

CAROLINA POWER & LIGHT COMPANY  
SHEARON HARRIS NUCLEAR POWER PLANT  
UNITS 1, 2, 3, 4

OMISSION OF ADDITIONAL REINFORCING STEEL IN  
UNIT #1 CONTAINMENT BUILDING EXTERIOR WALL  
ADJACENT TO THE CONSTRUCTION OPENING  
FOR THE EQUIPMENT HATCH

FINAL REPORT  
JUNE 24, 1980

REPORTABLE UNDER 10CFR50.55(e)

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## INTRODUCTION

Reinforcing steel bars are detailed on design drawings which identify bar type, size, and location. Numerous drawings are required for the containment building exterior wall to provide construction adequate information for installation. Separate profile drawings were developed for both vertical and horizontal bars in each of ten rows around the circumference of the building. Bethlehem also provided fabrication and installation drawings for two plane bending required of bars around major penetrations. Other design drawings were utilized for additional reinforcing steel around penetrations and construction openings.

## DESCRIPTION

On or about April 9, 1980, the construction inspector assigned solely to inspection of reinforcing steel in the containment exterior wall discovered 25 additional vertical and horizontal bars omitted adjacent to the construction opening for the equipment hatch. Concrete had already been placed on the west side of the opening which should have partially embedded the bars. The bars were discovered as missing when the inspector was reviewing a drawing identifying reinforcing steel within the construction opening. Prior to the inspector's observation, the inspector and craft personnel had assumed any additional reinforcing steel would have been within the construction joint perimeter based on normal construction practices, the large size of the opening, and the relative distance previously placed concrete was from the equipment hatch:

## SAFETY IMPLICATIONS

Reinforcing steel was omitted from the exterior wall. Preliminary engineering evaluation of the affected area determined modified reinforcing steel could be installed adjacent to the previously placed concrete with no loss of design integrity.

NOTE: After corrective action with replacement bars to satisfy original design based on preliminary evaluation was completed, final Ebasco calculations revealed no structural deficiencies would occur if the bars were not installed as originally detailed.

The condition of omission and corrective action recommended by the design engineer is documented in PW-C-1361.

The exterior wall would not have been completed without the discrepant condition of reinforcing steel being discovered at some check point prior to actual placement of concrete within the construction opening. Therefore, the potential for a deficiency in construction/inspection functions resulting in a condition of safety significance did not exist.

NOTE: This item was considered reportable based on preliminary evaluation by Ebasco and the extent of investigation needed to resolve potential implications related to inspection procedures, drawing detailing, application to other areas, and QA findings.

CORRECTIVE ACTION

Circumstances surrounding the omission of the rebar in the containment building were thoroughly investigated, design review and modification to reinforcing steel has been completed, and acceptance by the quality control staff was received prior to continued concrete placement. NRC concurrence was also obtained. Craft work procedures and inspection technical procedures were revised to include an inventory control of design drawings for the exterior wall concrete placements to preclude recurrence.

Audit of previous exterior wall concrete placements, drawing review of reinforcing steel in highly stressed/complex areas of Class I structures, review of other discipline similarities, and application of findings to the QA program have been completed. Detailed information and circumstances encompassing all of the above are documented in the following references.

DETAILED REFERENCES

1. CP&L internal letter, M. A. McDuffie to T. H. Wyllie dated April 9, 1980.
2. CP&L internal letter, N. J. Chiangi to distribution dated April 10, 1980.
3. NRC letter, James P. O'Reilly to J. A. Jones dated April 10, 1980.
4. Discrepancy Report DR-C-522 dated April 9, 1980.
5. Deficiency and Disposition Report, DDR No. 387 dated April 9, 1980.
6. Permanent Waiver PW-C-1361 approved April 12, 1980.
7. NRC letter, James P. O'Reilly to J. A. Jones dated April 15, 1980.
8. CP&L letter, J. A. Jones to James P. O'Reilly dated April 16, 1980.
9. CP&L letter, J. A. Jones to James P. O'Reilly dated April 18, 1980.
10. NRC letter, James P. O'Reilly to J. A. Jones dated April 22, 1980.
11. CP&L internal letter, M. A. McDuffie to R. M. Parsons dated April 22, 1980.
12. CP&L internal letter, R. M. Parsons to W. D. Goodman dated April 22, 1980.
13. CP&L/Ebasco telecon dated April 23, 1980.
14. CP&L site Technical Procedure TP-22, "Inspection of Rebar Installation".
15. CP&L site Work Procedure WP-5, "Concrete Placement".
16. CP&L internal letter, G. L. Forehand to R. M. Parsons dated June 17, 1980.
17. CP&L internal letter, A. M. Lucas to R. M. Parsons dated June 23, 1980.