



Carolina Power & Light Company

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May 10, 1985

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

NRC-363

**CAROLINA POWER & LIGHT COMPANY
SHEARON HARRIS NUCLEAR POWER PLANT
1986 - 900,000 KW - UNIT 1
GREASE IN FRICTION TYPE STRUCTURAL CONNECTIONS,
ITEM 102**

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 don't hesitate to contact me.

Yours very truly,

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

RMP/aj

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

GREASE IN FRICTION TYPE STRUCTURAL CONNECTIONS
ITEM 102

May 10, 1985

REPORTABLE UNDER 10CFR50.55(e)

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

ITEM: Bolted structural steel connections in the Unit No. 1 Turbine and Containment Building have evidence of grease between mating surfaces.

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, and the Containment Building is a Seismic Class I structure. These structural connections were designed as friction type connections, requiring grease-free mating surfaces. These connections were previously inspected and accepted.

DATE PROBLEM OCCURRED: August 30, 1982.

DATE PROBLEM REPORTED: On September 15, 1982, CP&L (N. J. Chiangi) notified the NRC (Mr. C. Hehl) that this item was potentially reportable.

On April 26, 1983, CP&L (N. J. Chiangi) notified the NRC (Mr. A. Hardin) that the item was reportable per the provisions of 10CFR50.55(e).

SCOPE OF PROBLEM: A reinspection of the Turbine and Containment Buildings, including connections where engineering evaluation indicated grease in the connection could have safety significance, has been completed. Approximately 878 connections were reinspected in the Turbine Building and 500 in the Containment, with evidence of grease being found in approximately 366 and 67, respectively. Additional connections in the Turbine Building were identified as having evidence of grease since the reinspection addressed by this reportable item was completed.

SAFETY IMPLICATION:

These structural connections were designed as friction type connections, with the ability of the connection to resist a shear failure dependent on the friction coefficient of the mating surfaces. The grease on these surfaces, by reducing the slip resistance, could allow the shear load to be transferred to the bolts, for which they were not designed.

**REASON DEFICIENCY
IS REPORTABLE:**

Reportable due to the magnitude of the problem plus the extensive evaluation and/or rework required.

CORRECTIVE ACTION:

Appropriate site work and technical procedures have been revised to specifically require mating surface inspection during fit-up, and to specifically forbid the use of lubricants to fit up bolts. Inspection and craft personnel have received additional training in inspection and erection of structural steel in formal classes and on-the-job training.

Permanent Waivers (PW's) were written, requiring engineering evaluation, for each identified deficient connection. Each connection has been accepted "as-is" if not significantly deficient, or has been repaired to make it acceptable, based on this engineering evaluation. In addition to the deficiency documented in this report, structural connections in the Turbine and Containment Buildings also exhibited gaps between mating surfaces and in the Turbine Building torch cut bolt holes. These conditions were reported as NRC Reportable Items 92 and 112, respectively. Connections in the Containment Building 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 identified deficiencies were documented.

Ebasco Services has completed a reanalysis of the Turbine building structure taking into consideration the identified defects in combination. Actions required to close this item have now been completed.