

**BOILERS AND PRESSURE VESSELS
REPAIR OR ALTERATION REPORT**

(A) #: 403457

OWNER EQUIP. NO: V-620

REPAIR ORG. JOB NO: _____

REPAIR

and/or

ALTERATION

Partial

Final

1. Name of Organization doing Repair/Alteration Exact Oilfield Developing Ltd.

Address 1412 Tamarack Road N.E. Slave Lake AB AQP No. & Expiry Date 2172 November 26 / 2014

2. Name of Owner Canadian Natural Resources Ltd.

Address 2500-855 2 St. SW Calgary AB T2P 4J8

Location of Installation 12-9-81-22 W4 Brintnell Battery

3. Boiler/Pressure Vessel Description Treater CRN L0015.2

Manufacturer's Name RCI Resource Constructors Inc. Year 1998 Serial No. 97015-2-30

4. Original Design Conditions:

a) Vessel/Shellside/Boiler: Max Allowable Working Press. 75 psi Min/Max Design Temp -20 F/300 F

b) Jacket/Tubeside: Max Allowable Working Press. _____ Min/Max Design Temp /

5. New Design Conditions:

a) Vessel/Shellside/Boiler: Max Allowable Working Press. _____ Min/Max Design Temp /

b) Jacket/Tubeside: Max Allowable Working Press. _____ Min/Max Design Temp /

6. Description of defects (location and types of deterioration that resulted in the repair/alteration). _____

A portion of the hot side on firetube C80054 is collapsed & the pipe on the hot side on firetube 509893A is warped.

7. Original Code Edition and Addenda ASME Sect. VIII-I Year 1996 Addenda _____

8. Code Edition and Addenda used for performing the work ASME Sect. VIII-I Year 2010 Addenda 2011a

9. Description of Work performed. (Step by step description of repair/alteration method used. Attach additional pages as required, and reference any additional documents used to provide the required information; such as repair or alteration procedures, drawings, and specifications)

Remove & Replace 20' of pipe for tube # C80054 & 16'3" for tube 509893A.

All work to follow CNRL repair / alteration procedure

10. Heat Treatment: Preheat Temp 176 F Post Weld HT (Temp./Time) _____ Other _____

11. Non Destructive Examination (Specify type and extent).

MPI prep ends. MPI root weld.

100% RT on butt weld

MPI 12 hr. after completion of work.

12. Pressure Test

Vessel/Shellside/Boiler

Tubeside/Jacket

a) Hydrostatic _____

b) Other Test _____

(A) #: 403457

OWNER EQUIP. NO. V-620

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

Item	Material Specifications	Thickness / Schedule	Diameter	Item	Material Specifications	Thickness / Schedule	Diameter
Shell/Drums	SA516-70	.500"	120"	Heads/ Ends	SA516-70	.691"/.439"	
Tubesheet				Tubes	A106B	.375" / .500	20"
Nozzles				Flanges/Fittings		Class	

14. Welding Procedures - Alberta Registration Number WP- 1093.2 WPS Numbers used: EOD-1-3

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

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

a) Alteration Design Submission _____ b) Repair/Alteration Procedure: yes c) Material Control _____

d) Welding Control _____ e) NDE _____ f) Heat Treatment _____ g) Pressure Test _____

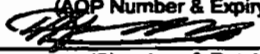
Note 2: Owner/client must have a valid Alberta Quality Program (AQP), for the scope of work, to assume responsibility for function c, d, e, f, or g.

17. REMARKS: _____

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 and the AB-513.

a) For all items except for items identified in 16:
 Exact Oilfield Developing Ltd.

(Repair/Alteration Organization Name)
 2172 Nov. 26 / 2014
 (AQP Number & Expiry Date)

 Mar. 15, 2013
 (Signature & Date)
 Len Hayne
 (Print Name)

b) For items identified in 16 only:
 Canadian Natural Resources Ltd.

(Owner/Client Organization Name)
 8039 June 30 / 2013
 (AQP Number & Expiry Date)

 (Signature & Date)

 (Print Name)

19. DATE WORK WAS COMPLETED: Mar. 15, 2013

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) In-service Inspector (ISI) Certification
 (When the repair is inspected by an ISI per the requirements established in AB-513)

b) ABSA Safety Codes Officer Certification
 (when work is inspected by ABSA).

Canadian Natural Resources 8039
 Owner-User/Inspector Company Name AQP#

 In-Service Inspector Signature & Date
 Chris Auld
 In-Service Inspector Name (Please Print)
 1BRV 206
 In-Service Inspector Alberta Cert #

ABSA SCO Signature & Date

 Print Name



Canadian Natural

Procedure Number: IN-QP-010

Owner User Program – Pressure Vessel Repair Procedure
Vessel Firetube Repair - Replacement of Damaged Sections
12-9 Treater 620

Contents

Static Data	2
Scope	2
Procedure	2
Vendor Qualification	2
Cut-Out	2
Weld Preparation	3
Hydrogen Bake Out and Sulfur Removal	3
Welding	3
Post Weld Non-Destructive Examination (NDE)	3
Documentation	3
Travel Sheet	5

Revision History

Date	Revision	By	Chk	Approver
Nov 24, 2011	1.3	AM	KM	AM

Static Data

Date:	March 11, 2013	CNRL Facility:	Central Brintnell
Facility LSD:	12-09-81-22W4	Vessel Description:	Treater 620
A #:	A0403457	CRN:	L0015.2
Vessel Serial #:	97015-2-30	Fire tube Serial #:	509893A
Vessel MAWP:	75 PSI	Fire tube Thickness:	0.500"
Owners Inspector:	IRIS Inspection Services	Repair Organization:	Exact Oilfield Developing Ltd.
Scope of Work:	Inspect and repair the deformation on the firetube by replacing 16ft 3" of the damaged section of the tube. Ensure firetube checklist is complete and correct before job completion. Ensure QC package is complete and sent to Anthony Merle. *Bake-out not required because of sweet service* **PWHT not required**		

Scope

CP
March 13, 2013

Installation of replacement section of severely pitted or collapsed firetube from ASME Section VIII Division I pressure vessel constructed of P-I Group 1 or 2 materials. ~~Note that due to the high likelihood of repeat failure, all repairs on vessel firetubes must be post-weld heat treated (PWHT) regardless of whether the firetube was PWHT at time of manufacture.~~

Materials shall be of the same specification, grade, and dimensions as defined in the manufacturer's original registered design.

Procedure

Vendor Qualification

1. CNRL Owner's Inspector must review Contractor's Quality Control Program, welding procedures, and welder qualifications prior to the start of the repair. Any concerns must be brought the attention of the CNRL Integrity group.

Cut-Out

2. Define the area to be removed.
3. Perform UT of the cut area to determine if any laminations or discontinuities exist.
4. If laminations or discontinuities are identified, move the cut out area to attempt to avoid these defects.
5. Owner's Inspector shall approve the layout of the area to be removed prior to the initial cut being made.
6. Make sure the firetube has been sanitized and there are no explosive environments present.
7. Perform the cut.

Weld Preparation

8. The joint preparation shall be in accordance with the contractor's registered WPS.
9. The surface shall be cleaned to white metal for a distance of 10 mm beyond the expected weld area.
10. The weld area shall be MPI (where practical Wet Fluorescent MPI) examined for laminations and surface discontinuities. If laminations or surface discontinuities are identified they shall be brought to the attention of the Chief Inspector.

