

# BOILERS AND PRESSURE VESSELS REPAIR AND ALTERATION REPORT

(A) #: 0412597

OWNER EQUIP NO.: V-2000

REPAIR ☒

and/or

ALTERATION ☐

Partial ☐ Final ☒

- Name and Address of Organization** doing Repair/Alteration Bunch Welding Ltd  
Box 579, Rocky Mountain House, AB. T4T 1A4 AQP No. & Expiry Date 1264 June 14, 2009  
Location of Installation 07-21-39-10 W5M
- Name of Owner** Devon Canada  
Address #17, 7471 Edgar Industrial Bend, Red Deer, AB. T4P 3Z5
- Boiler/Pressure Vessel Description** Sulfa treat tower CRN L6160.2  
Manufacturer's Name Brooks Welding Services Ltd. Serial No. BW228.001
- Design Conditions:**  
a) Vessel/Shellside/Boiler: Max Allowable Working Press. 4964 KPA Min/Max Design Temp -29C/38C  
b) Jacket/Tubeside: Max Allowable Working Press.                      Min/Max Design Temp /
- Description of defects** (location and types of deterioration that resulted in the repair/alteration).  
Install 13 new 1/2" x2" SA 36 bed support bars
- ASME Code Edition and Addenda** used for work: ASME Sect. VIII Year 2007 Addenda 2008
- Repair/Alter. Description of Work.** Step by step description of repair/alteration method, attach additional sheets as needed.

**Note 1:** Repair/Alteration Procedure to be accepted by ABSA SCO prior to start of work.

See repair procedure attached.

- Material** - List any material used in repair/alteration and any base material welded on:

Item	Mat'l Spec.	Thick/Sch	Diam	Item	Mat'l Spec.	Thick/Sch	Diam
Shell/Drum	SA-516-70	1.00"	42"	Heads/ Ends			
Tubeshe				Tubes			
Nozzles				Flanges/Fitting		Class	

- Welding Procedure** - Alberta Registration Number WP- 1078.2 WPS Numbers used: BW-1
- Heat Treatment:** Bake Out (Temp./Time) / hr Preheat Temp 176F Post Weld HT (Temp./Time) /
- Non Destructive Examination** (Specify type and extent).

UT & MT affected support bed attachment area

MT all fillet welds after cooling 12 hours

<b>Detail Job Scope</b>	Remove the remaining two flat bars. Grind the support bed weld metal from the vessel shell. UT & MT the affected support bed attachment area. Pre heat affected area to 80 C. Fillet weld no greater than 12.7 mm for all reachable areas around the ends of the flat bars at the correct vessel elevation in the lay out prescribed in the attached manufacturer's drawing. Post MT all the fillet welds as noted below.
<b>Section E</b>	
<b>Procedure</b>	<p><b>Weld Preparation</b></p> <ol style="list-style-type: none"> <li>Area to be welded to shall be cleaned to white metal for a distance of 10 mm beyond the expected attachment area.</li> <li>The weld attachment area shall be UT and MT examined for laminations and surface discontinuities. If laminations or surface discontinuities are identified they shall be brought to the attention of the FAIA and dealt with in accordance with the requirement of the Company's Owner User Program.</li> </ol> <p><b>Preheat and Welding:</b></p> <ol style="list-style-type: none"> <li>Minimum pre-heat shall be 80 C (176 F) for a 100 mm band on both sides of the weld attachment area. Temperature to be controlled by temperature-sensitive crayons – upper and lower temperature to be controlled.</li> </ol> <div data-bbox="535 961 596 1037" data-label="Image"> </div> <p><b>Note</b>      The 80 C (176 F) pre-heat temperature has been selected for alignment with NB-23, Appendix B assuming the specific carbon content of the material is not known.</p> <ol style="list-style-type: none"> <li>Welds shall be completed using new E 7018-1 electrodes.</li> <li>Maximum interpass temperature shall not exceed 230 C (450 F).</li> <li>The FAIA, or his delegate, shall witness seal on the box being broken and ensure that once the box has been opened the electrodes are stored in an oven.</li> <li>Once the welds are completed the weld area shall be wrapped with an insulating blanket and allowed to slow cool to 100 C (212 F). The cooling rate shall not exceed 260 C (500 F) / hour.</li> </ol> <p><b>Post Welding NDE:</b></p> <ol style="list-style-type: none"> <li>Perform MT 12 hours after completion of the work</li> <li>No hydrotest is required.</li> </ol> <p><b>Documentation:</b></p> <ol style="list-style-type: none"> <li>Ensure Company Approved Contractor has completed QC documentation.</li> </ol>

(A) #: 149061

OWNER EQUIP. NO. V-2000

12. **Pressure Test**                      Vessel/Boiler/Shellside                      Tubeside/Jacket
- a) Hydrostatic    n/a
- b) Other Test

13. **Welded Replacement Parts:** Attached are Manufacturer's Partial Data Reports or Repair/Alteration Reports properly identified and signed by Authorized Inspectors for the following items of this report: (Welded parts supplied by others).

