



April 1, 1983
L-83-212

Mr. James P. O'Reilly
Regional Administrator, Region II
U. S. Nuclear Regulatory Commission
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

RE: St. Lucie Unit 2
Docket No. 50-389, 10CFR50.55(e), 82-017
Undersize Fillet Welds

Dear Mr. O'Reilly:

On September 30, 1982, Florida Power & Light Company (FPL) filed a final report regarding undersized fillet welds which stated that all fillet welds would be re-inspected. FPL was unable to reinspect a small percentage (approximately 5%) of the welds and therefore, is filing an amended final report on this issue.

Very truly yours,

A handwritten signature in cursive script that reads "Robert E. Ehrig".

Robert E. Ehrig
Vice President
Advanced Systems and Technology

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I. Summary

A potential deficiency was identified in that socket welds were undersized. These welds had previously passed QC inspection. In response to several USNRC inspections in early 1982, site QC performed a reinspection of approximately 10% of the socket welds on ASME Section III, Class 1, 2 and 3 piping. The welds were randomly selected, 12% of which were found to be undersized.

FPL notified the NRC of this deficiency existing at the St. Lucie Unit 2 site as potentially reportable under 10CFR50.55(e) on August 31, 1982. This final report is submitted to advise the NRC of the description and corrective action that is being taken.

II. Description

In the early part of 1982, the USNRC inspected a number of small bore socket welds and found them undersized according to ASME Section III. These welds had already been inspected and found acceptable by QC. Subsequently, site QC performed a reinspection of 1119 Class 1, 2 and 3 socket welds, including 25 flange and 1094 fitting welds. Of those reinspected, 15 flange welds were found undersized (60%) and 127 (12%) fitting welds were undersized.

A. Reinspection - Accessible Welds

To ensure the correct reinspection of all accessible Class 1, 2 and 3 socket welds, QC has added Technique 9 to QI 9.1, "Visual Inspection of Welds". This technique clarifies the inspection requirements for determining weld size and contour. Fillet gauges, rulers, Welding Institute gauges, etc., are to be used to measure the size of the weld as accurately as possible. Use of this technique will identify welds requiring additional material and will alleviate future problems with undersized fillet welds.

B. Evaluation - Inaccessible Welds

On all inaccessible welds, an engineering evaluation has been performed. This evaluation resulted in an analysis which was based on data collected on accessible welds. Approximately 5% of the welds were inaccessible for reinspection.

III. Corrective Action

The following actions have been taken by FPL to correct the deficiency, and to ensure the correct construction and inspection of socket welds at the St. Lucie 2 site:

- A. Revise the inspection program to require measurements of socket welds for Class I, II and III piping (this action was completed on 6-16-82.)

B. Where applicable, a reinspection and analysis of all flange and socket fitting welds not inspected in the initial sampling has been completed. The reinspection was performed by a specially constituted team from Site QC, solely dedicated to this program. Using the techniques described in Section II, all welds were reinspected or analyzed. Based on the findings of the reinspection program and a finite element analysis, undersized fillet welds were dispositioned as follows:

1. On all undersized flange welds additional weld material will be added.
2. All accessible undersized socket fitting welds on Schedule 40 piping weld material will be added.
3. An engineering evaluation on all inaccessible welds was conducted to determine the "worst case" weld. The location of this weld was in the Containment Spray System. After this evaluation a finite element analysis was performed on this weld conservatively assuming a 50% undersized weld. This analysis was completed revealing that in all cases the stresses did not exceed the ASME Section III allowables. This evaluation was reviewed and subsequently approved by the resident ASME inspector.
4. All undersized welds on pipe greater than 1" in Class I system were repaired.
5. Other undersized welds were analyzed for applicability under ASME Code Case N-316.
6. Undersized welds found unacceptable per the analysis in Step 5 and resulting in additional or revised hanger/restraints or changing the postulated break location in high energy lines, weld material will be added.

C. The reinspection, analysis and material addition were done on a priority basis to avoid impacting major milestones. Since the undersized fillet welds were not identified by Quality Control during routine in-process inspection, the deficiency was evaluated to determine if it represented a significant breakdown in the Quality Assurance program. The deficiency does constitute a breakdown in the QA program since QC inspectors did not correctly identify undersized welds as required by QI 9.1. Due to the above mentioned re-inspection program, including revised procedures and additional training, this aspect of the deficiency has been corrected.

IV. Safety Implications

We have evaluated this concern and determined that it is a significant deviation from our commitment to build according to the ASME code as stated in the FSAR. Though most of the welds in question have successfully passed hydro requirements, the possibility of a weld failing under a seismic event could create a safety hazard. Therefore, we have deemed this concern to be reportable under 10CFR50.55(e).

V. Conclusion

Corrective action as indicated in Section III of this report has been completed. This closes out this item for St. Lucie Unit 2 with regards to the NRC's reporting requirements.