Hydrogen Bake Out and Sulfur Removal

~~Note: Remove this section if firetube has not been in sour service~~

- ~~11. Vessels that have been exposed to sour or sulfur bearing process streams shall required the weld attachment area to undergo a "Bake Out" procedure. This procedure shall consist of heating the weld attachment area and 10 cm on each side to 315°C (600°F) for and holding that temperature for a minimum of 60 minutes. Bake out should be done prior to cutting out, if cutout is done thermally. Stipulate controls methods.~~
- ~~12. Bake Out is performed by either induction coil (use thermocouples as control instrumentation) or propane torch (use temperature sensitive crayons — upper and lower temperature to be controlled). Oxyacetylene torches are not acceptable.~~
- ~~13. If induction coils are used, a 250°C (482°F) four hour heat treatment may be substituted for the normal 450°C (842°F) one hour heat treatment.~~

Welding

14. Minimum pre-heat shall be 80°C (176°F) for a 100 mm band on both sides of the weld attachment area.
15. The CNRL Owner's Inspector shall witness seal on the box being broken and ensure that once the box has been opened the electrodes are stored in an oven.
16. The CNRL Owner's Inspector shall approve the alignment and fit-up of the replacement section with only the tack welds in place.
17. Welding shall be in accordance with the contractor's registered PWHT WPS utilizing new E 7018-1 electrodes.
18. Inspect root weld using dry powder MT.
19. Complete the butt welds. No down hand welding shall be used.
20. ~~Perform post weld heat treatment (PWHT). If firetube was PWHT at time of manufacture, perform PWHT as per U1A. If firetube was not PWHT at time of manufacture, perform PWHT by heating to 620°C (1160°F) and holding for 1 hour. PWHT may be performed by either oven or stress relief truck. Heating rates shall be as per ASME Section VIII Division 1.~~
21. ~~After PWHT, 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.~~

Post Weld Non-Destructive Examination (NDE)

22. Complete 100% RT of butt weld joints.
23. MT 12 hours after completion of the work
24. No hydro-test is required.

Documentation

25. The CNRL Owner's Inspector must make sure that Contractor has completed required QC documentation and jurisdictional documents.

26. The CNRL Owner's Inspector must sign off the jurisdictional documents and make sure one copy is submitted to the jurisdictional authority and one is included in the QC package.
27. Mail a hard copy of QC Documentation to:

Anthony Merle c/o CNRL
Suite 2500, 855 – 2nd Street SW
Calgary AB, T2P 4J8

Travel Sheet

A #:	A403457	Date: MAR. 13/13	509893A
Vessel LSD:	12-09-81-22W4	Facility:	Central Brintnell Battery

Step #	Description of Step	Insp. Point	Contractor		Insp. Point	Owners Inspector	
			Initial	Date		Initial	Date
Scope Sign-Off							
CP Mar 13, 2013							
Vendor Qualification							
Step 1	Ensure Vendor is Qualified		SP	13/03/13		A	MAR 13/13
Cut-Out							
Step 2	Mark Area		SP	"		A	
Step 3	Perform UT					A	
Step 4	Move Area If Defects Found					A	
Step 5	Owners Inspector Approval		SP	"		A	
Step 6	Ensure Removal of LEL		/	/		/	/
Step 7	Perform Cut		SP	"		A	
Weld Preparation							
Step 8	Joint Prep as per WPS		SP	"		A	
Step 9	Surface Prep		SP	"		A	
Step 10	Weld Area MPI for Discontinuities		SP	"		A	
Hydrogen Bake-Out							
Step 11	Perform Bake-Out (If Required)					-	-
Step 12	Heating Method Used for Bake-Out					-	-
Step 13	Substitution of Inductions Coils					-	-
Welding							
Step 14	Pre-Heat		SP	"		A	
Step 15	New Electrodes		SP	"		A	
Step 16	Owners Acceptance of Fit-Up		SP	"		A	
Step 17	Approved WPS		SP	"		A	
Step 18	Inspect Root Weld		SP	"		A	MAR 15/13
Step 19	Completion of Weld		SP	13/03/13		A	MAR 15/13
Step 20	PAHT						
Step 21	Slew-Cool						
Post-Weld Non-Destructive Examination (NDE)							
Step 22	Completion of Radiography		SP	13/03/13		A	MAR 15/13
Step 23	12 Hour MPI		SP	"		A	MAR 15/13
Step 24	No Hydrotest					A	LI
Documentation							
Step 25	Completion of Contractor Documentation		SP	13/03/13			
Step 26	Owners Inspector Signs Jurisdictional Docs		SP	"			
Step 27	Mail QC Docs to Anthony Merle		SP				

H = Hold Point, W = Witness Point, R = Review Point

Final Sign-Off	
Contractor: 	Owners Inspector:



Canadian Natural

Procedure Number: IN-QP-010

Owner User Program – Pressure Vessel Repair Procedure
Vessel Firetube Repair - Replacement of Damaged Sections
12-9 Treater 620

Contents

Static Data	2
Scope	2
Procedure	2
Vendor Qualification	2
Cut-Out	2
Weld Preparation	3
Hydrogen Bake Out and Sulfur Removal	3
Welding	3
Post Weld Non-Destructive Examination (NDE)	3
Documentation	3
Travel Sheet	5

Revision History

Date	Revision	By	Chk	Approver
Nov 24, 2011	1.3	AM	KM	AM

Static Data

Date:	March 11, 2013	CNRL Facility:	Central Brintnell
Facility LSD:	12-09-81-22W4	Vessel Description:	Treater 620
A #:	A0403457	CRN:	L0015.2
Vessel Serial #:	97015-2-30	Fire tube Serial #:	C80054
Vessel MAWP:	75 PSI	Fire tube Thickness:	0.593" 1.375" <i>AD</i>
Owners Inspector:	IRIS Inspection Services	Repair Organization:	Exact Oilfield Developing Ltd.
Scope of Work:	Inspect and repair the deformation on the firetube by replacing 16ft of the damaged section of the tube. Ensure firetube checklist is complete and correct before job completion. Ensure QC package is complete and sent to Anthony Merle. *Bake-out not required because of sweet service* <i>30' OF PIPE AT</i> **PWHT not required**		

Scope

CP
Mar 13, 2013
 Installation of replacement section of severely pitted or collapsed firetube from ASME Section VIII Division I pressure vessel constructed of P-I Group 1 or 2 materials. ~~Note that due to the high likelihood of repeat failure, all repairs on vessel firetubes must be post-weld heat treated (PWHT) regardless of whether the firetube was PWHT at time of manufacture.~~

Materials shall be of the same specification, grade, and dimensions as defined in the manufacturer's original registered design.

Procedure

Vendor Qualification

1. CNRL Owner's Inspector must review Contractor's Quality Control Program, welding procedures, and welder qualifications prior to the start of the repair. Any concerns must be brought the attention of the CNRL integrity group.

Cut-Out

2. Define the area to be removed.
3. Perform UT of the cut area to determine if any laminations or discontinuities exist.
4. If laminations or discontinuities are identified, move the cut out area to attempt to avoid these defects.
5. Owner's Inspector shall approve the layout of the area to be removed prior to the initial cut being made.
6. Make sure the firetube has been sanitized and there are no explosive environments present.
7. Perform the cut.

Weld Preparation

8. The joint preparation shall be in accordance with the contractor's registered WPS.
9. The surface shall be cleaned to white metal for a distance of 10 mm beyond the expected weld area.
10. The weld area shall be MPI (where practical Wet Fluorescent MPI) examined for laminations and surface discontinuities. If laminations or surface discontinuities are identified they shall be brought to the attention of the Chief Inspector.

Hydrogen Bake Out and Sulfur Removal

~~Note: Remove this section if firetube has not been in sour service~~

- ~~11. Vessels that have been exposed to sour or sulfur bearing process streams shall require the weld attachment area to undergo a "Bake Out" procedure. This procedure shall consist of heating the weld attachment area and 10 cm on each side to 315°C (600°F) for and holding that temperature for a minimum of 60 minutes. Bake out should be done prior to cutting out, if cutout is done thermally. Stipulate controls methods.~~
- ~~12. Bake Out is performed by either induction coil (use thermocouples as control instrumentation) or propane torch (use temperature sensitive crayons—upper and lower temperature to be controlled). Oxyacetylene torches are not acceptable.~~
- ~~13. If induction coils are used, a 250°C (482°F) four hour heat treatment may be substituted for the normal 450°C (842°F) one hour heat treatment.~~

Welding

14. Minimum pre-heat shall be 80°C (176°F) for a 100 mm band on both sides of the weld attachment area.
15. The CNRL Owner's Inspector shall witness seal on the box being broken and ensure that once the box has been opened the electrodes are stored in an oven.
16. The CNRL Owner's Inspector shall approve the alignment and fit-up of the replacement section with only the tack welds in place.
17. Welding shall be in accordance with the contractor's registered PWHT WPS utilizing new E 7018-1 electrodes.
18. Inspect root weld using dry powder MT.
19. Complete the butt welds. No down hand welding shall be used.
- ~~20. Perform post weld heat treatment (PWHT). If firetube was PWHT at time of manufacture, perform PWHT as per U1A. If firetube was not PWHT at time of manufacture, perform PWHT by heating to 620°C (1150°F) and holding for 1 hour. PWHT may be performed by either oven or stress relief truck. Heating rates shall be as per ASME Section VIII Division 1.~~
- ~~21. After PWHT, 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.~~

Post Weld Non-Destructive Examination (NDE)

22. Complete 100% RT of butt weld joints.
23. MT 12 hours after completion of the work
24. No hydro-test is required.

Documentation

25. The CNRL Owner's Inspector must make sure that Contractor has completed required QC documentation and jurisdictional documents.

