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

Report No. 99900700/79-01 Program No. 51300

Company: Thermxchanger Inc.
760 98th Avenue
Oakland, California 94603

Inspection Conducted: December 17-18, 1979

Inspector: V. H. Hunter 2-29-80
V. H. Hunter, Inspector Date
Component Section I
Vendor Inspection Branch

Approved by: V. H. Hunter for 2-29-80
D. E. Whitesell, Chief Date
Component Section I
Vendor Inspection Branch

Summary

Inspection on December 17-18, 1979 (99900700/79-01)

Areas Inspected: Implementation of 10 CFR 50, Appendix B. Criteria and applicable codes and standards, including 10 CFR 21 reported defective components, QA Manual Review, ANI interface, and documentation inconsistencies. The inspection involved sixteen (16) inspector hours on site.

Results: In the four (4) areas inspected, no apparent deviations were identified in three (3) areas. One (1) deviation was identified in the following area:

Reported Dicrepancies: Contrary to the requirement of Appendix B to 10 CFR 50 and the ASME accepted QA Manual, N stamped nameplates were affixed to four (4) units prior to submitting final data file and Data Reports to the Authorized Nuclear Inspector (ANI) for review and concurrence. (Details paragraph E.1.b(2))

DETAILS

A. Principal Persons Contacted

Thermxchanger Incorporated (TX)

*E. A. Anderson, President
*D. L. Lombard, Vice President
*J. D. Hollison, Quality Assurance Manager
*M. H. Stanford, Production Manager
*D. Billings, Chief Engineer
*K. Arney, Contracts Manager
*H. B. Gardner, Materials Manager

Transamerica Delaval Incorporated (DL)

*A. E. Nance, Quality Engineer
E. G. Deane, Quality Control Manager

*Denotes those present at the Exit Meeting

B. General

TX manufactures heat exchangers and is a prime supplier to the Transamerica Delaval Corporation. TX maintains an ASME Certificate of Authorization number N-1944 for class 3 vessels and storage tanks which expires on October 31, 1980. The authorized agency is the State of California with the Authorized Inspector provided on an as needed basis.

C. QA Manual Review

1. Objectives

The objectives of this area of the inspection were to verify that the QA program changes have been documented in writing, and have been implemented to control quality related activities. Also to ascertain that the program provides for the following:

a. Management's policy statements concerning QA.

b. The QA organization structured to achieve organizational independence and freedom to:

(1) Identify quality problems.

(2) Initiate appropriate resolutions.

(3) Verify corrective actions.

c. Provide the QA staff with the authority, and access to a level of management that ensures effective implementation of the QA program elements, and to enforce positive and timely corrective action.

d. The duties, responsibilities, and the authority of the QA staff is clearly delineated in writing.

e. Detailed written procedures, properly reviewed and approved are available to control quality activities.

2. Method of Accomplishment

The preceding objectives were accomplished by:

a. Review of the ASME accepted QA Manual, revision 3.

b. Review of representative copies of the QA Manual.

c. Review of QA audits of the QA Manual.

d. Interviews with vendor personnel.

3. Inspection Findings

Within those areas inspected there were no deviations or unresolved items identified.

D. 10 CFR 21 Reported Deficiencies

1. Background Data

On December 11, 1979 TX reported to IE:V that apparent defective jacket water coolers (2) had been shipped to the Catawba Nuclear Station Unit No. 1 in South Carolina. The report described a baffle spacing error which could cause the involved disel engine to overheat.

2. Pertinent Component Data

a. Components: Two (2) jacket water coolers with a 24" shell diameter x 26' tube length, type NSP with Serial Numbers X-12176-B1 and X-12176-B2.

b. Customer: Transamerica Delaval Inc., Engine and Compressor Division, Oakland, California. Purchase Order Number 62661 for four (4) jacket water coolers and four (4) lube oil coolers.

c. User: Duke Power Company, Catawba Nuclear Station, Unit 1.

d. Reference: TX job number X-12176B and drawing number 1082.

3. TX Error Detection

TX was in the process of fabricating two (2) jacket water coolers for Catawba, Unit 2 (having previously fabricated and shipped identical components to Catawba Unit 1) when a production worker on the floor questioned the location of the baffle cut on the segmented baffles. This apparent discrepancy was brought to the attention of the area supervisor who in turn interfaced with engineering and determined that in fact the production worker was right in that a dimensional error on drawing E-1371 for the segmental cuts had resulted in too small a flow area for the jacket water passage. This flow restriction would create an excessive pressure drop on the shell side and consequently cause over heating of the diesel engines.

When questioned as to why the drawing error existed, TX management stated that the error should have been noted at the time the drawing was reviewed and checked or during fabrication of the first two (2) units.

4. TX Corrective Actions

a. Recalled the two (2) jacket water coolers that were shipped to Catawba Unit 1.

b. Filed an interim report with the NRC as required by 10 CFR 21.

c. Revised drawing E-137. .o require the correct baffle cuts.

d. Added baffle cuts to the tube field drawings that indicates the tube hole locations in the tube sheet which results in baffle cut errors being readily detectable.

e. Issued and discussed instructions to design and design review personnel that re-emphasizes the methods and importance of their related functions.

5. Generic Considerations

Generic considerations to other nuclear facilities is considered remote due to the fact that both lube oil coolers and jacket water coolers are custom manufactured to customer unique design requirements. This requires TX to develop a complete new set of drawings for each customer order. However, to positively assure that other undetected drawing errors do not exist, TX will review the detailed drawings for all eighteen (18) previous designs for nuclear heat exchangers (both lube oil and jacket water coolers) and include their findings in the final report to the NRC in accordance with 10 CFR 21.

