

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
REGION IV

Report No. 99900342/80-02

Program No. 51300

Company: Lakeside Bridge and Steel Company
5300 North 33rd Street
Milwaukee, Wisconsin 53207

Inspection Conducted: December 15-19, 1980

Inspector: *L. E. Eilershaw* 2-3-81
L. E. Eilershaw, Contractor Inspector
Components Section
Vendor Inspection Branch
Date

Approved by: *I. Barnes* 2-3-81
I. Barnes, Chief
Components Section II
Vendor Inspection Branch
Date

Summary

Inspection conducted December 15-19, 1980 (99900342/80-02)

Areas Inspected: Implementation of 10 CFR 50 Appendix B criteria, and applicable codes and standards, including: a Construction Deficiency Report; weld heat treatment, and welding material control. The inspection involved 34 inspector-hours on site.

Results: In the three areas inspected, no deviations from commitment and two unresolved items were identified.

Unresolved Item: Followup on a Construction Deficiency Report - Acceptance of a corrective action request response from a subcontractor, which did not address the cause of conditions adverse to quality (Details Section, paragraph B.4.c).

Weld Heat Treatment - Identification (on a manufacturing process sheet for a postweld heat treated steam generator lateral support) of the use of a welding procedure specification that was not qualified for a postweld heat treatment application (Details Section, paragraph C.3.b.).

DETAILS SECTION

(Prepared by L. E. Ellershaw)

A. Persons Contacted

F. Cullen - Welding Foreman
W. Jonas - NDE Level III Examiner
R. T. Rozek - Director, Quality Assurance
T. Smith - Chief Planner
Y. T. Smith - Chief Welding Engineer
A. J. Wos - Quality Assurance Engineer

B. Follow-up On A Construction Deficiency Report (CDR):1. Background

A CDR was initiated by Duke Power Co. (Catawba Unit 1) on June 12, 1980, relating to defective welds being visually detected in an equipment hatch. The equipment hatch and flange was fabricated by Lakeside Bridge & Steel Co. (LB&S), with certain welding and NDE performed by Chicago Bridge & Iron Co. (CB&I) on the flange to barrel section.

2. Objectives

The objectives of this area of the inspection were to determine any generic implications and to verify that LB&S had taken the necessary steps to assess, correct, and preclude recurrence of the problem.

3. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of contractual requirements between Duke Power Co. and LB&S and, the requirements passed on to CB&I by LB&S.
- b. Review of correspondence between Duke and LB&S after the defective welds were discovered.
- c. Review of CB&I's Ultrasonic Test Procedure, UT1, Revision 0, dated March 12, 1979.
- d. Review of CB&I's Shop Check List and UT Examination report for the No. 1 Upper Barrel.

- e. Review of NDE qualifications for CB&I personnel performing the shop ultrasonic examinations (UT).
- f. Review of Nonconformance Report No. 771-10, including recommended disposition, which was submitted to Duke by LB&S on June 5, 1980.
- g. Review of the resultant weld repair records, including verification of welding materials used in making the repairs.
- h. Review of UT and MT (magnetic particle examination) reports after repairs had been accomplished.
- i. Review of Corrective Action Request No. 64, which requested CB&I to investigate the possible causes for their failure to detect defects during the performance of UT examination.
- j. Discussions with cognizant personnel.

4. Findings

a. General

Duke Power Company notified NRC Region II by telephone on June 12, 1980, that defective welds (slag inclusions) had been visually detected during the machining of certain weld preps. As a result, Duke performed a UT examination and identified five areas which they considered questionable. The welds in question are in the area between the upper barrel and the containment flange.

LB&S fabricated the equipment hatch, barrel halves, and flange, including welding the equipment hatch to the upper barrel, and CB&I welded the flanges to the barrel halves and UT examined those welds. The configuration was such that radiography could not be performed. The balance of welding and NDE is performed in the field.

Duke notified LB&S, who in turn, went to the site (Catawba I) to review Duke's findings. LB&S performed a UT examination of the entire area. Four locations were discovered with rejectable indications. The lower barrel to flange contained one which was $1\frac{1}{2}$ " long, while the upper barrel to flange contained three which were $1\frac{1}{4}$ ", $1\frac{1}{2}$ ", and $5\frac{1}{2}$ " long. Duke requested LB&S to submit a Nonconformance Report (NCR) with a recommended repair disposition. NCR 771-10 dated June 5, 1980, was submitted by LB&S and Duke accepted the disposition on June 6, 1980.

LB&S requested CB&I to accompany them to the site for verification purposes. The agreement reached at the site, was for LB&S to effect the repairs. This was accomplished during the week of June 9, 1980. UT and MT examinations on June 11, 1980 showed the repaired areas to be acceptable.

The inspector reviewed the weld repair records, including: welder's qualifications; welding procedure specification and its qualification, and the welding material qualifications. In addition, the NDE reports, procedures and the qualifications of the personnel performing the NDE were reviewed.

LB&S subsequently sent a Corrective Action Request (No. 64) dated September 22, 1980, to CB&I, requesting a written response relative to CB&I's assessment of the cause of the condition and their corrective action to prevent recurrence.