26. The CNRL Owner's Inspector must sign off the jurisdictional documents and make sure one copy is submitted to the jurisdictional authority and one is included in the QC package.
27. Mail a hard copy of QC Documentation to:

Anthony Merle c/o CNRL
Suite 2500, 855 – 2nd Street SW
Calgary AB, T2P 4J8

Travel Sheet

A #:	A403457	Date: MAR. 12/13	C80054
Vessel LSD:	12-09-81-22W4	Facility:	Central Brintnell Battery

Step #	Description of Step	Insp. Point	Contractor		Insp. Point	Owners Inspector	
			Initial	Date		Initial	Date
Scope Sign-Off						CP	MAR 13 2013
Vendor Qualification							
Step 1	Ensure Vendor is Qualified		CA	13/03/13		CA	MAR 13/13
Cut-Out							
Step 2	Mark Area		CA	"		CA	MAR 12/13
Step 3	Perform UT		/	/		/	/
Step 4	Move Area if Defects Found		/	/		/	/
Step 5	Owners Inspector Approval		CA	"		IA	MAR 12/13
Step 6	Ensure Removal of LEL		/	/		/	/
Step 7	Perform Cut		CA	"		IA	MAR 13/13
Weld Preparation							
Step 8	Joint Prep as per WPS		CA	"		CA	MAR 12/13
Step 9	Surface Prep		CA	13/03/13		CA	
Step 10	Weld Area MPI for Discontinuities		CA	"		CA	
Hydrogen Bake-Out							
Step 11	Perform Bake-Out (if Required)						
Step 12	Heating Method Used for Bake-Out						
Step 13	Substitution of Induction Coils						
Welding							
Step 14	Pre-Heat		CA	13/03/13		CA	MAR 13/13
Step 15	New Electrodes		CA	"		CA	
Step 16	Owners Acceptance of Fit-Up		CA	"		IA	
Step 17	Approved WPS		CA	"		CA	
Step 18	Inspect Root Weld		CA	"		IA	MAR 13/13
Step 19	Completion of Weld		CA	13/03/14		IA	MAR 13/13
Step 20	PAHT						
Step 21	Slow Cool						
Post-Weld Non-Destructive Examination (NDE)							
Step 22	Completion of Radiography		CA	13/03/15		CA	MAR 15/13
Step 23	12 Hour MPI		CA	"		IA	"
Step 24	No Hydrotest					IA	"
Documentation							
Step 25	Completion of Contractor Documentation		CA	13/03/15			
Step 26	Owners Inspector Signs Jurisdictional Docs		CA	"			
Step 27	Mail QC Docs to Anthony Merle		CA				

H = Hold Point, W = Witness Point, R = Review Point

Final Sign-Off		
Contractor:		Owners Inspector:

ALBERTA LABOUR
 Alberta Boilers Safety Association
 200, 4208 - 97 Street
 Edmonton AB T6E 5Z9
 Partial/ Partiel C

A-2403457
 TRC Meri 288
**MANUFACTURER'S DATA REPORT
 FOR PRESSURE VESSEL**
 DÉCLARATION DE CONFORMITÉ DU CONSTRUCTEUR
 D'APPAREILS SOUS PRESSION

AB-25 (aide 1) 97711

Upon shipment of a pressure vessel, this form fully and correctly filled in must be mailed to the office of the Chief Inspector in the province of installation in accordance with the regulations under the Act, governing the construction and inspection of pressure vessels.

À moment de l'expédition d'un appareil sous pression, ce formulaire complété correctement, doit être envoyé au bureau de l'inspecteur en chef de la province d'installation tel que prévu dans les règlements de la loi sur les appareils sous pression.

Manufactured by Constructeur par	Name and address of Manufacturer Nom et adresse du constructeur RCI
Manufactured for Constructeur pour	Name and address of Purchaser or Contractor Nom et adresse du client ou de son représentant C.S. RESOURCES LTD. c/o MILLENIA RESOURCES CONSULTING
Ultimate owner Utilisateur	Name and address Nom et adresse 150 1300 - 8th STREET CALGARY AB.
Location of installation Lieu d'installation	Address Adresse PELKAN LAKE COMPLEX, WADASCA AB., L5D # 12-9-081-22W4M

Pressure vessel / Appareil			
Type / Genre HORIZONTAL EMULSION TREATOR	Serial No / N° de série 97015-2-30	Year built / Année de fabrication 1998	Overall Length / Longueur totale 40'-0"
Provincial Registration No. - C.R.N / N° d'enregistrement provincial - N.E.C. 0015.2	National Board No / N° National Board	Drawing No / N° de dessin 97015.1/3-30 Rev A	Diameter / Diamètre 120"

The chemical and physical properties of all parts meet the requirements of material specifications of the ASME Code. YES
 Les propriétés chimiques et physiques de toutes les composantes respectent les exigences des spécifications de matériaux de code ASME.

Has design, construction and workmanship conform to CSA B51. La conception, la construction et la finition sont conformes à ASME B51. YES	ASME Sec III	Division DIV 3	Additional Supplement 96	Code case No. N/A
---	-----------------	-------------------	-----------------------------	----------------------

Manufacturers' partial data reports properly identified and signed by authorized inspectors have been furnished for the following items of the report, and attached to this report:
 Les rapports partiels du constructeur adéquatement identifiés et signés par les inspecteurs autorisés ont été fournis pour les items suivants du rapport, et attachés à ce rapport.

Names of parts / Nom de la composante	Item No / N° d'item	Manufacturer's Name / Nom du constructeur	Identifying Stamp / Estampe d'identification
N/A			

Description	Material / Matériau	Thickness / Épaisseur	Con Allow Surplus de corr	Diameter / Diamètre	Overall Length / Long. totale	Number of courses / Nombre de sections	Girth Joint / Arête de raccordement		Longitudinal Joint / Arête longitudinale			P.W.H.T. / Traitement thermique		
							Type	RT Rating	Type	RT Rating	Efficiency / Rendement	Temp	Touté Durée	
SHELL # 1,2,3,4	SA 516-70	5	.0625	120"	10'-0"	4	1	FULL RT-1	1	RT-1	1.0	N/A		

Description	Material / Matériau	Min. Thick / Épais. min.	Allow Surplus de corr	Conv. Radius / Rayon conv.	Knuckle Radius / Rayon de courb.	Elbow Ratio / Rapport coudé	Outlet Open Angle / Angle de sortie	Height / Hauteur	Flw Diameter / Diam. ext.	Side to pressure / Côté sous pression
FT END	SA 516-70	.691	.0625	N/A		2.1				CONCAVE
Oil END	SA 516-70	.439	.0625			2.1				CONCAVE
Removable bolts used (describe other fastenings) / Boulons amovibles utilisés (décrire tous autres attaches)						Mat'l Spec / Spéc. du mat.		Grade		End Diameter
						N/A				

Pressure Vessel Part / Partie de l'appareil	Constructed for max. allowable working pressure / Construit pour une pression maximale de service permise	At max temp. / À une temp. max.	Min. Temp. (when less than 39°C) / Temp. min. inférieure à 39°C	Test pressure (hydro-pneumatic or combination) / Pression d'essai (hydro-pneumatique ou combinatoire)
SHELL	75 PSI	300°F	-20°F	113 PSI

Threaded Plug Inlet	Threaded Plug Inlet	Material	Material	Material	Material	Material	Material	Material	Material
1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia
1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia
1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia

Material	Material	Material	Material	Material	Material	Material	Material	Material	Material
1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia
1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia
1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia

Material	Material	Material	Material	Material	Material	Material	Material	Material	Material
1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia
1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia
1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia

Material	Material	Material	Material	Material	Material	Material	Material	Material	Material
1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia
1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia
1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia

Material	Material	Material	Material	Material	Material	Material	Material	Material	Material
1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia
1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia
1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia	1/2" Dia

VESSEL IS IMPACT TEST EXEMPT PER UCS-66
 VOLUME OF VESSEL 3378 CU FT
 RADIOGRAPH CODE PER UW-11(a)
 SAFETY VALVE BY OTHERS

Certificate of Compliance - Pile Work

We certify that the installation of all parts of the vessel conforms with the requirements of Federal Regulations.

