



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

Report Nos.: 50-325/89-45 and 50-324/89-45

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

Docket Nos.: 50-325 and 50-324

License Nos.: DPR-71 and DPR-62

Facility Name: Brunswick 1 and 2

Inspection Conducted: December 18-22, 1989

Inspector: J. L. Coley 1-16-90
Date Signed

Accompanying Personnel: A. F. Gibson, Director, Division of Reactor Safety

Approved by: J. J. Blake 1/16/90
Date Signed
J. J. Blake, Chief
Materials and Processes Section
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope:

This routine announced inspection was performed as a followup effort to those documented in Reports 89-33, 89-35, and 89-43 in order to observed recirculation system pipe replacement activities including welding and nondestructive testing.

Results:

During the inspection, the inspector observed a welding operator employed by General Electric (GE) welding outside a welding parameter of welding procedure specification (WPS) No. 8.8.6 W Revision 5. Failure to follow the qualified parameters of the WPS indicated a lack of attention to detail by the welding operator and resulted in violation (NCV) 324/89-45-01, paragraph 2.a. This violation however meets NRC Enforcement Policy for not issuing a Notice of Violation and was not cited. Other areas examined by the inspector such as radiographic film review, ultrasonic examinations, weld traveler documentation, and weld repair procedures appeared to be effective in achieving their intended quality goals.

Except for the NCV discussed above, no other violations or deviations was identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *W. J. Dorman, Manager, Quality Assurance/Quality Control
- *J. L. Harness, General Manager
- *R. E. Helme, Manager, Technical Support
- *J. R. Holder, Manager, Outages
- *R. H. Jordan, Project Engineer
- *D. E. Norvotmy, Senior Specialist, Regulatory Compliance
- *M. J. Pastva, Senior Specialist, Regulatory Compliance
- *L. W. Wheatley, Engineer, Inservice Inspection

Other licensee employees contacted during this inspection included craftsmen, engineers, operators, security force members, technicians, and administrative personnel.

Other Organizations

- *A. D. Ketcham, GE Site Services Manager
- *G. Rowe, GE Pipe Replacement Project Manager

NRC Resident Inspector

- *B. Ruland, Senior Resident Inspector

*Attended exit interview

2. Replacement of BWR Recirculation Piping - Unit 2 (2513/12)

a. Nuclear Welding (55050)

Inspection Report 89-35 discussed the welding program associated with this pipe replacement. Items discussed included qualification of welding procedures and welders, control procedures, and travelers and subtier documents used to record hold points, milestones, etc. Applicable codes and standards for pipe installation, fabrication and testing were discussed in detail. Inspection Report 89-43 discussed in-process activities observed by the inspectors such as machining, preheating of nozzles prior to weld-butter application, welding on inlet nozzles A, B, & C, welding on three riser to extension "pup-pieces" and post weld heat treatment. For in-process welding and nondestructive testing documented by the present report, the applicable Code is ASME B&PV Code, Section III, 1986 Edition with 1988 Addenda.

At the start of this inspection on December 18, 1989, the status of work was as follows for the recirculation system pipe replacement activity.

- (1) 'A' Nozzle/Safe-end, welding complete
- (2) 'B' Nozzle/Weld-butter repairs in-process
- (3) 'C' Nozzle/Weld-butter repairs in-process
- (4) 'D' Nozzle/Weld-butter repairs in-process
- (5) 'E' Nozzle/Weld-butter acceptable, however, indications in original I.D. cladding
- (6) 'F' Nozzle/Safe-end, welding complete & riser/sweep-o-let weld complete
- (7) 'G' Nozzle Weld-butter, post weld heat treatment, complete
- (8) 'H' Nozzle/Safe-end, welding complete
- (9) 'J' Nozzle/Safe-end, preparing for inservice inspection, welding Complete
- (10) 'K' Nozzle/Safe-end, preparing for inservice inspection, welding complete

Between December 18-21, 1989, the inspector observed welding activities on inlet nozzles E and G to verify that: work was conducted in accordance with the weld traveler and/or joint process control sheets (JPCS's), which were available at the work station; welding procedures and weld data sheets were also at the work station; weld technique, sequence and heat input, wire feed, travel speed and electrical characteristics, shielding gas flow, composition, and dew point were verified regularly by the inspector. Welding equipment including power cables and gas liners were in good condition. Preheat and interpass temperatures were controlled as required by the specification. In addition, weld repair activities were observed on B, C & D nozzles and fitup activities were witnessed by remote cameras on J riser to sweep-o-let.