CB&I's response, dated October 27, 1980, and accepted by LB&S on November 3, 1980, addressed the fact that their UT procedure was written in accordance with Section V of the ASME Code. They went on further by discussing the re-examinations performed at the site by both LB&S and CB&I using a 45 degree and 60 degree transducer. CB&I's contention was that when using a 45 degree transducer, three of the four indications were acceptable and the fourth was a "borderline type defect," which they accepted as meeting the acceptance criteria of their procedure. However, when using a 60 degree transducer, two of the indications were rejectable while the other two were "somewhat questionable because of the lengths of the defects." LB&S's position was that all four indications were rejectable.

Regarding corrective action, CB&I stated, "On future work, consideration will be given to the use of two different angle transducers (45° and 60° angles) for certain weld joint geometries such as encountered on this job, even though the two angle search is not required by ASME Section V, Article 5."

It would appear then, that in this case, the 60° angle transducer was better suited for detecting and defining these four indications.

Review of the CB&I shop UT examination reports indicated the use of a 60° angle transducer. The CB&I corrective action response letter did not address, however, the failure of the shop examinations to detect the rejectable indications, that were subsequently established to exist by site examination with a 60° angle transducer.

It was determined that the only other nuclear work performed by CB&I for LB&S, was on a steam generator sliding base for St. Lucie 2. This work was classified as non ASME. During that job, LB&S monitored the UT performed by CB&I.

LB&S stated that they had monitored some MT, but no UT performed by CB&I on the Duke job. They also performed a final visual examination before shipment.

b. Nonconformances

None.

c. Unresolved Item

The ASME Code requires that conditions adverse to quality, the cause of the condition, and the corrective action taken shall be documented, and that these requirements shall also extend to the performance of a subcontractor's corrective action measures.

Based upon the information available during this inspection (corrective action request and response), it would appear that LB&S accepted a subcontractor's response without obtaining a documented cause for that subcontractor's failure to identify rejectable indications during shop UT examination.

C. Weld Heat Treatment1. Objectives

The objectives of this area of the inspection were to verify that LB&S had implemented the requirements for the control of postweld heat treatment (PWHT) in accordance with the QA Manual and applicable NRC and ASME Code requirements.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of QA Manual Section 12, "Heat Treatment."
- b. Review of procedure No. 2.1, "Procedure and Specification For Thermal Stress Relieving For P₁ and P₃ Materials."
- c. Review stress relief furnace load records and heat treat charts for components used in contracts C-9182 and C-9233.
- d. Review records of welding procedure specifications used and their procedure qualification records.
- e. Review of welding materials used and their certified material test reports to ascertain their qualification for use in a PWHT condition.
- f. Discussions with cognizant personnel.

- g. Review of Manufacturing Process Sheets (MPS) used to delineate the applicable procedures to be used, and to provide for operation performance sign-off.

3. Findings

a. Nonconformances

None.

b. Unresolved Item

During review of the MPSs, WPSs and PWHT Charts for the Steam Generator Lateral Support, No. 25-0-1-2, the following information was obtained.

MPS 25.0.1 showed that certain weld seams had been welded and subsequent PWHT had been performed. The WPSs and welding materials used, had been qualified for use in the PWHT condition.

The next MPS for this assembly (MPS 25.0.1 X1) was issued and it showed that welding was performed on additional seams with a sign-off date of April 15, 1980. PWHT was signed-off on April 28, 1980. Subsequent magnetic particle examination revealed defects which required repair welds. These were of a size and depth which would not require PWHT. Due to a previously identified problem regarding radiography (film density), LB&S agreed with their customer to re-radiograph certain areas. This revealed additional rejectable indications; thus, a repair MPS was generated (MPS 25.0.1 X2). All identified, rejectable indications were weld repaired on September 30 and October 7, 1980, using WPS 50-B-U3b, revision 3. The part then received a PWHT on November 14, 1980.

WPS 50-B-U3b is not qualified in a PWHT condition. LB&S explained that the wrong WPS was shown as being used, that WPS 49-B-U3b was the one actually used. A review and comparison of the two WPSs showed that they have identical parameters with the exception that one is qualified for PWHT and the other is not.

From a technical standpoint, there are no problems. However, from a quality record standpoint, in which the records are used to demonstrate compliance with various requirements, there is a problem. In addition, this type of problem lends itself to questioning the adequacy of reviews performed on MPSs prior to their being issued to Manufacturing.

D. Welding Material Control

1. Objectives

The objectives of this area of the inspection were to verify that LB&S had implemented the requirements for the control of welding materials in accordance with the QA Manual and applicable NRC and ASME Code requirements.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of QA Manual Section 10, "Welding."
- b. Review of welding material issue slips with subsequent review of associated certified material test reports.
- c. Observation of welding material storage areas, including weld rod storage ovens.
- d. Discussions with cognizant personnel.

3. Findings

a. Nonconformances

None.

b. Unresolved Items

None.

E. Exit Meeting

A meeting was held at the conclusion of this inspection on December 19, 1980, with the following management representatives:

G. Behnke - Executive Vice President
W. Jonas - NDE Level III Examiner
A. Jurevics - Vice President, Engineering
R. T. Rozek - Director, Quality Assurance
T. Smith - Chief Planner
Y. T. Smith - Welding Engineer
J. Watts - Vice President, Manufacturing
A. J. Wos - QA Engineer

The scope and findings of this inspection were summarized. Management acknowledged the statements relative to the findings.