Also certify that the installation of all parts of the vessel conforms with the requirements of Federal Regulations.

Signature: W. J. ...
 Date: 11/18/71

Inspector's Name: W. J. ...
 Date: 11/18/71

Certificate of Compliance - Pile Work

We certify that the installation of all parts of the vessel conforms with the requirements of Federal Regulations.

Also certify that the installation of all parts of the vessel conforms with the requirements of Federal Regulations.

Signature: W. J. ...
 Date: 11/18/71

Inspector's Name: W. J. ...
 Date: 11/18/71

- Manufactured and certified by: RCI Resource Constructors Inc., 53251 RR 232 Sherwood Park, Alberta, T8A 2A8
(Name and Address of Manufacturer)
2. Manufactured for: **C.S. RESOURCES LTD. 46 MILLENIA RESOURCE CONSULTING**
(Name and Address of Purchaser) 150, 1300-8th STREET, CALGARY, AB.
3. Location of installation: **PELICAN LAKE COMPLEX, WABASCA AB., LSD# 12-9-081-22W4M**
(Name and Address)
4. Type: Horizontal **EMULSION TREATER 97015-2-30** L-005.2 97015.113REV2 N/A 1998
(Horz, Vert, or Sphere) (Tank, Sep., Heat (Mfg's Serial No) (CRN) (Drawing No.) (Natl. Bd. No.) (Year Built)
Exh., Etc.)

Purpose (Inlet, Outlet, Drain)	Item No.	Diameter or Size	Type	Material	Nominal Thk.	Reinforcement Material	How Attached	Location
EMULSION INLET	N1	6"	150# RFWN PIPE	SA 105 SA 106B	SCH 80		WELDED	PIPE SHELL
GAS OUTLET	N2	3"	150# RFWN PIPE	SA 105 SA 106B	SCH 80		WELDED	PIPE DOME
OIL OUTLET	N3	4"	150# RFWN PIPE	SA 105 SA 106B	SCH 80		WELDED	PIPE HEAD
WATER OUTLET	N4	2"	150# RFWN PIPE	SA 105	SCH 160		WELDED	SHELL
DRAIN	N5A/B	3"	150# RFWN PIPE	SA 105 SA 106B	SCH 80		WELDED	PIPE SHELL
ANODE	N6A/E	4"	150# RFWN PIPE	SA 105 SA 106B	SCH 80		WELDED	PIPE SHELL
		3/4"	STUD NUT	SA 1937M SA 1942HM				
RELIEF	N7	4"	150# RFWN PIPE	SA 105 SA 106B	SCH 80		WELDED	PIPE SHELL
WASH WATER INLET	N8A/B	3"	150# RFWN PIPE	SA 105 SA 106B	SCH 80		WELDED	PIPE SHELL
WASH WATER INLET	N9A/B	2"	150# RFWN PIPE	SA 105 SA 106B	SCH 160		WELDED	PIPE SHELL
RESAND WATER OUTLET	N10A/B	3"	150# RFWN PIPE	SA 105 SA 106B	SCH 80		WELDED	PIPE SHELL
DESUDGE OUTLET	N11A/B	3"	150# RFWN PIPE	SA 105 SA 106B	SCH 80		WELDED	PIPE SHELL
MANWAY	M 1/2	24"	150# RFWN PIPE	SA 105 SA 106B	SCH 40		WELDED	PIPE SHELL
		24"	GASKET	3165	1/8"			
		1.25	STUD	SA 1937M				
		1.25	NUT	SA 1942HM				
		24"	NAUT	CS				
		24"	HANGE	CS				
DOME	D1	24"	HEAD	SA 51670	SCH 40		WELDED	PIPE SHELL
		24"	PIPE	SA 106B	SCH 40		WELDED	PIPE SHELL
		24"	PIPE	SA 106B	SCH 40		WELDED	PIPE SHELL
		24"	150# RFWN PIPE	SA 105	SCH 40		WELDED	PIPE SHELL
		24"	GASKET	3165	1/8"			
		1.25	STUD	SA 1937M				
		1.25	NUT	SA 1942HM				
FIRE TUBE	FT 1/2	2'-5"	PLATE	SA 51670N	1.375			
		2'-5"	PLATE	SA 51670N	1.25			
		15.75	PLATE	SA 51670	0.5			
		3"	GASKET	VEPRENE	.1875			

Date March 12/98

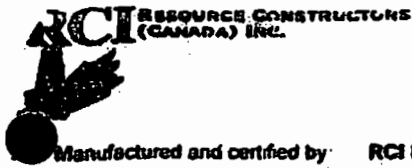
Name RCI Resource Constructors Inc.

Signed C. Callison
(Manufacturer) (Representative)

Date March 12/98

Name J.R. Bellhouse
(Authorized Inspector)

Commission Alberta AS78
(Next Board Incl. Endorsement, State, Province and No.)



A408457

HEAD OFFICE
 PO Box 3120, 53251-RR 232
 Sherwood Park, Alberta, T8A 2A6
 Phone: (403) 417-7222, Fax: (403) 417-7220

- Manufactured and certified by: RCI Resource Constructors Inc., 53251 RR 232 Sherwood Park, Alberta. T8A 2A6
 (Name and Address of Manufacturer)
2. Manufactured for: S. RESOURCES LTD. 46 MILLENIA RESOURCE CONSULTING
 (Name and Address of Purchaser) 150, 1300-8th STREET, CALGARY, ALBERTA
3. Location of installation: PELICAN LAKE COMPLEX, WABASCA, AB, LSD # 12-9-081-22W4M
 (Name and Address)
4. Type: Horizontal EMULSION TREATER 970152-30 L-00152 97015-1/3 Rev 2 N/A 1998
 (Horz, Vert, or Sphere) (Tank, Sep., Heat (Mfg's Serial No.) (CRN) (Drawing No.) (Nat'l. Bd. No.) (Year Built)
 Exh., Etc.)

