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

Report No.: 50-400/84-19

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

Docket No.: 50-400

License No.: CPPR-158

Facility Name: Harris Unit 1

Inspection Dates: July 10-13, 1984

Inspection at Harris site near Raleigh, North Carolina

Inspector: W. P. Kleinsorge — July 20, 1984 (Date Signed)

Accompanying Personnel: G. A. Hallstrom

Approved by: J. J. Blake, Section Chief, Engineering Branch, Division of Reactor Safety — 7/20/84 (Date Signed)

SUMMARY

Scope: This routine unannounced inspection involved 66 inspector-hours on site in the areas of licensee action on previous enforcement matters, construction progress, reactor coolant pressure boundary piping, safety-related piping, visual examination (57050B), safety-related components, inspector followup items, and IE Bulletins (IEBs).

Results: No violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*R. M. Parsons, Project General Manager
*P. Foscolo, Assistant Project General Manager
*N. J. Chiangi, Manager QA/QC Harris Plant
*G. L. Forehand, Director of QA/QC
*D. A. McGaw, Superintendent, QA
*R. Hanford, Resident Engineer - Met/Welding
C. H. Griffin, Senior Engineer Met/Weld
*D. C. Whitehead, QA Supervisor
*J. F. Nevill, Principal Engineer

Other licensee employees contacted included construction craftsmen, technicians, and office personnel.

Other Organization

L. M. Petrick, Chief Materials Engineer - Ebasco Services Inc.

NRC Resident Inspectors

*G. F. Maxwell
R. L. Prevatte

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on July 13, 1984, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings listed below. No dissenting comments were received from the licensee.

(Open) Unresolved Item 400/84-19-01 "Adequacy of AWS D1.1 Visual Inspection Procedure" - paragraph 8.

(Open) Inspector Followup Item 400/84-19-02 "Unavailable NDE Reports" - paragraph 6.b.

3. Licensee Action on Previous Enforcement Matters

(Closed) Unresolved Item 50-400/84-02-03: "QA Involvement in Pipe Support Reinspection."

This item concerned QA involvement, with the pipe support installation and inspection program, which did not appear to be commensurate with problems reported in that area. The licensee, on February 17, 1984, started weekly surveillances of QA and CI inspections relative to hanger

inspection activities; these surveillances included reinspection of hangers. The inspector reviewed the majority of the surveillance reports generated. This matter is considered closed.

4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve noncompliance or deviations. New unresolved items identified during this inspection are discussed in paragraph 8.

5. Independent Inspection Effort

Construction Progress

The inspector conducted a general inspection of the reactor power block to observe construction progress and construction activities such as welding, material handling and control, housekeeping and storage.

Within the areas examined no violations or deviations were identified.

6. Reactor Coolant Pressure Boundary Piping

The inspector observed work activities and reviewed records for non-welding and welding work activities for reactor coolant pressure boundary (RCPB) piping. The applicable code for the installation of RCPB piping is the ASME B&PV Code, Section III, Subsection NB, 1974 Edition through the winter 1976 addenda.

a. Observation of Non-Welding Activities (49054B)

Observation of specific work activities was conducted to determine conformance, where applicable, with the following: inspection and/or work procedures, record keeping, installation specifications or plans, specified materials, specified NDE, calibration and use of proper test equipment and qualified inspection and NDE personnel.

The following piping "runs" were inspected for compliance with installation specifications or plans:

Weld No.		Drawing
From	To	
FW 456	FW 464, FW 468 & FW 460	1-RC-149
FW 341	FW 344	1-RC-130
FW 339	FW 340 & FW 344	1-RC-129

b. Review of Non-welding Quality Records (49056B)

The inspector selected various reactor coolant pressure boundary piping components (e.g., pipe, fittings and welded-in components) for review of pertinent records to determine conformance with procurement, storage and installation specifications and QA/QC site procedures.

