



Carolina Power & Light Company

July 19, 1982

File: SH N-2/18  
Item 91

CQAD 82-1249

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

SHEARON HARRIS NUCLEAR POWER PLANT UNIT 1  
DOCKET NO. 50-400  
DEFICIENCIES IN WELDED STUDS ON EMBEDDED STRIP PLATES

Dear Mr. O'Reilly:

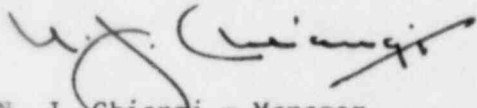
Attached is the final 10CFR50.55(e) report on the subject deficiency which describes the problem and the corrective action taken to accomplish resolution. With this report, Carolina Power & Light Company considers this matter closed.

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

Yours very truly,

NJC/mt  
Attachment

cc: Mr. G. Maxwell W/A  
Mr. V. Stello (2) W/A

  
N. J. Chiangi - Manager  
Engineering & Construction  
Quality Assurance/Quality Control

CAROLINA POWER & LIGHT COMPANY  
SHEARON HARRIS NUCLEAR POWER PLANT

UNITS NO. 1 AND 2  
DEFICIENCIES IN WELDED STUDS ON  
EMBEDDED STRIP PLATES - ITEM 91

INTERIM REPORT  
July 16, 1982

Reportable Under 10CFR50.55(e)

SUBJECT: 10CFR50.55(e) Reportable Item  
Shearon Harris Nuclear Power Plant (SHNPP)  
Embedded Strip Plates With Inadequate Welds on Studs

ITEM: Embedded Strip Plate Received at Site on May 28, 1982.

SUPPLIED BY: Applied Engineering Company  
1525 Charleston Highway  
P. O. Box 1327  
Orangeburg, South Carolina

NATURE OF DEFICIENCY: During receipt inspection, several studs were noted not to have a 360° flash. When bent, per the requirements of the AWS code, one stud sheared off.

DATE PROBLEM WAS CONFIRMED TO EXIST: Upon investigation by CP&L engineering on June 18, 1982, it was determined that the plate with the failing stud could not fulfill its design function.

PROBLEM REPORTED: June 18, 1982 - CP&L (N. J. Chiangi) informed NRC Region II office (Mr. C. Hehl) by telephone that the problem was "reportable" per the provisions of 10CFR50.55(e).

SCOPE OF PROBLEM: One shipment of embedded strip plates (Type II) contained studs that did not exhibit a 360° flash. When bend tested, one stud failed.

SAFETY IMPLICATIONS: Strip plates are used to support any load (seismic, non-seismic, safety related or non-safety related) within the design envelope loads. These plates are not controlled in their use and any plate accepted for use can be used in any location where a strip plate is needed. Plates from the shipments containing faulty studs could have been used to carry loads required for Seismic Category I Safety-Related Equipment. According to the analysis performed plates with just one bad stud would have had minor over-stress when loaded to the envelope loads. Some loads less than envelope loads could be carried by the plates even with the faulty studs.

The application of envelope or near envelope loads to a plate with missing or faulty studs and to support safety-related loads would have resulted in permanent deformation of the strip plates, shifting of load and violation of seismic design criteria. However, the analysis of this condition is conservative. The more accurate analysis for this condition is a limiting or plastic analysis

SAFETY IMPLICATIONS:  
(cont'd.)

which has not been performed. In general, a plastic analysis results in indicating much less severe conditions and would probably have indicated that very little, if any, stress above ultimate strength would have been experienced.

REASON PROBLEM WAS  
REPORTABLE:

The strip plates cannot meet their original design criteria with inadequate studs. This condition is addressed in 10CFR50.55(e) and is a condition which "...were it to have remained uncorrected, could have affected adversely the safety of operations...and which represents:

- (iii) A significant deficiency in construction... which will require extensive evaluation,...or extensive repair to meet the criteria and bases stated in the Safety Analysis Report or construction permit...." (Quotation from 10CFR50.55(e))

CORRECTIVE ACTIONS:

All the embeds on the purchase order release on which the stud failed were returned to the vendor for investigation. After investigating, the vendor provided written correspondence stating that they thought the cause was a result of personnel changes. Prior to CP&L receiving this shipment of embeds, the vendor had personnel changes in their embed production area. Applied Engineering Company thinks this problem was a result of the inexperience of the new personnel involved.

To prevent this incident from occurring in the future, the vendor has instituted the following:

- 1.) Whenever new personnel are utilized on the embed production line, they will receive additional instructions on the project requirements on which they are working.
- 2.) When there is a shift or change in personnel, additional QC surveillance will be implemented.

In addition to investigating the personnel side of the situation, the vendor also had a Nelson Stud representative come in and review their operational parameters. The Nelson Stud representative thought Applied Engineering Company's set up was in good order and could see no apparent reason for any problems; however, the representative did state that based on several Nelson studies, that a 95 percent efficiency rate of good welds is excellent.