

LOUISIANA POWER & LIGHT COMPANY  
WATERFORD SES - UNIT NO 3

FINAL REPORT OF  
SIGNIFICANT CONSTRUCTION DEFICIENCY NO 9

REPORT OF NONCOMPLIANCE TO WELDING REQUIREMENTS  
FOR HVAC SEISMIC SUPPORT HANGER TO EMBEDDED PLATES

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FINAL REPORT  
MARCH 17, 1980

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## Introduction

This report is submitted pursuant to 10CFR50.55(e). It describes deficiencies with regard to the welding of HVAC seismic support hangers to embedded plates at Waterford Unit 3.

## Background

As a result of a review of the American Welding Society - Structural Welding Code, it had been determined that 425 HVAC seismic support hangers at the Waterford 3 Steam Electric Station have been welded to embedded plates without applying the required preheat to the plates.

Through corrective action efforts it was further determined that an additional 45 hangers were found to be within the scope of this deficiency, bringing the total of affected hangers to 470.

The welding was performed by The Waldinger Corporation at various elevations in the Reactor Auxiliary and Fuel Handling Buildings utilizing E-6011 series electrodes. As identified in the Structural Welding Code - AWS D1.1-75, metals with a thickness over 3/4" to 1-1/2" must be preheated to 150 degrees F when an E-60XX series electrode is used.

A "Stop Work Order" was issued by Ebasco Management on June 19, 1978, on the use of E-60XX series electrodes.

Mr A E Henderson of Louisiana Power & Light Company, 142 Delaronde Street, New Orleans, Louisiana, notified Mr R C Stewart of the NRC on July 11, 1978, of this potential significant construction deficiency.

The "Stop Work Order" was rescinded on June 20, 1978, upon review of Waldinger's revised welding inspection and installation procedures. Shielded metal arc welding of the HVAC support hangers to the embedded plates resumed utilizing only E-7018 series electrodes (per procedure).

Ebasco Quality Assurance initiated Nonconformance Report W3-957 on June 20, 1978, describing the deficiency.

## Discussion

On June 16, 1978, upon review of the American Welding Society - Structural Welding Code AWS D1.1-75, it was determined that HVAC duct seismic support hangers at Waterford 3 Steam Electric Station were welded to embedded plates (1 inch to 1-1/2 inch thick) without applying preheat to the plate as required by the Code. The 425 seismic supports and the 45 additional seismic supports as described above, are located at various elevations in the Reactor Auxiliary Building and the Fuel Handling Building as identified in attachments to Nonconformance Report W3-957. The welding was performed by The Waldinger Corporation, the HVAC Contractor, utilizing E-6011 series electrodes as identified in their Weld Specification No PQW-1. In accordance with Structural Welding Code AWS D1.1-75, ASTM A36 metals with a thickness of over 3/4 inch to 1-1/2 inch must be preheated to 150 degrees F when an E-60XX series electrode is used.

Failure to preheat these plates is a direct violation of the HVAC Contractor's Weld Specification No PQW-1 and Structural Welding Code AWS D1.1-75.

At the time of discovery of this deficiency, overall construction of Waterford 3 was 44.6 percent complete and the HVAC seismic support installation in the Reactor Auxiliary Building and Fuel Handling Building was 41 percent and 32 percent complete, respectively.

#### Analysis of Safety Implications

This deficiency was classified as reportable because of the extensive engineering evaluation needed to determine the significance of the deficiency under 10 CFR 50.55(e). This deviation is a departure from the technical requirements of AWS D1.1-75. If the HVAC seismic support welds were left uncorrected, a major degradation of essential safety related HVAC equipment (e.g., Control Room Air Conditioning System, Controlled Ventilation Area System) could result during a seismic event.

#### Corrective Action

In February, 1979, the HVAC Contractor (The Waldinger Corporation) initiated corrective action repairs for hanger to embedded plate welds as identified in this deficiency. Of the 470 total HVAC seismic hangers to be repaired The Waldinger Corporation repaired 149 (32%) and the remaining 321 (68%) hangers were repaired by Ebasco Services Incorporated - HVAC, after termination of contract with Waldinger. All affected welds of hanger to embedded plates were repaired by either:

- a) Providing additional structural or mechanical attachments to carry the design loads of the affected welds or,
- b) Removal of the unacceptable weld, verification of the integrity of the excavated base material and replacement of the weld using low hydrogen electrodes.

Ebasco initiated the following Field Change Requests to provide typical design details to accomplish items a and b above:

FCR-AS-1206, Rev. 1, 2, & 3	FCR-AS-1114	FCR-AS-1452
FCR-AS-1255	FCR-AS-1230	
FCR-AS-1259	FCR-AS-1267	
FCR-AS-1390	FCR-AS-1304	
FCR-AS-1314	FCR-AS-1380	

All required corrective actions for this Significant Construction Deficiency have been completed including relevant Quality Assurance/Quality Control inspection reports and documentation. All records for this deficiency are now being maintained in the permanent Quality Assurance records files.