14. **Responsibility Owner/Client.** Identify below items that the owner/client has assumed responsibility for. **Note (2)**

- a) Design                      b) Repair/Alteration Procedure: x                      c) Material Control
- d) Welding Control                      e) NDE                      f) Heat Treatment                      g) Pressure Test

**Note 2:** Owner/client must have a valid Alberta Quality Program (AQP), for the scope of work, to assume responsibility for function c, d, e, f, or g.

15 **REMARKS:**

16. **CERTIFICATE OF COMPLIANCE**

We certify that the statements made in this Report are correct and that all design, material, construction and workmanship on this repair/alteration conform to the requirements of the Alberta Safety Codes Act and Regulations.

- a) For all items except for items identified in 14:

Bunch Welding Ltd

(Repair/Alteration Organization Name)

1264                      June 14, 2009

(AQP Number & Expiry Date)

*Bob Gonda*                      Oct 2/08

(Signature & Date)

Bob Gonda

(Print Name)

- b) For items identified in 14 only:

Devon Canada

(Owner/Client Organization Name)

AQP - 8114                      Dec. 13, 2009

(AQP Number & Expiry Date)

*Calvin Campbell Busby*                      Oct. 2/08

(Signature & Date)

Calvin Campbell Busby

(Print Name)

17. **DATE WORK WAS COMPLETED:** Oct. 2, 2008

18. **CERTIFICATE OF INSPECTION**

I have inspected the repairs and/or alterations described in this report. To the best of my knowledge, this work has been done in accordance with the Safety Codes Act and Regulations and the requirements established in AB-513.

- a) **Owner-User Inspection Certification (Field Only)**

(Required when Owner-User Inspects the work under their ABSA Authorized Owner-User Quality Program).

AQP - 8114                      Dec. 13, 2009

Owner-User AQP# & Expiry Date

*Calvin Campbell Busby*                      Oct. 2/08

In-Service Inspector Signature & Date

Calvin Campbell Busby

In-Service Inspector Name (Please Print)

000128

In-Service Inspector Alberta Cert #

- b) **ABSA Safety Codes Officer Certification**

(when work is inspected by ABSA).

ABSA SCO Signature & Date

Print Name

Report Received by ABSA SCO

Date



M-3890

## MAGNETIC PARTICLE/LIQUID PENETRANT INSPECTION REPORT

Date	OCT 2/08	VESSEL REPAIRS	Page	1 of 1
CLIENT:	DEVON CANADA	ECHO JOB #		
CONTRACTOR:	BUNCH PROJECTS			
LOCATION:	7-21-39-10W5M	PROJECT	SULFA TREAT TOWER	
ITEMS EXAMINED:	NEW WELDS ON BED SUPPORTS			
PROCEDURE:	MT-2A	CLIENT P.O.#/JOB#:	BUNCH# 08-18779	
ACCEPTANCE CRITERIA:	ASME SEC VIII, DIV 1, APP 6	SPECIFICATION:	A 412597	
SURFACE CONDITION:	<input checked="" type="checkbox"/> Clean Base Metal	<input type="checkbox"/> As Ground	<input type="checkbox"/> Machined	<input type="checkbox"/> Shot Blast
	<input type="checkbox"/> Painted	<input checked="" type="checkbox"/> Other		
MINIMUM LIGHT INTENSITY $\geq 100$ fc VISIBLE	$\geq 1000 \mu\text{W}/\text{cm}^2$ FLUORESCENT			AS WELDED
MPI METHOD				
<input checked="" type="checkbox"/> AC	<input type="checkbox"/> DC	<input checked="" type="checkbox"/> Continuous	<input type="checkbox"/> Residual	<input type="checkbox"/> 12V
		<input checked="" type="checkbox"/> 120V	<input type="checkbox"/> Other:	
EQUIPMENT TYPE	PROD SPACING 4"-6"			
<input checked="" type="checkbox"/> Yoke	<input type="checkbox"/> Coil	Serial #:	123	Last Calibration Date:
				APR 3/08
<input type="checkbox"/> Blacklight	Serial #:	Last Calibration Date:		
MPI MEDIUM	<input type="checkbox"/> Dry Colour:	<input checked="" type="checkbox"/> Wet	<input checked="" type="checkbox"/> Fluorescent	<input type="checkbox"/> Black on White
		Particle Size:		
EXCESS PARTICLE REMOVAL	<input checked="" type="checkbox"/> Flow	<input checked="" type="checkbox"/> Exhalation	<input type="checkbox"/> Other	
LPI METHOD				
Penetrant:	S/N	<input type="checkbox"/> Vis	<input type="checkbox"/> Fluorescent	<input type="checkbox"/> Water Wash
		<input type="checkbox"/> Solvent Removable		
Developer:	S/N	<input type="checkbox"/> Wet	<input type="checkbox"/> Dry	<input type="checkbox"/> Nonaqueous
Dwell Times	Penetrant	Min:	Max:	Developer
		Min:	Max:	
TEST RESULTS				
A WET FLUORESCENT MPI EXAMINATION WAS PERFORMED ON ALL THE NEW WELDS OF THE BED SUPPORT ON THE BOTTOM OF VESSEL A 412597 AS REQUESTED BY CLIENT. THE MPI WAS DONE ON ALL ACCESSIBLE WELDS AS WELL AS A 1"-2" AREA TO EACH SIDE.				
* RESULTS: THERE WERE NO VISIBLE SURFACE DEFECTS FOUND AT TIME OF INSPECTION. ACCEPTABLE TO CODE.				
I-CAN MPI		STAMP		
CONSUMABLES		KYLE BRUNS #10294		
		CGSB RTII / MTII		
		SNT-TC-1A RTII / MTII		
Client Representative:	Dan Houlie	Technician:	JAMIE B	
		Regular Hours	5 REG	
		Overtime Hours	-	
		Sub/Man Day	-	
		Kilometers	260	