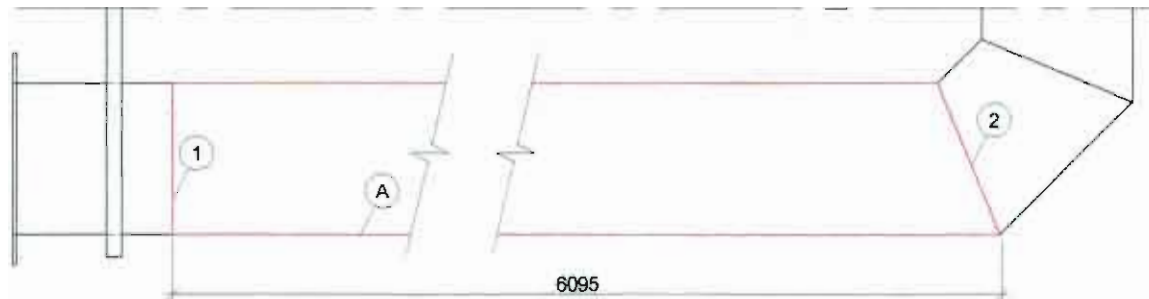
Purpose (Inlet, Outlet, Drain)	Item No.	Diameter or Size	Type	Material	Nominal Thk.	Reinforcement Material	How Attached	Location
FIRE TUBE	FT 1/2	.75"	STUD	SA19387M				
		.75"	NUT	SA1942HM				
DESLUDGE (SPARE)	N11A/B	3"	BUNA FLANGE	SA105	SCH 80			
		3"	GASRET	316SS	.125"			
		.625"	STUD	SA19387M				
		.625"	NUT	SA1942HM				
DESLUDGE OUTLET	N12A/B	3"	150# RWV	SA105	SCH 80		WELDED	PIPE
		3"	150# RESO	SA105	SCH 80			
		3"	PIPE	SA-105B	SCH 80		WELDED	SHELL
WATER LT	N13A/B	2"	150# RWV	SA105	SCH 160		WELDED	PIPE
		2"	150# RETRF	SA105	SCH 160			
		2"	GASRET	316SS	.125"			
		.625"	STUD	SA-19387M				
		.625"	NUT	SA1942HM				
		2"	PIPE	SA105B	SCH 160		WELDED	SHELL
		2"	PIPE	SA105B	SCH 160		WELDED	
TI	C1A/B	.75"	COUPLING	SA105	6000#		WELDED	SHELL
		.75"	COUPLING	SA105	6000#		WELDED	SHELL
TE	C2A/B	1.0"	COUPLING	SA105	6000#		WELDED	SHELL
PI	C3	.50"	COUPLING	SA105	6000#			
SAMPLE	C4A/B	.75"	COUPLING	SA105	6000#		WELDED	SHELL
		.75"	COUPLING	SA105	6000#		WELDED	SHELL
SAMPLE	C5A/B	.75"	COUPLING	SA105	6000#		WELDED	SHELL
		.75"	COUPLING	SA105	6000#		WELDED	SHELL
FUEL GAS	C6A/B	1.0"	COUPLING	SA105	6000#		WELDED	SHELL
LSL	C7A/B	1.0"	COUPLING	SA105	6000#		WELDED	SHELL
L2NH	C8A/B	1.0"	COUPLING	SA105	6000#		WELDED	SHELL
OIL LT	C9A/B	1.0"	COUPLING	SA105	6000#		WELDED	HEAD
SPARE	C10	1.0"	COUPLING	SA105	6000#		WELDED	SHELL
		1.0"	PLUG	SA105	6000#			
SPARE	C11	1.0"	COUPLING	SA105	6000#		WELDED	SHELL
		1.0"	PLUG	SA105	6000#			
	C12	1.0"	COUPLING	SA105	6000#		WELDED	SHELL
		1.0"	PLUG	SA105	6000#			
LG	C13A/B	1.0"	COUPLING	SA105	6000#		WELDED	SHELL
SAMPLE	C14	.75"	COUPLING	SA105	6000#		WELDED	SHELL

Date March 12/98 Name RCI Resource Constructors Inc.

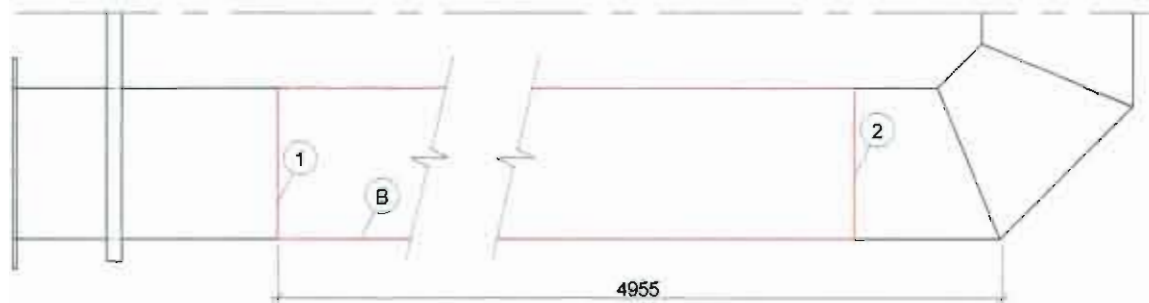
Signed [Signature]
 (Manufacturer) (Representative)

Date March 12/98 Name [Signature]
 (Authorized Inspector)

Commission Alberta AR28
 (Nat'l Board Incl. Endorsement, State, Province and No.)



Tube C80054
(Hot Side Only)



Tube 509893A
(Hot Side Only)

Notes:

1. All dimensions in mm
2. New material shown thus:
3. Tube C80054 RT Report PLRT-6003-HW
4. Tube 509893A RT Report PLRT-6004-HW

Materials

Item	Qty.	Description	Heat No
A	6.1 m	508 mm OD x 9.53 mm WT SA106 B Smls Pipe	WA4084
B	5.0 m	508 mm OD x 12.7 mm WT SA106 B Smls Pipe	MA1427
C			

Welding

WPS No	EOD-1-3			
Weld	Welder	RT	MT	UT
Tube C80054				
1 (Butt Weld)	3	X2	MP1	
2 (Butt Weld)	3	X1	MP1	
Tube 509893A				
1 (Butt Weld)	2	X2	MP1	
2 (Butt Weld)	2	X3	MP1	

NDE Services

Type	Contractor	Technician
RT	Team Industrial Services	H Wahlstrom
MT	IRIS NDT	C Auld
UT		
PT		

Vessel Data

Equipment Number:	V-620	Serial Number:	97015-2-30
'A' Number:	A403457	CRN Number:	L0015.2

Exact Oilfield Developing Ltd
Box 755, Slave Lake, AB, T0G 2A0

Canadian Natural Resources Ltd

CNRL C Brintnell 12-9-81-22W4M
V620 Firetube Repairs - 2013-03-18
C80054 & 509893A

Drawn By: CGMc	Date: 2013-03-30	Scale: NTS
Drawing No: 001	Revision: 0	File No: EOD-CN-1300207-7022

Type of Inspection: MT VT	Job/P.O.#: _____	IRISNDT #: 166110	Date: 15-Mar-13
Test Technique: Visual, MT-1V, MT-2V	Client: CNRL		
Equipment: _____	Location: Exact Oilfield, Slave Lake		
	Item Inspected: 20" Firetube, C80054-Treater 620		
	Code: ASME VIII, Client repair procedure		

Scope:

Provide visual oversight and NDT support for repairs on a 20" fire tube, SN C80054 to be re-installed in Treater 620, from the Central Brintnell plant. Repairs are to be performed as detailed in CNRL procedure IN-QP-010, "Vessel Firetube Repair-Replacement of Damaged Sections", to meet ASME VIII standard and the standards defined in the CNRL pressure equipment integrity management system and the contractor quality management system. Repairs will be performed off-site by Exact Oilfield Developing (AQP-2172) at their Slave Lake facility.

Results/Observations:

Prior to commencement of the repair, the equipment owner (CNRL) developed and approved an ABSA accepted repair scope for the firetube.

The repair consisted of the removal and replacement of the damaged section of the 20" fire tube. 2 circ welds were required to complete the repair. One of the 2 circ welds was a mitered joint. All sourced materials were of the same specification, grade and dimensions detailed in the original design.

Areas for repair were marked and confirmed. As the vessel is considered a "sweet service" vessel, no hydrogen bake out was performed

Joint preparation was completed as required in the WPS (single-v, 37.5 degrees). All preps/bevels were examined using dry visible magnetic particle inspection. No indications were found (See IRISNDT report 166110-CA-001MT)

All welding was performed by qualified welders, using approved weld procedures (WP 1093.2, procedure EOD-2 Rev 2) under the Exact Oilfield quality management system (AQP-2172).

All new E7018-1 rods were used for the repairs, and rods were stored as required by the procedure.

Fit up on all joints were visually inspected and approved (proper gap, no unacceptable internal misalignment) prior to commencing welding.

Dry visible magnetic particle inspection was performed on the root pass of each weld. No indications were noted (166110-CA-001MT)


Radiography was performed on all butt welds by TEAM. No rejectable defects were found (See TEAM report)

Visual inspection of welds was performed during welding and upon completion of each weld, with no issues or indications.

Wet visible magnetic particle inspection was performed on all completed welds (12 hour post) and all existing welds on the firetube prior to stress relief. No indications were found (166110-CA-001MT).

Post weld heat treatment was waived by CNRL for this repair

As per the procedure, no hydro test is to be performed.

