



Carolina Power & Light Company

35 APR 4 1985
P. O. Box 101, New Hill, N. C. 27562
March 29, 1985

Dr. J. Nelson Grace
United States Nuclear Regulatory Commission
Region II
101 Marietta Street, Northwest (Suite 2900)
Atlanta, Georgia 30323

NRC-344

**CAROLINA POWER & LIGHT COMPANY
SHEARON HARRIS NUCLEAR POWER PLANT
1986 - 900,000 KW - UNIT 1
DEFICIENCIES IN BOLTED STRUCTURAL CONNECTIONS, ITEM 112**

Dear Dr. Grace:

Attached is our final report on the subject item which was deemed reportable per the provisions of 10CFR50.55(e) on April 26, 1983. With this report, Carolina Power and Light Company considers this matter closed.

If you have any questions regarding this matter, please do not hesitate to call me.

Yours very truly,

R. M. Parsons
Project General Manager
Completion Assurance
Shearon Harris Nuclear Power Plant

RMP/bs

Attachment

cc: Messrs. G. Maxwell/R. Prevatte (NRC-SHNPP)
Mr. R. C. DeYoung (NRC)

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CAROLINA POWER & LIGHT COMPANY
SHEARON HARRIS NUCLEAR POWER PLANT

UNIT NO. 1

FINAL REPORT

DEFICIENCIES IN BOLTED STRUCTURAL CONNECTIONS
ITEM 112

March 29, 1985

REPORTABLE UNDER 10CFR50.55(e)

SUBJECT: Shearon Harris Nuclear Power Plant/Unit No. 1 10CFR50.55(e), reportable deficiency. Deficiencies in Bolted Structural Steel Connections.

ITEM: Bolted structural steel connections in the Unit No. 1 Turbine Building with flame cut bolt holes and undersized bolts.

SUPPLIED BY: Not a supplier-related deficiency. Structural connections were field assembled.

NATURE OF DEFICIENCY: The Turbine Building is seismically designed per Regulatory Guide 1.29. These flame cut bolt holes were oversized, irregular in shape and exceeded minimum edge distances. The bolts in some of these holes were smaller in diameter than specified. The connections were previously inspected and accepted.

DATE PROBLEM OCCURRED: December 13, 1982.

DATE PROBLEM REPORTED: On December 29, 1982, CP&L (N. J. Chiangi) notified the NRC (Mr. A. Hardin) that this item was potentially reportable. On April 26, 1983, CP&L (N. J. Chiangi) notified the NRC (Mr. Hardin) that the item was reportable per the provisions of 10CFR50.55(e).

SCOPE OF PROBLEM: A reinspection of the Turbine Building, including those connections where there exists a probability bolt holes would have been burned (e.g., to ease fit-up), or where, per engineering evaluation, they would be safety significant, has been completed. Approximately 878 connections were reinspected, with a total of 25 connections with burned holes and 1 with undersized bolts.

SAFETY IMPLICATION: The reduced edge distance caused by the oversized hole could result in a shear failure on the clip or plate. The undersized bolt would have a smaller allowable load, thus contributing less to the clamping force between the mating surfaces than that for which it was designed.

Either of these conditions could reduce the allowable load of the connection below the actual load imposed, resulting in a failure of the connection.

REASON DEFICIENCY IS REPORTABLE: Reportable due to the extensive evaluation and/or rework required.

CORRECTIVE ACTION:

Inspection and craft personnel have received additional training in inspection and erection of structural steel, both in formal classes and on-the-job training. Permanent Waivers (PW's) were written, requiring engineering evaluation, for the deficient connection. Each connection has been accepted "as-is" if not significantly deficient, or has been repaired to make it acceptable, based on the engineering evaluation. To date, those connections with torch cut holes have been evaluated, and those with torch cuts alone have been repaired or accepted as-is, and the undersized bolts have been replaced. In addition to the deficiency documented in this report, structural connections in the Turbine Bldg. also exhibited gaps and evidence of grease between mating surfaces. These conditions were reported as NRC reportable items 92 and 102, respectively. Connections in the Containment Bldg. have been accepted or repaired based on engineering evaluations. In the course of the reinspections, the welded parts of the connections were inspected as well and any deficiencies documented.

Ebasco services has completed a reanalysis of the Turbine Bldg. structure taking into consideration the identified defects in combination. Ebasco's determination was that no further action is required.