

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

1271E
Report - 50324 - - 298
50325 - - 238

AUG 1 1975

Docket Nos. 50-324
50-325

Carolina Power & Light Company
ATTN: Mr. J. A. Jones
Executive Vice President
336 Fayetteville Street
Raleigh, North Carolina 27602

CADWELL INSPECTION DEFICIENCY

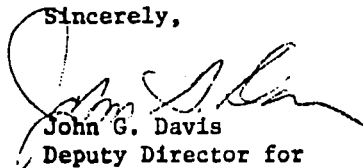
Gentlemen:

Thank you for your letter dated July 8, 1975 which forwarded a final report pursuant to 10 CFR 50.55(e) regarding the above referenced item. Your report will be reviewed and evaluated and, should we require additional information concerning this matter, we will contact you.

Please refer to Control No. H03FDF2 in future correspondence in reference to this item.

Your cooperation is appreciated.

Sincerely,



John G. Davis
Deputy Director for
Field Operations
Office of Inspection
and Enforcement



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BP A-1/16

July 8, 1975

Dr. D. F. Knuth, Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

CAROLINA POWER & LIGHT COMPANY
BRUNSWICK STEAM ELECTRIC PLANT
1974-1975 - 1,600,000 KW - UNITS 1 AND 2
CADWELD INSPECTION DEFICIENCY

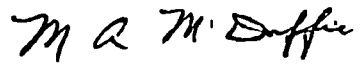
Dear Dr. Knuth:

In accordance with 10CFR50.55(e), the Region II Office was officially notified of a cadweld inspection deficiency in Brunswick Steam Electric Plant Unit No. 1 on June 17, 1975.

Attached is a final report which describes the problem and the corrective action taken to accomplish resolution. With this report, Carolina Power & Light Company considers the matter closed.

If you have any questions regarding this matter, please do not hesitate to contact us.

Yours very truly,



M. A. McDuffie - Vice President
Power Plant Construction

NJC/dds

Attachment

cc: Mr. N. C. Moseley (2) W/A

CONFIDENTIAL

CAROLINA POWER & LIGHT COMPANY
BRUNSWICK STEAM ELECTRIC PLANT
UNIT NO. 1

CADWELD INSPECTION DEFICIENCY

FINAL REPORT

Date: July 8, 1975

Reported in accordance with: 10CFR50.55(e)

Prepared by: Carolina Power & Light Company

Reported Initially by: N. J. Chiangi by telephone
on June 17, 1975

INTRODUCTION

On June 17, 1975, it was reported to NRC, Region II I&E, that forty-four (44) cadweld splices in Brunswick Unit No. 1 Reactor building had become inaccessible prior to completion of the required Quality Control inspection. The cadwelds in question consisted of thirty-two horizontal and twelve (12) vertical splices made in a 11'3" X 12' temporary opening located in the north wall of the Reactor building. The cadwelds were made inaccessible for Quality Control inspection by placement of concrete during closure of the temporary opening.

DISCUSSION

The temporary opening in the Reactor building north wall was located at the 2 R line, between columns L and M, from elevation 20 to elevation 32. The 32 horizontal splices were made on No. 10 rebar and the 12 vertical splices were made on No. 11 rebar.

United Engineers and Constructors, Inc. (UE&C) Specification 9527-01-13-1, Concrete Work, requires that completed cadwelds be visually inspected by a Quality Control inspector in accordance with Specification 9527-01-5-1, Design, Testing and Inspection of Concrete Mixes, Concrete Materials and High Strength Bolts.

Brunswick FSAR, Appendix D, page D-50, paragraph 3. Cadweld Splices, sets forth visual inspection requirements. In addition, a plot plan of cadweld splices showing splice location and number, operator number, position, date made and date inspected is required.

The available construction and quality assurance records provide a history of the cadweld operator, splice locations and numbers, position and dates involved. Therefore, the deficiency centers around the requirement for visual inspection and resultant documentation, by a Quality Control inspector.

CADWELD INSPECTION

As stated, the forty-four cadwelds were not inspected by a Quality Control inspector in accordance with the project requirements. The cadwelds were however, inspected by the civil construction engineer during installation activities for number of bars, bar size and bar location in accordance with the applicable drawing. In addition, the engineer checked sleeve alignment and that the cadwelds were completed. These activities are documented in site records. The engineer that was in charge is a responsible and experienced engineer, and knowledgeable in cadweld installation requirements. Though the engineer's inspection activities were not for the purposes of quality control, it is felt that any readily apparent condition that would have led to visual rejection of a splice by Quality Control would have been observed by the engineer and appropriately corrected.

CADWELD OPERATOR HISTORY

All of the forty-four cadwelds were made by a qualified operator with a very good record for production splices. During cadwelding operations at the Brunswick project this operator made 2,384 splices from which 103 were tested to destruction. Three of the tested splices failed below the minimum requirements as follows:

1. No. 9 to No. 9 rebar failed by pullout at 75,000 psi.
2. No. 11 to No. 11 rebar failed by pullout at 80,128 psi.
3. No. 11 to No. 11 rebar failed by pullout at 71,795 psi.

Splices were available for subsequent testing for items 2 and 3, tests were made and both proved satisfactory.

EVALUATION

UE&C and CP&L's evaluation of the reported inspection deficiency considered the project design and inspection requirements, the cadweld operator qualifications, his past history, and the cadweld inspection performed by the construction civil engineer.

The minimum strength requirement for the three cadweld tests that failed during the operator's past activities was 81,000 psi. The design of the project structure, is based on a rebar yield strength of 60,000 psi. In each case the three test splice failures exceeded the design base (125%, 133% and 120% respectively).

Based on the above UE&C and CP&L conclude that an adequate level of confidence in the quality of the installed cadwelds has been established.

The cause of the reported deficiency was an oversight by construction personnel in placing the concrete prior to release by Quality Control. The Brunswick program, as written, sets forth adequate controls to prevent this type incident, provided the controls are followed. As a result of the investigation and evaluation of this deficiency both construction and Quality Control have been made sufficiently aware of the program requirements to prevent recurrence of a similar nonconformance.

CONCLUSION

The action taken in reporting, investigating and correcting the cadweld deficiency satisfies the requirements of 10CFR50.55(e). It has been reasonably established that the installed cadwelds provide structural integrity, as supported by site documentation, and no further action is required.

END

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