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

Report No. 50-261/84-11

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

Facility Name: H. B. Robinson

Docket No.: 50-261

License No.: DPR-23

Inspection at H. B. Robinson site near Hartsville, South Carolina

Inspector: J. L. Coley — May 4, 1984
Date Signed

Approved by: J. J. Blake, Section Chief — 5/9/84
Engineering Branch
Division of Reactor Safety
Date Signed

SUMMARY

Inspection on April 10-13, 1984

Area Inspected

This routine, unannounced inspection involved 29 inspector-hours on site in the area of the steam generator replacement project.

Results

Of the area inspected, one apparent violation was identified (Procedure Inadequate for Segregation of Weld Rods with Exposure Time, paragraph 5.c). No deviations were observed.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*G. Beatty, Department Manager
*R. Morgan, General Manager
*M. Reid, Construction Engineer
*E. Upchurch, Welding Engineer
*P. Reane, NDE Specialist
*R. Miller, Construction
*J. Sturdavent, Regulatory Compliance
*F. Gilman, Regulatory Compliance
*C. Carson, Regulatory Compliance

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

*Attended exit interview

2. Exit Interview

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

(Open) Violation, 261/84-11-01, "Procedure Inadequate for Segregation of Weld Rods with Exposure Time," paragraph 5.c.

(Open) Unresolved Item, 261/84-11-02, "Uncontrolled Copy of Cooper Heat Quality Manual," paragraph 5.a.

3. Licensee Action on Previous Enforcement Matters

Not inspected.

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 paragraph 5.a.

5. Steam Generator Replacement Project - Unit 2

The inspector made a general inspection of the work areas associated with the steam generator (SG) replacement. This included observation of the cuts and removal for the SG's upper domes, the weld rod rooms, and the weld test

shop. The applicable codes for the steam generator replacement project (SGRP) are listed below.

- ASME Code Section III, 1980 Edition including all Addenda through Winter of 1980 - as applicable to vessels (the steam generators)

- ASME Code Section IX, 1980 Edition including all Addenda through Winter of 1980 - for welding requirements as applicable to the project

- ASME Code Section XI, 1977 Edition with Addenda through Summer 1978, for the establishment of the new baseline inspection requirements

- ASME (Power Piping Code) B31.1.0, 1967 - All applicable piping work is to meet or exceed the requirements of this code

- American Institute of Steel Construction (AISC) Sixth Edition (1963) for use for all structural steel design, fabrication, and installation

- American Concrete Institute (ACI) 318-63 for use in restoring structural (reinforced) concrete

a. Review of Quality Program

The inspector reviewed the below listed documents to ascertain whether the steam generator project had been approved by the licensee and whether adequate plans and procedures had been established to assure that the replacement project would be controlled and accomplished consistent with commitments and regulatory requirements.

No.	Title
CAP-713	SGRP Construction Authorization Package
CWP-713	SGRP Construction Work Package
TP-SGR-2	Special Lift for Steam Dome Removal
TP-SGR-5	Removal of Biological and Missile Shield Walls
TP-SGR-11	Removal of Structural Steel
TP-SGR-17	Steam Generator Primary Side Cleanliness
TP-SGR-21	Disassembly, Modification, and Reassembly of Lateral Support Ring
TP-SGR-30	Removal and Storage of Main Steam and Feedwater Piping
TP-SGR-54	Channel Head Cutting
TP-SGR-56	Instrument Removal and Installation S/G A
TP-SGR-60	Tubesheet/Tubebundle Protection Installation and Removal
TP-SGR-65	Equipment Hatch Removal, Storage, and Replacement
TP-SGR-75	Channel Head Ventilation System Installation and Removal
TP-SGR-80	S. G. Water Level Control
TP-SGR-96	Steam Generator Tube Blower

WP-502	Storage and Control of Welding Filler Metal and Backing Rings (CP&L)
WP-503	Qualification of Welders (CP&L)
WPS-1BA8	Welding Procedure for; Main Steam and Feedwater Pipe Welds
WPS-3-1A4	Welding Procedure for; Shield Plates
WPS-1 (309/308)A-Z	Welding Procedure for; Repair to Cladding to Channel Head Without Post Weld Heat Treatment
WPS-3BA3	Welding Procedure for; Upper Girth Weld and Feedwater Nozzle Extension to Feedwater Nozzle Remnant P-3 to P-3, GTAW and SMAW
WPS-1-382	Welding Procedure for; Cladding Inside Channel Head
WPS-1-3BA2	Weld Procedure for; Lower Girth Weld, Main Steam Pipe and Feedwater Pipe to Nozzles P-1 to P-3
WPS-8-43BA1 and 3BA1	Weld Procedure for; Weld Divider Plater Inside Channel Head
--	Steam Generator Repair Manual
--	CB&I Contract Quality Assurance Marual (Issue No. 10, Division 4)
MT11X	CB&I's Magnetic Particle Inspection Procedure (Yoke Method)
--	Cooper Heat's Quality Control Manual
--	CB&I's NDE Personnel Training Qualification and Certification Program
QCI-84	Cooper Heat's Training Requirements
4651-CHP.005-2	Procedure for Preheat of Upper Girth Rough Cut
4651-CHP-005-3	Procedure for Preheat of Upper Shield Plate Weld
4651-CHP-005-04	Procedure for Preheat of; Upper Girth Precision Cut

