

LOUISIANA POWER & LIGHT COMPANY

WATERFORD SES UNIT NO 3

Final Report of  
Significant Construction Deficiency No 14

Unsatisfactory Impact Tests  
On Pipe Penetration Assemblies 3 & 4

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FINAL REPORT  
SIGNIFICANT CONSTRUCTION DEFICIENCY NO 14  
UNSATISFACTORY IMPACT TESTS  
ON PIPE PENETRATION ASSEMBLIES 3 & 4

Summary

Pursuant to the requirements of 10CFR50.55(e), this report identifies a nonconformance of impact properties for the process pipe of Containment Penetration Assemblies 3 and 4 supplied to Ebasco at the Waterford SES Unit No 3 Project by Associated Piping and Engineering Company - Temp Flex Division (Compton, California).

Description

Associated Piping and Engineering Corporation - Temp Flex Division, under purchase order contract (NY-403422) to Ebasco Services Incorporated, supplied ASME Class 2 process pipe of containment penetration assemblies 3 and 4 to the Waterford SES - Unit No 3 Project which are to be used for the feedwater system. It was determined by the Ebasco Quality Assurance Department that impact test results for this heat (#L02364) did not meet the acceptance criteria of ASME, Section III, Subsection NE, 1971 Edition, Winter 1973 Addenda for the application. Specifically the Code required that this material have a lateral expansion of 25 mils for Charpy V-notch impact testing. Actual  $C_v$  results were 18, 19, and 21 mils lateral expansion for the process pipe of containment penetrations 3 and 4. This deviation was detected prior to installation of these assemblies.

For further verification of this data two  $C_v$  tests were performed on representative heats. It was determined that similar unacceptable values were obtained.

As required by Associated Piping QA Manual and Ebasco procedure (VQAD-13) initial QA review of the test results by vendor and Ebasco failed to detect the deviation of conformance to the Code requirement. Subsequent to this discovery Ebasco initiated NCR No W3-1695 describing this deficiency on October 4, 1979.

It was confirmed by Associated Piping and Engineering Corporation - Temp Flex Division that safety related components fabricated from this heat for the Waterford SES Unit No 3 Project were limited to the two process pipes for penetration assemblies described herein. Further verification was obtained from Associated Piping and Engineering Corporation - Temp Flex Division to assure that no other safety related components for other nuclear projects were supplied from this heat number.

### Safety Implication

The Charpy Test is performed to demonstrate the ability of the piping to equalize the design stresses as set forth in Sub-section 3.9.3 of the Final Safety Analysis Report. The results of the impact testing on process pipe of penetration assemblies 3 and 4 indicate that fatigue could occur when the piping is subjected to typical dynamic events which may occur in the plant. If left uncorrected, this deficiency could lead to pipe crack during cold hydrostatic tests or later during emergency feedwater operation due to corrosion/thermal stress.

### Corrective Action

Representing a discrepancy in initial review of QA documents and a deviation from design criteria (Code Requirements) two modes of corrective action were taken:

- 1) A facility resurvey of Associated Piping and Engineering Corporation - Temp Flex Division was performed by Ebasco Quality Assurance with special emphasis on the training program and mechanics of the QA records review process.

Corrective actions were provided by means of increasing the scope of the QC personnel indoctrination and training program to provide more emphasis on the review of preparation of QC/QA records.

- 2) To correct the document review discrepancies by the Ebasco Vendor Quality Assurance Representative (VQAR), a corrective action directive has been issued to all VQAR supervisors. Corrective action was in the form of re-indoctrination of all VQAR(s) by their supervisors relative to the review of QA records.

To correct the material deficiencies of the process pipe, the penetration assemblies were returned to Associated Piping and Engineering Corporation - Temp Flex Division for rework. Both process pipe sections were removed from the assemblies and heat treated to improve the impact properties in accordance with a qualified heat treatment process. Verification testing (Charpy "V" Notch Impact Test) was performed on the process pipe of both assemblies with acceptable results obtained on process pipe of penetration assembly No 4 and unacceptable results on No 3. Process pipe for Penetration No 3 was replaced with material meeting specification requirements.