Unit#: _____ Kilometers: _____ In _____ Out: _____ Hrs: _____ In _____ Out: _____ Hrs: _____ Personnel: CA	Consumables:	Interpretation by: Chns Auld-API 510,IBPV SNT-TC-1A <u>2</u> C.G.S.B. <u>2</u> (Level) C.G.S.B. # <u>12725</u> (Print)  Chris Auld I am the author of this document 2013/03/18 09:57:23 -0700 (Signature) Client Representative: (Print) _____ I am in full agreement with report contents (Sign) _____
--	--------------	--

Equipment Photographs:



C80054 FIRETUBE REPAIR-MARCH 2013 (01)

C80054 FIRETUBE REPAIR-MARCH 2013 (02)



C80054 FIRETUBE REPAIR-MARCH 2013 (03)

C80054 FIRETUBE REPAIR-MARCH 2013 (04)

5411 - 96 Street Edmonton, Alberta, T6E 1J8 Phone: (780) 487-2022 Fax: (780) 438-0436
 Calgary (403) 270-6121
 Lloydminster (780) 875-6458
 Sherwood (780) 674-3018
 Stisku (780) 955-7615

Cold Lake (780) 826-6118
 Fort McMurray (780) 743-1538
 Red Deer (403) 897-1742

Deer Park, TX (281) 476-4444
 Marlin, Houston, TX (713) 722-7677
 Tulsa, OK (918) 446-8773



C80054 FIRETUBE REPAIR-MARCH 2013 (05)

C80054 FIRETUBE REPAIR-MARCH 2013 (06)



C80054 FIRETUBE REPAIR-MARCH 2013 (07)

C80054 FIRETUBE REPAIR-MARCH 2013 (08)

13111 - 96 Street Edmonton, Alberta, T6L 5T8 Phone: (780) 437-2022 Fax: (780) 438-1436
 Calgary (403) 279-6121
 Lloydminster (780) 875-6455
 Barhead (780) 674-3018
 Nisku (780) 955-7616

Cold Lake
 Fort McMurray
 Red Deer

(780) 806-6109
 (780) 743-1536
 (403) 347-1742

Door Park, TX
 Matrix, Houston, TX
 Tulsa, OK

(281) 476-4444
 (713) 722-7177
 (918) 446-8773



C80054 FIRETUBE REPAIR-MARCH 2013 (09)



C80054 FIRETUBE REPAIR-MARCH 2013 (10)



C80054 FIRETUBE REPAIR-MARCH 2013 (11)



C80054 FIRETUBE REPAIR-MARCH 2013 (12)

5117 - 46 Street Edmonton, Alberta, T6E 5T8 Phone: (780) 437-2022 Fax: (780) 438-1436
 Calgary (403) 279-6121
 Lloydminster (780) 875-6455
 Sherwood (780) 674-3018
 Nisku (780) 955-7616

Cold Lake
 Fort McMurray
 Red Deer

(780) 826-6105
 (780) 743-1536
 (403) 347-1742

Deer Park, TX
 Marlin, Houston, TX
 Tulsa, OK

(281) 476-4444
 (713) 722-2177
 (918) 446-8773

Procedures: MT 1V-2V Code: ASME VIII, client procedure, information only report for all existing welds	Job / P.O. #: Client: CNRL Location: Exact Oilfield Developing-Slave Lake Item Inspected: Firetube C80054, Treater 620	IRISNDT #: 166110 Date: 15-Mar-13
---	---	--

Surface Condition: Painted Sandblasted Machined As Cast As Forged Weldment Other

Material: CS **Thickness:** N/A **Heat Treatment:** N/A

Magnetizing Equipment: Yoke Coil Prod
 IRISNDT #: 40193
 Bench: Headshot Central Conductor Coil
 Mfg: Parker Calibration Date: 8-Jan-13

Blacklight: IRISNDT #:
 Verification per ASME V Art 7 T.777.2
 Mfg: Calibration Date: Jan-11

Whitelight: Battery Powered Min. 3V } Held within 30 cm (12in) of the inspection surface
 110V Power Min. 60W Bulb } provides minimum 1000 Lx (100fc)

Method of Magnetization: AC DC Continuous Residual

Magnetic Particles: Dry Wet Red Grey Black Fluorescent
 Batch #: 957/1182 Mfg: Magnaflux Type: 8A/7C

Background: Batch #: 1197 Mfg: Chemetall Type: Ardrex 8901W


Inspection Results:
 Dry visible magnetic particle inspection was performed on all joint preps and butt weld roots for the repair on the 20" firetube C80054. In addition, Wet visible magnetic particle inspection was performed on all newly completed welds (12 hour post) and accessible existing welds on the fire tube.
 New welds completed: 2-20" pipe to pipe butt weld (Includes 1 mitered joint).

All newly completed welds
 Welder ID-3
 RT Designation-X-1, X-2

No indications were found at the time of inspection.

NOTE: ALL REPAIR WELDS WERE PERFORMED AND ASSESSED BASED ON ASME VIII STANDARD AND CNRL REPAIR PROCEDURE IN-QP-010, "Vessel Firetube Repair-Replacement of Damaged Sections". ALL EXISTING WELDS WERE EXAMINED FOR INFORMATION ONLY TO FIND IN-SERVICE DEFECTS AND WAS NOT ASSESSED TO A CODE OR STANDARD.

Inspection Limitation(s): Access to some existing welds was limited by firetube configuration

Unit#: _____ Kilometers: _____ In: _____ Out: _____ Hrs: _____ In: _____ Out: _____ Hrs: _____ Personnel: CA	Consumables: MT-MIN	Interpretation by: Chris Auld (Print)  <small>Chris Auld I am the author of this document 2013/03/15 08:57:42 -0700</small> (Signature) Client Representative: (Print) _____ I am in full agreement with report contents (Sign) _____	SNT-TC-1A <u>2</u> C.G.S.B. <u>2</u> C.G.S.E. # <u>12725</u> <small>(Level)</small>
--	-------------------------------	--	--

Type of Inspection: <u>MT VT</u>	Job/P.O.#: _____	IRISNDT #: <u>166110</u>	Date: <u>15-Mar-13</u>
Test Technique: <u>Visual, MT-1V, MT-2V</u>	Client: <u>CNRL</u>	Location: <u>Exact Oilfield, Slave Lake</u>	
Equipment: _____	Item Inspected: <u>20" Firetube, 509893A-Treater 620</u>		
Code: <u>ASME VIII, Client repair procedure</u>			

Scope:

Provide visual oversight and NDT support for repairs on a 20" fire tube, SN 509893A to be re-installed in Treater 620, from the Central Brintnell plant. Repairs are to be performed as detailed in CNRL procedure IN-QP-010, "Vessel Firetube Repair-Replacement of Damaged Sections", to meet ASME VIII standard and the standards defined in the CNRL pressure equipment integrity management system and the contractor quality management system. Repairs will be performed off-site by Exact Oilfield Developing (AQP-2172) at their Slave Lake facility.

Results/Observations:

Prior to commencement of the repair, the equipment owner (CNRL) developed and approved an ABSA accepted repair scope for the firetube.

The repair consisted of the removal and replacement of the damaged section of the 20" fire tube. 2 circ welds were required to complete the repair. All sourced materials were of the same specification, grade and dimensions detailed in the original design.

Areas for repair were marked and confirmed. As the vessel is considered a "sweet service" vessel, no hydrogen bake out was performed

Joint preparation was completed as required in the WPS (single-v, 37.5 degrees). All preps/bevels were examined using dry visible magnetic particle inspection. No indications were found (See IRISNDT report 166110-CA-002MT)

All welding was performed by qualified welders, using approved weld procedures (WP 1093.2, procedure EOD-2 Rev 2) under the Exact Oilfield quality management system (AQP-2172).

All new E7018-1 rods were used for the repairs, and rods were stored as required by the procedure.

Fit up on all joints were visually inspected and approved (proper gap, no unacceptable internal misalignment) prior to commencing welding.

Dry visible magnetic particle inspection was performed on the root pass of each weld. No indications were noted (166110-CA-002MT)


Radiography was performed on all butt welds by TEAM. No rejectable defects were found (See TEAM report)

Visual inspection of welds was performed during welding and upon completion of each weld, with no issues or indications.