M-3888

## MAGNETIC PARTICLE/LIQUID PENETRANT INSPECTION REPORT

Date	SEPT 30/08	VESSEL REPAIRS	Page	1 of 1
CLIENT:	DEVON CANADA	ECHO JOB # 1610		
CONTRACTOR:	BUNCH PROJECTS			
LOCATION:	7-21-39-10WSM	PROJECT SULFA TREAT TOWER		
ITEMS EXAMINED:	AREAS THAT HAVE GRINDED FLUSH			
PROCEDURE:	MT-2A	CLIENT P.O.#/JOB#: BUNCH # 08-18779		
ACCEPTANCE CRITERIA:	ASME SEC VIII, DIV 1, APP 6		SPECIFICATION: A 412597	
SURFACE CONDITION:	<input checked="" type="checkbox"/> Clean Base Metal <input checked="" type="checkbox"/> As Ground <input type="checkbox"/> Machined <input type="checkbox"/> Shot Blast <input type="checkbox"/> Painted <input type="checkbox"/> Other			
MINIMUM LIGHT INTENSITY $\geq 100$ fc VISIBLE $\geq 1000 \mu\text{W}/\text{cm}^2$ FLUORESCENT				
MPI METHOD				
<input checked="" type="checkbox"/> AC <input type="checkbox"/> DC <input checked="" type="checkbox"/> Continuous <input type="checkbox"/> Residual <input type="checkbox"/> 12V <input checked="" type="checkbox"/> 20V <input type="checkbox"/> Other:				
EQUIPMENT TYPE	PROD SPACING 4"-6"			
<input checked="" type="checkbox"/> Yoke	<input type="checkbox"/> Coil	Serial #: 123	Last Calibration Date: APR 3/08	
<input checked="" type="checkbox"/> Blacklight		Serial #: 1451427	Last Calibration Date: SEPT 30/08	
MPI MEDIUM	<input type="checkbox"/> Dry Colour:	<input checked="" type="checkbox"/> Wet <input checked="" type="checkbox"/> Fluorescent <input type="checkbox"/> Black on White	Particle Size:	
EXCESS PARTICLE REMOVAL	<input checked="" type="checkbox"/> Flow <input checked="" type="checkbox"/> Exhalation <input type="checkbox"/> Other			

## LPI METHOD

Penetrant:	S/N	<input type="checkbox"/> Vis	<input type="checkbox"/> Fluorescent	<input type="checkbox"/> Water Wash	<input type="checkbox"/> Solvent Removable
Developer:	S/N	<input type="checkbox"/> Wet	<input type="checkbox"/> Dry	<input type="checkbox"/> Nonaqueous	
Dwell Times	Penetrant	Min:	Max:	Developer	Min: Max:

## TEST RESULTS

A WET FLUORESCENT MPI EXAMINATION WAS PERFORMED ON ALL AREAS THAT WERE GROUND FLUSH ON THE INSIDE WALL OF VESSEL A 412597 AS REQUESTED BY CLIENT. THE MPI WAS DONE ON EACH GROUND AREA AS WELL AS A 1"-2" AREA TO EACH SIDE.

\* RESULTS: THERE WERE NO VISIBLE SURFACE DEFECTS FOUND AT TIME OF INSPECTION. ACCEPTABLE TO CODE.

STAMP  
KYLE BRUNS #10294  
CGSB RTII / MTII  
SNT-TC-1A RTII / MTII

Regular Hours	5 REG
Overtime Hours	—
Sub/Man Day	—
Kilometers	260

1 - CAN MPI  
CONSUMABLES  
1 DAY GENERATOR

Client Representative:

Technician:

Assistant:

ANDREW H.