Records of the following items were selected for review to ascertain whether they (records) were in conformance with applicable requirements relative to the following areas: material test reports/certifications; vendor supplied NDE reports; NSSS quality releases; site receipt inspection; storage; installation; vendor nonconformance reports.

Item	Heat/Control No.	System
3" sched 160 Pipe	04840	Reactor Coolant
3" sched 160 Tee	04488/11278-7	Reactor Coolant
3" x 2" sched 160 Conc Swg. fitting	659AN/32482-1	Reactor Coolant
3" sched 160 pipe	04840/72079-7	Reactor Coolant
3" sched 160 pipe	M2760/61179-1	Reactor Coolant
3" sched 160-90° ell	JMJK/52080-20	Reactor Coolant
3" sched 160-90° ell	JMJK/12479-11	Reactor Coolant
3" sched 160-90° ell	JMJK/52180-9	Reactor Coolant
3" sched 160-90° ell	RW750180/92779-1	Reactor Coolant
6" sched 160-90° ell	E0324/5581-18	Reactor Coolant
6"x6"x3" sched 160 Reducing Tee	E0324/5581-1	Reactor Coolant
6"x6"x3" sched 160 Reducing Tec	E0277/5481-2	Reactor Coolant
6"x3" corcentric Reducer	E0218/5481-1	Reactor Coolant
6" sched 160 pipe	M2786/120980-8	Reactor Coolant
6" sched 160 pipe	M2945/120980-4	Reactor Coolant
6" sched 160-90° ell	JKJD/5880-5	Reactor Coolant
6" sched 160-90° ell	JKJD/5880-6	Reactor Coolant
6" x 3/4" sched 160 weld-o-let	370AN	Reactor Coolant
6" sched 160 pipe	M2945/120980-12	Reactor Coolant
6" sched 160 pipe	M2813/121080-6	Reactor Coolant
6" sched 160-90° ell	E0324/5581-17	Reactor Coolant
6" sched 160-90° ell	E0324/5581-20	Reactor Coolant
6" sched 160-90° ell	E0324/5581-1	Reactor Coolant
2" - 6000# socket weld coupling	27BAN	Reactor Coolant
2" sched 160 pipe	07118	Reactor Coolant
2" sched 160 pipe	05682	Reactor Coolant
2" sched 160-90° ell	JNYM	Reactor Coolant

Spool Pieces

1-RC-129-1	Reactor Coolant
1-RC-149-3	Reactor Coolant
1-RC-149-2	Reactor Coolant
1-RC-149-1	Reactor Coolant
1-RC-130-1	Reactor Coolant
1-RC-130-2	Reactor Coolant

With regard to the examination above, the inspector was unable to review the following final acceptance NDE Reports:

Method	Weld Joint ID
RT & PT	1-CS-414-FW-3074
PT	1-RC-149-FW-459
RT	1-RC-149-FW-467
PT	1-RC-129-FW-339
RT	1-RC-129-FW-340

The licensee indicated the above reports would be made available for a future inspection. This matter will be identified as inspector followup item 400/84-19-02: "Unavailable NDE Reports."

c. Welding Activities

(1) Visual Inspection of Welds (55175B)

The inspector visually examined completed welds as described below to determine whether applicable code and procedure requirements were being met.

(a) The below listed welds were examined relative to the following: location, length, size and shape; weld surface finish and appearance, transitions between different wall thickness; weld reinforcement--height and appearance; joint configurations on permanent attachments and structural supports; removal of temporary attachment, arc strikes and weld spatter; finish-grinding or machining of weld surface, surface finish and absence of wall thinning; surface defects, cracks, laps, lack of penetration, lack of fusion, porosity, slag, oxide film and undercut exceeding prescribed limits.