Wet visible magnetic particle inspection was performed on all completed welds (12 hour post) and all existing welds on the firetube prior to stress relief. No indications were found (166110-CA-002MT).

Post weld heat treatment was waived by CNRL for this repair

As per the procedure, no hydro test is to be performed.

Unit#: _____	Kilometers: _____	Consumables	Interpretation by:	SNT-TC-1A	<u>2</u>
In: _____	Out: _____		Chris Auld-API 510,IBPV	C.G.S.B.	<u>2</u>
In: _____	Out: _____		(Pr) 	C.G.S.B. #	<u>(Level) 12725</u>
Personnel			Chris Auld I am the author of this document 20130318 00:57:54 -0700		
CA			(Signature) Client Representative:	(Print)	_____
			I am in full agreement with report contents	(Sign)	_____

Equipment Photographs:



509893A- FIRETUBE REPAIR MARCH 2013 (1)

509893A- FIRETUBE REPAIR MARCH 2013 (2)



509893A- FIRETUBE REPAIR MARCH 2013 (3)

509893A- FIRETUBE REPAIR MARCH 2013 (4)

5111 - St. Street Edmonton, Alberta, T6L 5T8 Phone: (780) 437-2022 Fax: (780) 438-3436
 Calgary (403) 279-6121
 Lloydminster (780) 875-6455
 Inverwood (780) 674-8018
 Nisku (780) 855-7616

Cold Lake
 Fort McMurray
 Red Deer

(780) 826-6105
 (780) 743-1536
 (403) 347-1742

Deer Park, TX
 Matrix, Houston, TX
 Tulsa, OK

(281) 470-4444
 (713) 712-7177
 (918) 446-8773



509893A- FIRETUBE REPAIR MARCH 2013 (5)

509893A- FIRETUBE REPAIR MARCH 2013 (6)



509893A- FIRETUBE REPAIR MARCH 2013 (7)

5111 - 86 Street Edmonton, Alberta, T6E 5T8 Phone: (780) 437-2022 Fax: (780) 434-1436
 Calgary (403) 279-6121
 Lloydminster (780) 875-6455
 Hardhead (780) 674-3018
 Nisku (780) 955-7616

Cold Lake
 Fort McMurray
 Red Deer

(780) 826-6105
 (780) 743-1536
 (403) 347-1742

Deer Park, TX
 Matrix, Houston, TX
 Tulsa, OK

(281) 476-4444
 (713) 722-7177
 (918) 446-8773

Procedures: MT 1V-2V Code: ASME VIII, client procedure, information only report for all existing welds	Job / P.O. #: Client: CNRL Location: Exact Oilfield Developing-Slave Lake Item Inspected: Firetube 509893A, Treater 620	IRISNDT #: 166110 Date: 15-Mar-13
---	--	--

Surface Condition: Painted Sandblasted Machined As Cast As Forged Weldment Other

Material: CS **Thickness:** N/A **Heat Treatment:** N/A

Magnetizing Equipment: Yoke Coil Prod **Bench:** Headshot Central Conductor Coil
 IRISNDT #: 40193 **Mfg:** Parker **Calibration Date:** 8-Jan-13

Blacklight: IRISNDT #: Verification per ASME V Art 7 T.777.2 **Mfg:** **Calibration Date:** -Jan-11

Whitelight: Battery Powered Min. 3V } Held within 30 cm (12in) of the inspection surface
 110V Power Min. 60W Bulb } provides minimum 1000 Lx (100fc)

Method of Magnetization: AC DC Continuous Residual

Magnetic Particles: Dry Wet Red Grey Black Fluorescent
 Batch #: 957/1182 **Mfg:** Magnaflux **Type:** 8A/7C

Background: Batch #: 1197 **Mfg:** Chemetall **Type:** Ardrox 8901W


Inspection Results:
 Dry visible magnetic particle inspection was performed on all joint preps and butt weld roots for the repair on the 20" firetube 509893A. In addition, Wet visible magnetic particle inspection was performed on all newly completed welds (12 hour post) and accessible existing welds on the fire tube.
 New welds completed: 2-20" pipe to pipe butt weld .

All newly completed welds
 Welder ID-J
 RT Designation-X-1, X-2

No indications were found at the time of inspection.

NOTE: ALL REPAIR WELDS WERE PERFORMED AND ASSESSED BASED ON ASME VIII STANDARD AND CNRL REPAIR PROCEDURE IN-QP-010, "Vessel Firetube Repair-Replacement of Damaged Sections". ALL EXISTING WELDS WERE EXAMINED FOR INFORMATION ONLY TO FIND IN-SERVICE DEFECTS AND WAS NOT ASSESSED TO A CODE OR STANDARD.

Inspection Limitation(s): Access to some existing welds was limited by firetube configuration

Units: _____ Kilometers: _____ In: _____ Out: _____ Hrs: _____ In: _____ Out: _____ Hrs: _____ Personnel: CA	Consumables: MT-MIN	Interpretation by: Chris Auld (Print)  <small>Chris Auld I am the author of this document 2013/03/15 09:56:07 -0700</small> (Signature) _____ Client Representative: (Print) _____ I am in full agreement with report contents (Sign) _____	SNT-TC-1A <u>2</u> C.G.S.B <u>2</u> C.G.S.B. # <u>(Level) 12725</u>
---	-------------------------------	---	--

REPORT# **PLRT-6003 HW**

CLIENT: **CNRL**

PAGE **1** OF **2**

LOCATION: **CENTRAL BRINTNELL 12-9-81-22 W4M**

DATE: **15-Mar-13**

RT PROCEDURE: **RT.ASME.1 R15**

JOB #: **53112429**

ACCEPTANCE STANDARD: **ASME VIII DIV 1 UW 51**

PO/AFE #:

ITEMS EXAMINED: **TREATER A403457 FIRETUBE C80054 REPAIR**

DEFECT LEGEND IF - INCOMPLETE FUSION IP - INCOMPLETE PENETRATION UC - UNDERCUTTING B - SLAG BT - BURN THROUGH		P - POROSITY HL - HIGH / LOW IC - INTERNAL CONCAVITY LC - LOW COVER		HB - HOLLOW BEAD C - CRACK AC - ARC BURNS EP - EXCESSIVE PENETRATION SH - SHRINKAGE 1 - SLIGHT, 2 - MEDIUM, 3 - SEVERE		CODE LEGEND 1. ASME B31.3 NORMAL 2. ASME B31.3 SEVERE 3. ASME VIII DIV 1 LW 51 4. ASME VIII DIV UW 52		5. ASME B31.1 6. CSA Z 662 7. API 650 8. OTHER		TECHNIQUES 1. SINGLE WALL EXPOSURE 2. DOUBLE WALL EXPOSURE 3. SINGLE WALL VIEWING 4. DOUBLE WALL VIEWING	
---	--	--	--	---	--	--	--	---	--	---	--

WELD #	LOCATION	THK	DIA.	W/LDR SYM	IF	IP	UC	S	BT	P	IC	LC	TECH #	CODE #	ACC.EPT	REMARKS	REJECT
X	1	508	STD	20	3								2/3	3	<input checked="" type="checkbox"/>	1	
X	2	508	STD	20	3					2			1/3	3	<input checked="" type="checkbox"/>	2	
															<input type="checkbox"/>	3	
															<input type="checkbox"/>	4	
															<input type="checkbox"/>	5	
															<input type="checkbox"/>	6	
															<input type="checkbox"/>	7	
															<input type="checkbox"/>	8	
															<input type="checkbox"/>	9	
															<input type="checkbox"/>	10	
															<input type="checkbox"/>	11	
															<input type="checkbox"/>	12	
															<input type="checkbox"/>	13	
															<input type="checkbox"/>	14	
															<input type="checkbox"/>	15	
															<input type="checkbox"/>	16	
															<input type="checkbox"/>	17	
															<input type="checkbox"/>	18	
															<input type="checkbox"/>	19	
															<input type="checkbox"/>	20	
															<input type="checkbox"/>	21	
															<input type="checkbox"/>	22	\$ 812.00
															<input type="checkbox"/>	23	\$ 40.60 GST
															<input type="checkbox"/>	24	\$ 852.60

Exposures per Weld	Film Make and Type	Screens	Films per Cassette	Type of Energy	Physical Size	Activity or K.V.	Maximum Source to Object Distance	Maximum Source to Object Distance	Material	Thickness			IQI		Exp. Time C/Min
										Base	Weld	R.F.	Type	Size	
5	GE D5	.010 PB	1	IR 192	3.0 MM	40 Ci			CS				DIN	10-16	

This Certificate or Report is valid only for that work which was specifically requested. The Company is not responsible for any views or opinions expressed by employees performing this work which fall outside the contract terms or reference. All certificates and / or reports are the result of work performed in conformance with applicable specifications and standards to the best of our ability and intent. However, the company will not be responsible for deviation within the normal limits of accuracy in accordance with standard practices. Final Code Acceptance shall require Client and Manufacturer

A.M.		P.M.		TOTAL HOURS		KILOMETERS		SUBSISTENCE		CONSUMABLES	
TIME IN	TIME OUT	TIME	TIME	S.T.	4	hrs.		MAN DAY	OT / MEALS	(20) 3 1/2 x 17 D5 FILM	
				O.T.		hrs.					