6. Inspection Findings

No apparent deviations or unresolved items were identified.

E. Reported Documentation Inconsistencies

During a routine inspection of the Bellefonte Nuclear facility, IE:RII inspectors noted certain inconsistencies in documentation of the "Driver Emergency Generator Power Package." The inconsistencies related to sub-components (jacket water and lube oil coolers) supplied to Delaval by TX and were identified in inspection reports filled by the Tennessee Valley Authority (TVA) materials inspector assigned to the TX facility. The inconsistencies noted in the TVA inspector's reports are stated and addressed sequentially in the following paragraphs.

1. Issuance of ASME Data Reported and Nameplate Prior to Final Acceptance:

The TVA inspection report noted that two lube oil coolers SN's X12171A1 and X12171A2, and two jacket water coolers SN's X12171B1 and X12171B2, had the ASME N Stamp nameplates affixed and/or ASME Data Reports issued prior to TVA final acceptance of the Hydrostatic test.

a. Documentation Review

The inspector reviewed all documentation relative to the units in question. In addition documentation for eight (8) other units manufactured at a later date was also reviewed as tabulated below:

*TX UNIT JOB NO. X12171

S/N		ASME Data Report	Hydro Report
A1		4-29-77	4-20-77
A2	**	4-20-77	4-29-77
B1	**	4-13-77	4-12-77
B2		4-7-77	4-7-77

TX Unit Job No. X12605

S/N	ASME Data Report	Hydro Report
A5	10-23-79	8-9-79
A6	10-23-79	8-9-79
B5	10-23-79	8-16-79
B6	10-23-79	8-28-79

TX Unit Job No. X12176

S/N	ASME Data Report	Hydro Report
A1	3-9-79	3-8-79
A2	3-9-79	3-8-79
B1	3-20-79	3-20-79
B2	3-22-79	3-20-79

*Units referenced in TVA field reports

**ASME Data Reports signed by the ANI prior to published hydro report dates.

The ANI was not available during this inspection. However, his required daily log book was reviewed which indicated that his logged activities corrosponed to the dates tabulated above.

b. Inspection Findings

(1) At first review it appeared that the ASME Data Reports for Units X12171-A2 and B1 had been signed by the ANI prior to acceptance of the hydro. However, further review of inspection check lists used for each manufacturing function disclosed that in fact these units were hydro tested for the ANI on 4-13-77 and 4-20-77, and repeated for TVA on 4-29-77 at which time the TX hydro report was initiated.

No deviation from commitments was identified.

(2) It was verified that ASME Code stamped nameplates were affixed to all four units X12171A1, A2, B1 and B2 prior to final hydro which is contrary to the ASME accepted QA manual.

Discussions with TX personnel disclosed that during 1977 the ANI, in order to maintain visual unit identities on the shop floor, had authorized TX to affix the name plates. This is considered a deviation from the ASME accepted QA Manual and requirements of the ASME Code. However, the inspector verified the following corrective action:

(a) TX had ceased this practice in 1977.

(b) TX has issued instructions to personnel to prevent recurrence. No response is necessary. (See Notice of Deviation)

2. Radiographic Film Interpretations

TVA inspection report No. 41 dated 9-28-78 stated that one (1) radiograph view 9-10 in air reciever tank No. X12174A1, was not satisfactory. Further that the radiograph showed linear indications which had been marked "crack or lack of penetration", but had been erased from the film and radiographic report.

a. Documentation Review

The inspector reviewed radiographs for the total girth seam of air reciever tank No. X12174A1 including the original radiograph of area 9-10 as referenced in the TVA report. Also reviewed was the final acceptance view of 9-10 which was re-radiographed in accordance with the TVA inspector's request.

b. Inspection Findings

(1) The original film for view 9-10 contained an obvious "film Artifact" and not a crack or lack of penetration as previously indicated.

(2) The final acceptance film for view 9-10 exibited a sufficient number of characteristics that were compared to the original film which verified that both film represented the same material area of interest.

(3) The final acceptance film for view 9-10 was found acceptable to the requirements of Section V, Article 2, paragraph ND5322-d.2 of the 1974 edition of the ASME Codes.

(4) No deviations or unresolved items were identified.

F. ANI (Authorized Nuclear Inspector) Interface

1. Objectives

The objectives of this inspection were to verify that:

a. The ANI has direct contact with the cognizant plant QA/QC representative.

b. The ANI has free access to all parts of the plant concerned with supply or manufacture of ASME Code work.

c. All applicable documents are available to the ANI for review.

d. The ANI identifies and signs off on witness hold points or process control documents and witnesses the qualification of special NDE procedures.

e. The ANI maintains a log of activities reviewed and/or witnessed.

2. Method of Accomplishment

The preceding objectives were accomplished by:

a. Review of revision 3 of the ASME accepted QA Manual.

b. Review of the ANI log book of inspection activities.

3. Findings

a. The ANI is assigned to this shop on as needed basis.

b. All necessary documents are made available to the ANI. The ANI has access to all plant facilities related to his work.

c. The ANI was not available, however, review of the ANI inspection log established it was consistently maintained.

d. Within this area of the inspection, no deviations from commitment or unresolved items were identified.

G. Exit Interview

The inspector met with those individuals noted in paragraph A above at the conclusion of the inspection on December 18, 1979. The inspector summarized the scope and findings of the inspection. Management representatives acknowledged the inspector's comments regarding the scope and findings as presented.