Weld Joint
1-RC-149-FW-457
1-RC-149-FW-458
1-RC-149-FW-463
1-RC-149-FW-464
1-RC-149-FW-467
1-RC-149-FW-468
1-RC-149-FW-460
1-RC-149-FW-459
1-RC-130-FW-341
1-RC-130-FW-342
1-RC-130-FW-343
1-RC-130-FW-344
1-RC-129-FW-339
1-RC-129-FW-340

(b) Quality records for the above welds were examined relative to the following: records covering visual and dimensional inspections indicate that the specified inspections were completed; the records reflect adequate weld quality; history records are adequate.

(2) Welding Procedure Specifications (55171B)

The following Welding Procedure Specifications (WPS) were selected for review and comparison with the ASME Code:

WPS	Process*	PQR
8BU10, Rev. 1	GTAW	101
8B2, Rev. 13	GTAW	6, 6A, & 6B

*GTAW-Gas Tungsten Arc Welding

The above WPSs and their supporting Procedure Qualification Records (PQRs) were reviewed to ascertain whether essential, supplementary and/or nonessential variables including thermal treatment were consistent with code requirements; whether the WPSs were properly qualified and their supporting PQRs were accurate and retrievable; whether all required mechanical tests had been performed and the results met the minimum requirements; whether the PQRs had been reviewed and certified by appropriate personnel and; whether any revisions and/or changes to nonessential variables were noted. WPSs are qualified in accordance with ASME Section IX, the latest edition and addenda at the time of qualification.

(3) Special Welding Activities (55178)

The inspector examined special welding activities including weld repair as described below to determine whether applicable code and procedure requirements were being met.

Records of the following special application welds were examined relative to the following: welding procedure used; welding procedure includes all pertinent requirements; welding procedure qualification; welder performance qualification; ANI witnesses performance qualification; base and filler material as specified; base material repairs documents; NDE performed, and records complete.

Incore Instrumentation Tube Welds

PC No.
CQL-50-A-9
CQL-36-B-8
CQL-40-B-10
CQL-44-C-12

Control Rod Drive Seal Welds

Field Weld No.
FW-36
FW-55
FW-60

Within the areas examined, no violations or deviations were noted.

7. Safety-Related Piping

The inspector observed welding activities for safety-related piping as described below to determine whether applicable code and procedures requirements were being met. The applicable code for safety-related piping is the ASME B&PV Code, Section III, Subsections NC and ND, 1974 edition with addenda through winter 1976. Non nuclear safety-related high energy piping identified seismic category 1 is fabricated to ANSI B31.1 (73S73) and post weld heat treated when required to ANSI B31.1 (77W77). The inspector observed in-process welding activities of field welds as described below to determine whether applicable code and procedure requirements were being met.

Weld Heat Treatment (55186B)

Stress Relief

The inspector examined the cumulative stress-relief records for selected pipe welds listed below to determine whether the total time at temperature did not exceed that permitted by applicable code requirements based on the welding procedure qualification record:

Weld No.	System
1-MS-72-FW-295	Main Steam
1-FW-135-FW-497	Feedwater

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

8. Visual Examination (57050B)

Procedure Review

The inspector reviewed CP&L procedure CAR-2165-A-003, Rev. 5, to ascertain whether it has been reviewed and approved in accordance with the licensee's established QA procedures. The above procedure was reviewed for technical adequacy and conformance with AWS D1.1, Structural Welding Code, and other licensee commitments/requirements in the following areas: specified method; specified application; type of surface condition; method of surface preparation; whether direct or remote viewing is used; special illumination, instruments, or equipment required; sequence of examination; acceptance criteria; and reports to be completed.

