Inspector
- *G. F. Maxwell, Senior Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on January 31, 1986, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee.

Proprietary material was reviewed during this inspection, but is not included in this report.

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Analysis of Buried Piping (92706)

The inspector examined EBASCO calculations for buried piping, specifically, the fuel oil and service water lines. Licensee design engineers were in the process of reviewing and updating these calculations. The calculations were prepared in accordance with criteria stated in EBASCO Stress Analysis Design Procedure No. 3, Analysis of Buried Piping.

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Within the areas inspected, no deviations or violations were identified.

6. Thermal Expansion Test (70370)

The inspector examined the thermal expansion test procedures, observed a portion of the thermal expansion test, and reviewed test data. Acceptance criteria utilized by the inspector appear in Final Safety Analysis Report (FSAR) Sections 3.9.2.1 and 14.2.12.1.44.

a. Review of Thermal Expansion Test Procedures

The inspector examined test procedure number 1-2005-P-07, Piping System Thermal Expansion Test Hot Functional. This procedure covers testing of safety-related piping systems whose normal operating temperature exceeds 250°F. The inspector verified test prerequisites were specified, test instructions and objectives were clearly stated, and acceptance criteria were specified. The test acceptance criteria requires that snubber movement be within design limits, that spring supports remain within the scale travel range, that measured thermal displacements of piping be within tolerances, and that piping and components not contact any interferences which may restrict piping thermal expansion.

The inspector also examined procedure number 1-2005-P-08, RCS Thermal Expansion and Shim Gap Measurement. This procedure provides instructions for obtaining measurements of the reactor coolant loop support gaps during plant heatup and after cool down. The purpose of this procedure is to provide data to size the support shims and to verify the expected thermal displacement behavior of the reactor coolant loop piping and major NSSS components.

b. Observation of Thermal Expansion Test

The inspector walked down portions of the reactor coolant, safety injection, steam generator blowdown, and main steam systems. During the walkdown, the reactor coolant system was operating at the 557°F temperature plateau. The inspector verified that temporary hangers had been removed, and that temporary scaffolding and ladders and permanent plant equipment (HVAC ducts, cable tray supports, structural steel supports, etc.) was not restricting piping thermal movement. The inspector examined spring cans and snubbers and verified that they were operating within their design limits.

c. Review of Test Results

During the walkdown inspections discussed above, the inspector recorded snubber scale reading and compared these measurements to those recorded by licensee personnel on the test data sheets for the following snubbers:

1950-1951

1952-1953

1954-1955

1956-1957

1958-1959

1960-1961

1962-1963

1964-1965

1966-1967

1968-1969

- (1) Steam generator blowdown system, Loop B, snubber numbers BD-H-80-353, -362, -364, -366, -428, -429, -587, -589 and SP-H-862.
- (2) Reactor coolant piping on pressurizer surge line, snubber numbers RC-H-2, -4, -5, -6, -67 through -70, -75, -77 and -80.
- (3) Safety injection system, snubber numbers SI-H-185, -187, -188, -190, -191, 983 and -1036.

The inspector also reviewed data recorded for snubber movements on the main steam, chemical and volume control, and residual heat removal systems. The inspector examined the thermal expansion problem log (Data Sheet 10.2) and reviewed corrective actions taken to correct identified problems.

Within the areas inspected, no violations or deviations were identified.

7. Containment Structural Integrity Test (63050)

The inspector examined the procedures listed below which control activities related to the structural integrity test of the concrete containment structure. Acceptance criteria utilized by the inspector appear in FSAR Sections 3.8.1.7.1 and 14.2.12.1.42 and USNRC Regulatory Guide (RG) 1.18 Procedures examined were as follows:

- a. EBASCO Specification CAR-SH-CH-22, Structural Integrity Test of Concrete Containment Structure Instrumentation, Deflection Measurement, Crack Pattern Mapping, Strain Measurements, Temperature Measurements and Test Data Analysis.
- b. CP&L Procedure WP-59, Structural Integrity Test Procedure.

These procedures specify pre-test requirements, the test method, test pressure (1.15 times design pressure per RG 1.18), measurement of concrete deflections (including mapping of crack patterns), and analysis of test data. The procedures meet or exceed NRC requirements.

Within the areas inspected, no violations or deviations were identified.

8. (Open) IE Bulletin 80-11, Masonry Wall Design

During the Independent Design Assessment Inspection conducted by the NRC Office of Inspection and Enforcement from December 1984 through February 1985, a deficiency (number D.4.5-6) was identified pertaining to construction of the masonry walls around auxiliary building stairway A-4 from elevation 236 to 261. The I&E inspectors noted, during the inspection, that the masonry wall details did not comply with requirements shown on FCR-AS-1045. The deficiency was closed out by I&E inspectors during an inspection conducted July 22-24, 1985. These walls are designated as wall numbers 1 RA 236 BW 007, 008, and 009.

The walls were initially constructed during the week of June 28, 1980 by the craft without an approved work procedure and thus no QC inspections were conducted. This problem was identified by licensee QC inspectors on November 6, 1981. Discrepancy Report (DR) No. C-1348 was written to document and disposition this problem. The DR was forwarded to EBASCO engineers for "use-as-is" resolution. However, subsequent to when the wall was constructed, (June 1980) it had been designated as a seismic wall and thus was redesigned by EBASCO engineers. In order to upgrade the wall to meet the new design criteria, EBASCO issued Field Change Request (FCR) AS-1045, which required addition of external steel supports to the existing wall. The licensee evaluated the FCR and elected to remove the existing walls and rebuild it in accordance with the revised design requirements shown on the construction drawings. The wall was removed in 1982 and reconstructed in October and November 1983. The upper three courses of block were not installed until April 1985, when details on the fire barrier at the wall-ceiling intersection were resolved. The inspector reviewed the QC inspection records documenting installation of rebar, and placement of block and gout. The inspector reviewed FCR-C-4548 and C-4596 and Permanent Waiver AS-7926 which modified design requirements for the new walls. FCR AS-1045 was voided and cancelled by the licensee on April 16, 1985, since it was no longer applicable. Discussions with licensee engineers disclosed that no other masonry walls were affected by similar problems.

The inspector reviewed QC inspection records documenting inspection of the construction of four masonry shielding walls in the containment building, designated wall numbers 1 CB 221 BW 001 and 1 CB 236 BW 002, 003, and 004. The inspector also reviewed nonconformance reports (NCR), documenting problems and correction of problems identified during erection of safety-related masonry walls in various Category 1 structures. NCRs reviewed were as follows: NCR 84-0758, -1207, -1906, 1909, -1914, -2049, -2278 and 2403.

IE Bulletin 80-11 will remain open pending further review by NRC Region II of completed masonry wall construction details and QC records.

Within the areas inspected, no violations or deviations were identified.

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