



Carolina Power & Light Company

P. O. Box 101, New Hill, N. C. 27562  
May 26, 1983

Mr. James P. O'Reilly  
United States Nuclear Regulatory Commission  
Region II  
101 Marietta Street, Northwest (Suite 3100)  
Atlanta, Georgia 30303

NRC-75

CAROLINA POWER & LIGHT COMPANY  
SHEARON HARRIS NUCLEAR POWER PLANT  
1986-90 - 900,000 KW - UNITS 1 & 2  
BOLTED STRUCTURAL CONNECTIONS WITH EXCESSIVE GAPS AND  
ASTM A325 NUTS ON ASTM A490 BOLTS, ITEM 92

Dear Mr. O'Reilly:

Attached is an interim report on the subject item which was deemed reportable per the provisions of 10CFR50.55(e), on April 26, 1983. CP&L is pursuing this matter, and it is currently projected that corrective action and submission of the final report will be accomplished by January 20, 1984.

Thank you for your consideration in this matter.

Yours very truly,

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

RMP/sh

Attachment

cc: Mr. G. Maxwell (NRC-SHNPP)  
Mr. R. Prevatte (NRC-SHNPP)  
Mr. V. Stello (NRC)

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USNRC REGION II  
ATLANTA, GEORGIA

CAROLINA POWER & LIGHT COMPANY  
SHEARON HARRIS NUCLEAR POWER PLANT

UNIT NO. 1

INTERIM REPORT

BOLTED STRUCTURAL CONNECTIONS WITH EXCESSIVE GAPS  
AND ASTM A325 NUTS ON ASTM A490 BOLTS  
ITEM 92

MAY 25, 1983

REPORTABLE UNDER 10CFR50.55(e)

SUBJECT:

Shearon Harris Nuclear Power Plant/Unit No. 1  
10CFR50.55(e), reportable deficiency, Bolted  
Connections With Excessive Gaps and ASTM A325  
Nuts on ASTM A490 Bolts.

ITEM:

Bolted structural steel connections in the Unit  
No. 1 Turbine and Containment Buildings have gaps,  
or areas with 0% contact between mating surfaces  
in friction connections. The part of this problem  
concerning the use of A325 nuts on A490 bolts was  
previously found to be non-reportable and so reported  
on November 30, 1982 (CP&L letter NRC-26).

SUPPLIED BY:

Not a supplier-related deficiency. All structural  
connections concerned 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. All structural connec-  
tions were designed as friction type connections  
requiring solid seating of the mating surfaces. These  
connections were previously inspected and accepted.

DATE PROBLEM  
OCCURRED:

June 22, 1982.

DATE PROBLEM  
REPORTED:

On July 2, 1982, Mr. L. E. Jones notified the NRC  
(Mr. A. Hardin) that the item was potentially reportable.  
On April 26, 1983, Mr. N. J. Chiangi notified the NRC  
(Mr. A. Hardin) that this item was reportable per the  
provisions of 10CFR50.55(e).

SCOPE OF PROBLEM:

A reinspection of the entire Turbine and Containment  
Buildings, including all structural connections where  
there was a potential for these gaps occurring, has been  
completed. An engineering evaluation had determined  
that the gaps would not occur in connections with beam  
end clips or plates less than 5/8" thick. In standard  
design, these clips deflect slightly under bolt tension  
to make contact with the adjacent mating surface.  
Main support girder end clips were generally fabricated  
from 1" thick angle, and end plate thicknesses in some  
members exceeded 2".

A total of approximately 878 connections were reinspected  
in the Turbine Building and approximately 500 in the  
Containment, with gaps being found in approximately 154  
and approximately 36, respectively.

SAFETY IMPLICATION:

The inability of the end clips and end plates to deflect under bolt tension, to close the mating surface gaps resulting from fabrication tolerances (allowing the girders to be fabricated slightly short for erection purposes) has two implications. The lack of contact area may affect the slip resistance in the friction connection. But more importantly, where the surfaces are not in contact, the bolt tension load is transferred to the weld attaching the clip or plate to the girder, potentially overstressing the weld.

REASON DEFICIENCY  
IS REPORTABLE:

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

CORRECTIVE ACTION:

Appropriate site technical procedures have been revised to specifically require inspection for mating surface gaps during erection. Inspection and craft personnel have received additional training in inspection and erection of structural steel through formal classes and on-the-job training.

Permanent Waivers (PW's) have been written, requiring engineering evaluation, for each deficient connection. Each connection will be accepted "as-is", as not being significantly deficient, or repaired to make it acceptable, based on this engineering evaluation.

FINAL REPORT:

A final report will be issued when the evaluation and rework are complete. We now expect to issue a final report by January 20, 1984.