During the review of the above documents, the inspector found that the Cooper Heat Quality Control Manual in Cooper Heat's site trailer was not a controlled copy. Since Cooper Heat mails revisions directly to CP&L from their home office for CP&L's controlled copies, Cooper Heat site personnel could be unaware of changes requested by CP&L or Cooper Heat's home office. Cooper Heat site personnel stated that they would request that a controlled copy be sent to their office. This item was reported to the licensee as unresolved item 50-261/84-11-02, "Uncontrolled Copy of Quality Control Manual at Cooper Heat Site office."

b. Welding Procedure Specification

General Welding (55050B)

The following Welding Procedure specifications (WPs) were selected for review with the ASME Code:

Welding Specification	Qualification Procedure
WPS-3BA3	PQR 125
WPS-1-3BA2	PQR 124

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.

c. Welding Filler Material Control (55050B and 55100B)

The inspector reviewed the program for control of welding materials to determine whether materials are being stored and handled in accordance with QA procedures and applicable code requirements. The following specific areas were examined:

- Purchasing, receiving, storing, distributing and handling procedures, material identification, and welding material issue stations

During the inspector's review of the welding issue station in the reactor containment building the inspector determined by discussions with the rod room attendant that some hygroscopic welding materials were issued without rod caddies (heated portable containers). CP&L's Procedure WP-502 for the storage and control of welding filler materials requires that series E70XX and series E80XX welding materials have a maximum exposure time of four hours and two hours respectively. Welding materials that accumulate an exposure time exceeding this maximum are supposed to be reconditioned or disposed of. However, discussions with the rod room attendant revealed that if a series E70XX weld rod (which has a maximum accumulative exposure time of four hours) were returned to the rod room and these weld rods had been only been out for 3 hours they would not be segregrated from conditioned weld filler materials and could be reissued immediately. Failure of the procedure to provide segregation and some method of reconditioning, for weld rods returned to the issue station with less than the maximum exposure time, could result in weld rods receiving accumulative exposure during an eight hour shift that far exceeds CP&L's procedural exposure limits for the specific filler materials. This procedural control discrepancy was reported as violation 50-261/84-11-01, "Procedure Inadequate for Segregation of Weld Rods with Exposure Time."

d. Welder Qualifications (55050B and 55100B)

The inspector reviewed the program for qualification of welders and welding operators for compliance with QA procedures and applicable code requirements. The review included observation of the welder

qualification test that were in progress and review of qualification records. The inspector also confirmed by positive identification that the person welding the test assembly was the person being qualified. Welders observed during qualification test were as follows:

Welder ID	Vendor
PLS	CB&I
BDB	CB&I
BRG	CB&I
R.J.D	CB&I
GY	Metric

Within the areas examined, no violations or deviations were identified except as noted in 5.c above.

6. Nondestructive Examination Program (Unit 2)

The inspector reviewed procedures for nondestructive examination program applicable to the steam generator replacement project to determine whether applicable code and procedure requirements had been met. For applicable code see paragraph 5.

a. Review of Quality Program

The inspector reviewed the below listed documents to ascertain whether the nondestructive examination program had been approved by the licensee and whether adequate plans and procedures had been established to assure that the replacement project would be controlled and accomplished consistent with commitments and regulatory requirements.

No.	Title
NA	CB&I, NDE Personnel Training Qualification and Certification Program
WA	Daniels, Personnel Training and Certification Program
MT-11X	CB&I, Magnetic Particle Inspection Procedure (Yoke Method)
NDEP-10	CP&L's Training Qualification and Certification of Nondestructive Examination Personnel
NDEP-20	CP&L's Training Qualification and Certification of Visual Examination Personnel for Inservice Inspection
NDEP-101	CP&L's - Radiographic Examination Procedure
NDEP-201	CP&L'a Liquid Penetrant Examination Procedure (Visible Dye, Solvent Removal)
NDEP-301	CP&L's - Magnetic Particle Examination Procedure (Dry Powder, Prods and Yoke)
NDEP-402	CP&L's - Ultrasonic Examination of Welds (ASME)