Within the above areas, the inspector noted the following discrepancy: during the filler pass welding of G nozzle to safe-end, a welding operator had his automatic voltage control (AVC) unlock delay set at 2.3 micro/sec, the welding parameters allowed by WPS 8.8.6 W, Rev. 5, were 3.0 - 9.9 micro/sec. The inspector discussed this procedural violation with the GE supervisor at the work station who promptly re-set the variable within the parameters of the WPS and assured the inspector that it was not an essential welding parameter.

The inspector also discussed the discrepancy with CP&L's welding engineer who also assured the inspector that the procedure violation would have no adverse effect on weld quality. However, the above violation does reflect a lack of attention to detail by the welding operator, which apparently is a major contributing factor for the numerous weld repairs. Application of the 309L filler material on the sharp angle of the nozzle weld prep combined with the lower heat input used when welding to the Electric Power Research Institute

(EPRI) recommended welding parameters requires constant attention by the welding operators.

The inspector also discussed this finding in detail with site management and stated that a violation of failure to follow procedures would be identified (NCV 324/89-45-01); however, because the discrepancy described above was minor in safety significance and was corrected immediately and CP&L project engineers committed to perform increased surveillance of GE's welding activities, this NRC identified violation is not being cited because the criteria specified in Section V. A. of the NRC Enforcement Policy was satisfied.

b. Review of Radiographs (57090)

The inspector reviewed radiographs for the following the completed welds:

<u>Weld Number</u>	<u>Piping Configuration</u>
2B32FF-12FW802	'A' Riser to Pup Piece
2B32FF-12FW805	'C' Riser to Pup Piece
2B32FF-12FW808	'E' Riser to Pup Piece
2B32FF-12FW813	'H' Riser to Pup Piece
2B11N2A-RPV-FWABA	'A' Nozzle to Safe-End
2B32FF-12FW-816	'K' Riser to Pup Piece
2B32FF-12FW-810	'F' Riser to Pup Piece
2B11N2H-RPV-FWABA	'H' Nozzle to Safe-End
2B32FF-12FWRRB10A	'A' Riser to Sweep-o-let

The inspector reviewed the above final radiographs to determine if the welds met the radiographic acceptance criteria of the licensee's procedure and ASME Section III. The inspector's review also verified acceptable film quality such as: penetrometer type, size and placement; penetrometer sensitivity; film density; film identification and weld coverage. In addition to the above final radiographs, the inspector reviewed numerous film of in-process weld repairs.

c. Pre-Mechanical Stress Improvement (MSIP) Ultrasonic Testing (UT) (NUREG 0313, Rev. 2 and 73753)

The inspector reviewed GE's automated ultrasonic system (SMART System) data for the welds listed below to determine if the Pre-MSIP data have been gathered in accordance with the parameters of the applicable procedure and if the examination results were evaluated satisfactorily.

<u>Weld Number</u>	<u>Piping Configuration</u>
2B32FF-12FW802	'A' Riser to Pup Piece
2B32FF-12FW805	'C' Riser to Pup Piece
2B32FF-12FW808	'E' Riser to Pup Piece
2B32FF-12FW810	'F' Riser to Pup Piece
2B32FF-12FW813	'H' Riser to Pup Piece
2B32FF-12FW816	'F' Riser to Pup Piece

In addition to the review of the above data the inspector also observed the in-process ultrasonic inspection of weld No. 2B32FF-12FW803.

b. Review of In-process Weld Packages (55050)

The inspector reviewed weld packages for the following in process welds:

<u>Weld Identification</u>	<u>Piping Configuration</u>
2B11N2B-RPV-FWABA	Weld Butter Repair (N2B Nozzle)
2B32-FW 825	Thermal Sleeve to Transition Weld (H-Riser)
2B32FF-12FWRRA13A	Riser to Sweep-o-let Weld (J Riser)
2B32FF-12FW815	J-Riser to Safe-End Weld
2B11N2D-RPV-FWABA	Weld Butter Repair (N2D Nozzle)

The above review of welding records was performed to verify that in-process instrumentations met ASME Code requirements, hold-points were correctly signed off, weld filler materials used were those certified, and welders certifications were satisfactory for the WPS used.

Within the areas examined, violations or deviations were not identified except as noted in paragraph 2.a, above.

3. Exit Interview

The inspection scope and results were summarized on December 22, 1989, with those persons indicated in paragraph 1. The inspector described the areas inspected and discussed in detail the non-cited violation listed below. This violation involved failure of welding operator to follow the parameters of a welding specification and was discovered by the NRC inspector. The error appeared to be of minor safety significance and was corrected immediately. The recirculation system pipe replacement project

engineer committed to increase surveillance of GE's welding operations to assure procedural compliance.

(Closed) Non-cited Violation 324/89-45-01, Failure to Follow Welding Parameters of Welding Procedure Specifications No. 8.8.6 W, Rev. 5.

Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.