With regard to the above the inspector noted the following:

a. Lack of clear definition of weld type and material applicability to assure no misuse of criteria

b. Lack of spacing control for short duration (less than ½") acceptable undersize welds

c. Lack of supporting justification of criteria based on longitudinal versus transverse shear

d. Lack of assurance against base metal thickness reduction for craters acceptable on butt welds

e. Lack of limit for undercut depth and spacing for short duration (less than ½") undercut imperfections

f. Lack of assurance that all materials applicable to these criteria have suitable notch toughness to prevent brittle fracture because of increased notch size (undercut)

g. Lack of supporting justification for assurance against crack propagation due to acceptance of lack of fusion

h. Lack of clarification of the acceptability of lack of fusion in butt welds

i. Lack of assurance that residue remaining after an arc strike on 60 KSI or less strength materials will be removed prior to visual inspection

j. Lack of supporting justification of the impact of acceptance of combined worst-case discontinuities

The inspector indicated that pending NRC review of the licensee's resolution to the above items this matter will be identified as unresolved item 400/84-19-01: "Adequacy of AWS D1.1 Visual Inspection Procedures."

Within the areas examined no violations or deviations were identified.

9. Safety-Related Components

a. Procedure Review (50071B)

The inspector reviewed Westinghouse Document AE435P/47P8203-1 Rev. 1, "NSSS Component Receiving and Storage Guidelines" and CP&L Procedures; WP-132 Rev. 2, "Installation of Coil Stack Assemblies, Rod Position Indicators, Seismic Sleeve Assemblies, Thermal Sleeve Guides, and Dummy Can Assemblies"; and WP-127 Rev. 1, "Installing the Pressure Vessel/Latch Assemblies, Head Adapter Plugs, and Instrument Ports," to determine whether specific activities associated with safety-related components are controlled and performed according to NRC requirements and licensee commitments in the below listed areas: installation, testing, and inspection activities meet applicable specifications and established procedures; post-inspection cleaning, preservation, and inspection requirements have been established before need; record keeping requirements are established and clearly indicate those responsible for record generation, and that provisions exist for their review by appropriate management personnel.

b. Work Observation (50073B)

The inspector conducted independent evaluation of storage conditions for the reactor head assembly in accordance with procedures listed above to determine whether activities were in conformance to the procedures involved in the following listed areas: storage environment and protection of components; implementation of special storage and maintenance requirements (cleanliness); and performance of licensee/contractor surveillance and documentation.

Within the areas inspected no violations or deviations were identified.

10. Inspector Followup Items

a. (Closed) IFI 400/83-24-07: "Undercut Criteria for Structural Welds."

This item concerns suitability of undercut acceptance criteria limiting undercut to .01" deep when transverse to the direction of primary stress. This matter is expanded in unresolved item 400/84-19-01; therefore, this inspector followup item is closed.

b. (Closed) IFI 400/84-13-01: "Unavailable Liquid Penetrant Record."

The licensee made the missing record available. The inspector has no further questions in this matter.

c. (Closed) IFI/84-09-02: "Cumulative PWHT Records."

This matter concerned unavailable PWHT records. The licensee made the PWHT records available. The inspector has no further questions in this matter.

d. (Closed) 400/83-03-03: "Evaluation of the Effectiveness of PT on Previously Painted Surface."

This matter concerned the effectiveness of liquid penetrant examination on previously painted surfaces. The licensee performed mock-up testing to demonstrate the effectiveness of cleaning and subsequent liquid penetrant examination of a test block with known defects. The inspector has no further questions in this matter.

11. IE Bulletins (IEBs)

(Closed) IEB 400, 401/80-BU-21: Valve Yokes Supplied by Malcolm Foundry Company, Inc.

CP&L responded to the Bulletin on January 5, 1981, reporting affected valves and stating that "any valve parts having properties not in accordance with ASTM material specification will be replaced by Anchor Darling." NRC Inspection Report 50-400(-401)/82-19 of July 8, 1982, contains the statement that "replacement of hand wheels manufactured by Malcolm Foundry was deemed unnecessary by the licensee." The inspector discussed the above with the licensee who indicated that the valves in question were determined to be passive, and therefore the valve hand wheels were considered non safety-related. The licensee stated that they would amend their January 5, 1981 response to reflect the actual status of the bulletin subject by September 1, 1984.