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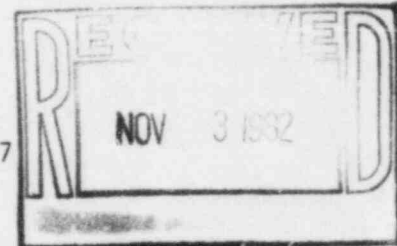
October 29, 1982

L. V. MAURIN
Vice President
Nuclear Operations

W3I82-0085
Q-3-A35.07.17

Mr. John T. Collins, Regional Administrator, Region IV
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76012

SUBJECT: Waterford SES Unit No. 3
Docket No. 50-382
Significant Construction Deficiency Report No. 17
"Base Metal Defect in Main Steam and Feedwater
Containment Penetration Anchors"
Final Report



REFERENCES: LP&L Letter LPL-14473 Dated July 3, 1980
LP&L Letter W3K82-0565 Dated September 2, 1982

Dear Mr. Collins:

In accordance with the requirements of 10CFR50.55(e), we are hereby providing two copies of the Final Report of Significant Construction Deficiency No. 17, "Base Metal Defect in Main Steam and Feedwater Containment Penetration Anchors".

Very truly yours,

L. V. Maurin

L. V. Maurin *by JAL*

LVM/MAL:keh

- cc: 1) Director
Office of Inspection & Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555 (with 15 copies of report)
- 2) Director
Office of Management
Information and Program Control
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- 3) E. Blake
- 4) M. Stevenson

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FINAL REPORT
BASE METAL DEFECTS IN MAIN STEAM AND FEEDWATER
CONTAINMENT PENETRATION ANCHORS

INTRODUCTION

This report is submitted pursuant to 10CFR50.55(e). It describes deficiencies in the base metal of the plates in the Main Steam and Feedwater Anchors. This condition is considered reportable under the requirements of 10CFR50.55(e).

To the best of our knowledge, this problem has not been reported to the Nuclear Regulatory Commission pursuant to 10CFR21.

DESCRIPTION

Tompkins-Beckwith, the process piping installation contractor, was attempting to weld 2-3/4" thick bearing lugs to the base and legs of the No. 1 and No. 2 Main Steam penetration anchors. Extensive cracking occurred in the base plates. The lugs and base plate area were untrasonically tested which indicated that cracking was prevalent in the base metal along the entire length of the lugs.

Six lugs had been previously welded on Feedwater No. 3 penetration anchors and had only minor indications after welding. However, the base material (Specification ASME SA-36) is susceptible to lamellar tearing and there was concern that cracking below the surface could exist. Ultrasonic testing was performed on all anchor lugs on the Main Steam penetration anchors Nos. 1, 2, and 3 and indications were found after welding. Nonconformances (W3-1718, W3-1723, W3-2083, and W3-2119) were generated to control the documentation and rework of indications. Problems previously encountered concerning distortion of the lugs as they cool down, was eliminated by the use of A588 high strength, low sulfur steel and revised welding procedures.

SAFETY IMPLICATIONS

If this deficiency was left uncorrected, in the event of a pipe rupture, the anchors may not be adequate to withstand the application of the full loads generated. It is therefore possible for an anchor to fail, perhaps resulting in subsequent pipe ruptures. Thus, failure to correct this deficiency could have invalidated assumptions made in the FSAR dealing with Pipe Rupture Analysis.

CORRECTIVE ACTION

The following action was taken to correct the deficiency:

1. A procedure to repair cracks in the base metal was furnished to the field. Direction was given for excavating the cracks and rewelding the base metal specifying a minimum preheat and interpass temperature. After being allowed to cool slowly to ambient temperature, the repairs were examined by magnetic particle and ultrasonic testing.

2. Reevaluation of the Main Steam and Feedwater Anchor loads has been performed by the Ebasco Mechanical Nuclear Department with the result that the size of the anchor lug and stiffener welds could be reduced.
3. The configuration of anchor lugs and stiffeners was revised to minimize the erection and welding problems encountered in the original design.
4. The design was changed to utilize a higher strength steel (from A441 to A588) for certain plate assemblies with special procurement requirements restricting the sulfur content.
5. The welding procedure was modified to incorporate welding techniques which were designed to minimize residual stresses in the welded plates thereby reducing the possibility of lamellar tearing of the base metal and distortion of the plates.
6. All welding is completed and all NDE reports have been reviewed and accepted as of October 29, 1982.
7. All documentation to support this repair and rework has been reviewed and approved as of October 29, 1982.
8. Nonconformance Reports Nos. W3-1718, W3-1723, W3-2083, and W3-2119, which were used to track and document this work, have been reviewed, accepted and closed.

This report is submitted as the Final Status Report.