NDEP-603	CP&L's - Visual Examination of Welds
NDEP-611	CP&L's - VT-1, Visual Examination of Nuclear Power Plants
NDEP-612	CP&L's - VT-2, Visual Examination of Nuclear Power Plants
NDEP-613	CP&L's - VT-3, Visual Examination of Nuclear Power Plants
NDEP-614	CP&L's - VT-4, Visual Examination of Nuclear Power Plants
NDEP-701	CP&L's Leak Test (Vacuum Box)

b. Procedure Review

(1) Visual Inspection (57050B)

The inspector review CP&L's procdure NDEP-603, NDEP-611, NDEP-612, NDEP-613, and NDEP-614 to ascertain whether they had been reviewed and approved in accordance with the licensee's established QA procedures. The above procedures were also reviewed for technical adequacy and conformance with the ASME Code, Sections V and XI and other licensee commitments/requirements in the below listed areas:

-Method
-Application
-How visual examination is to be performed
-Surface condition
-Method for surface preparation
-Direct/remote viewing
-Special illumination
-Sequence of performing examination
-Data to be tabulated
-Acceptance criteria
-Report form

(2) Liquid Penetrant (57060B)

The inspector reviewed CP&L's procedure NDEP-201 to ascertain whether it had been reviewed and approved in accordance with the licensee's establised QA procedures. The above procedure was also reviewed for technical adequacy and for conformance with ASME Code, Section V, article 6 and other licensee commitments/requirements in the below listed areas:

-Specific Method
-Penetrant materials identified
-Penetrant materials analyzed for sulfur
-Penetrant materials analyzed for total halogens
-Acceptable pre-examination surface
-Drying time

-Method of penetrant application
-Surface temperature
-Solvent removal
-Dry surface prior to developing
-Type of developing
-Examination technique
-Evaluation technique

(3) Magnetic Particle (57070B)

The inspector reviewed CP&L's Procedure No. NDEP-301 and CB&I procedure no. MT11X to ascertain whether it had been reviewed and approved in accordance with the licensee's established QA procedures. The above procedures were reviewed for technical adequacy and for conformance with ASME Section V, Article 7 and other licensee commitments/requirements in the below listed areas:

-Examination method
-Surface preparation
-Contrast of dry powder particle color with background and surface temperature
-Viewing conditions
-Examination overlap and directions
-Pole or prod spacing
-Current or lifting power (yoke)
-Acceptance criteria

(4) Ultrasonic (57080B)

The inspector reviewed CP&L's procedure NDEP-402 to ascertain whether it had been reviewed and approved in accordance with the licensee's established QA procedures. The above procedures was reviewed for technical adequacy and conformance with ASME, Section V, Article 5 and other licensee commitments/requirements in the below listed areas:

-Type of apparatus used
-Extent of coverage of weldment
-Calibration requirements
-Search Units
-Beam Angles
-DAC Curves
-Reference level for monitoring discontinuities
-Method of demonstration of penetration
-Limits for evaluating and recording indications
-Recording significant indications
-Acceptance limits

(5) Radiography (57090B)

The inspector reviewed CP&L's procedure NDEP-101 to ascertain whether it had been reviewed and approved in accordance with the licensee's established QA procedures. The above procedures was reviewed for technical adequacy and conformance with ASME, Section V, Article 2 and other licensee commitments/requirements in the below listed areas:

-Material and weld surface condition requirements
-Types of material
-Material thickness range
-Type of radiation source, effective focal spot or effective source size, X-ray equipment voltage rating and equipment manufacturer, as applicable
-Film brand or type and number of films in cassette
-Minimum source to film distance
-Blocking or masking technique
-Type and thickness of intensifying screens and filters
-Exposure conditions for procedure qualifications
-Radiographic film processing requirements
-Quality of radiographs - limits on mechanical, chemical or other blemishes, such as fogging, process marks, scratches finger marks, loss of detail or false indications
-Film density limits for single and composite viewing
-Use of densitometers for assuring compliance with film density requirements
-System of radiograph identification
-Use of location markers
-Records for showing film and source location with reference to the part being radiographed
-Use of intensifying screens
-Methods of reducing and testing for backscatter
-Description of or reference to the welding procedure
-Material type and thickness restrictions for isotope radiography
-Geometrical unsharpness limitations
-Selection and use of penetrameters including:

    - Penetrameter design
    - Selection of essential hole
    - Penetrameter thickness including special requirements for single and double wall viewing
    - Penetrameter placement including special requirements for single and double wall viewing
    - Number of penetrameters
    - Shims under penetrameters

-Radiographic technique requirements for double wall viewing
-Qualification of radiographic procedure (radiographs taken to demonstrate procedure capability)

-Requirement for evaluation and disposition of radiographs
-Records requirements

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