Interpretation is done in accordance with the specified code, to the best of my professional ability.
 Radiographer: **HAROLD WAHLSTROM** SNT/CSB Level: **2** Reg. No.: **1913** Assistant: **COLIN EVENSON**

I am in full agreement with the contents of this report and accept receipt of the associated film. Client Representative **MATT MALECH**

CLIENT: CNRL PAGE 2 OF 2
 LOCATION: CENTRAL BRINTNELL 12-9-81-22 W4M DATE: 15-Mar-13
 RT PROCEDURE: RT.ASME.1 R15 JOB #: 53112429
 ACCEPTANCE STANDARD: ASME VIII DIV 1 UW 51 P/O/AFE #:
 ITEMS EXAMINED: TREATER A403457 FIRETUBE 509893A REPAIR

DEFECT LEGEND IF - INCOMPLETE FUSION IP - INCOMPLETE PENETRATION UC - UNDERCUTTING S - SLAG BT - BURN THROUGH	P - POROSITY HL - HIGH / LOW IC - INTERNAL CONCAVITY LC - LOW COVER	HB - HOLLOW BEAD C - CRACK AC - ARC BURNS EP - EXCESSIVE PENETRATION SH - SHRINKAGE 1 - SLIGHT, 2 - MEDIUM, 3 - SEVERE	CODE LEGEND 1. ASME B31.3 NORMAL 2. ASME B31.3 SEVERE 3. ASME VIII DIV 1 UW 51 4. ASME VIII DIV UW 52	5. ASME B31.1 6. CSA Z 662 7. API 650 8. OTHER	TECHNIQUES 1. SINGLE WALL EXPOSURE 2. DOUBLE WALL EXPOSURE 3. SINGLE WALL VIEWING 4. DOUBLE WALL VIEWING
---	--	---	--	---	---

WELD #	LOCATION	THK	DIA.	WLDR SYM	IF	IP	UC	S	BT	P	IC	LC	TECH #	CODE #	ACC.EPT	REMARKS	REJECT
X 1	508	XS	20	2			1						1/3	3	<input checked="" type="checkbox"/>	1	
X 2	508	XS	20	2									1/3	3	<input checked="" type="checkbox"/>	2	
															<input type="checkbox"/>	3	
															<input type="checkbox"/>	4	
															<input type="checkbox"/>	5	
															<input type="checkbox"/>	6	
															<input type="checkbox"/>	7	
															<input type="checkbox"/>	8	
															<input type="checkbox"/>	9	
															<input type="checkbox"/>	10	
															<input type="checkbox"/>	11	
															<input type="checkbox"/>	12	
															<input type="checkbox"/>	13	
															<input type="checkbox"/>	14	
															<input type="checkbox"/>	15	
															<input type="checkbox"/>	16	
															<input type="checkbox"/>	17	
															<input type="checkbox"/>	18	
															<input type="checkbox"/>	19	
															<input type="checkbox"/>	20	
															<input type="checkbox"/>	21	
															<input type="checkbox"/>	22	
															<input type="checkbox"/>	23	
															<input type="checkbox"/>	24	

Exposures per Weld	Film Make and Type	Screens	Films per Cassette	Type of Energy	Physical Size	Activity or K.V.	Maximum Source Side Object To Film Distance	Maximum Source to Object Distance	Material	Thickness			IQI		Exp. Time C/Min
										Base	Weld	R.F.	Type	Size	
5	GE D5	.010 PB	1	IR 192	3.0 MM	40 CI			CS				DIN	10-16	

This Certificate or Report is valid only for that work which was specifically requested. The Company is not responsible for any views or opinions expressed by employees performing this work which fall outside the contract terms or reference. All certificates and / or reports are the result of work performed in conformance with applicable specifications and standards to the best of our ability and intent. However, the company will not be responsible for deviation within the normal limits of accuracy in accordance with standard practices. Final Code Acceptance shall require Client and Manufacturer

A.M.		P.M.		TOTAL HOURS		KILOMETERS		SUBSISTENCE		CONSUMABLES	
TIME IN	TIME OUT	TIME	TIME	S.T.	hrs.			MAN DAY	OT / MEALS		
				O.T.	hrs.						

Interpretation is done in accordance with the specified code, to the best of my professional ability.
 Radiographer: HAROLD WAHLSTROM SNT/CGSB Level: 2 Reg. No.: 1913 Assistant: COLIN EVENSON

I am in full agreement with the contents of this report and accept receipt of the associated film. Client Representative MATT MALECH

TEAM Industrial Services
Inspection Services Canada

Slave Lake, Alberta
Phone: 780-805-6384
Fax: 780-849-5321
ndtaltec@hotmail.com

Harold
Wahlstrom
Senior Technician
Area Supervisor



Natural Resources
Canada

Ressources naturelles
Canada



Name/
Nom Harold Wahlstrom

Reg. No. /
No. matricule 1913

Issue Date/
Date d'émission 2011/01/12

Corrective lenses for [X] near [X] far vision
Verres correctifs pour la vision de [X] près [X] distance.

Signature |




Natural Resources
Canada

Ressources naturelles
Canada

Document No. CAN-CGV-46-011
Document No. CAN-CGV-46-011

1913

Method Méthode	Level Niveau	Sector Secteur	Cert. Date Date cert.	Date recert Date recert	Expires Expiration
MT	2	EMC	1997/08/05		2013/12/31
PT	2	EMC	1997/12/02		2013/12/31
RT	2	EMC	1998/01/01		2013/12/31

TEAM

This certifies that Harold Wahlstrom
has qualified to S.N.T. No. SNT-TC-1A

Radiographic Inspection Level Level II

Magnetic Particle Level Level II

Liquid Penetrant Level Level II

Ultrasonic Testing Level _____

Level III Examiner: S. Banner

Date of Issue: 01 January 2011

Expiry Date: 31 December 2013

VISION ACUITY RECORD

Name: Harold Wahlstrom

Employee #: 664923

Vision Acuity Results

Near Vision Requirements
Required for All Personnel

Left Eye Right Eye

Uncorrected J-1 @ 12" J-1 @ 12"

Corrected J- @ " J- @ "

Satisfactory Near Vision (J-1 minimum required in at least one eye)

Unsatisfactory Near Vision

Corrective Lenses Required (J-1 requirement in at least one eye met with use of corrective lenses)

Reading card has been verified IAW 8.1.2.1 of 33.G.103-S8 for personnel certifying to 33.G.103-S4 (CP-189/ASME XI)

Distance Vision Requirements
Branch is Required to Determine Applicability

Left Eye Right Eye

Uncorrected 20/ Snellen 20/ Snellen

Corrected 20/ Snellen 20/ Snellen

Satisfactory Distance Vision (20/30 Snellen minimum required in at least one eye.)

Unsatisfactory Distance Vision

Corrective Lenses Required (20/30 Snellen requirement in at least one eye met with use of corrective lenses)

N/A (Branch determined non-applicable by Code or contractual agreements)

Color Vision Requirements

Required for All Personnel

(Use Form 103.10a "Color Vision Examination Charts")

Can differentiate between colors or shades of gray used in method(s)

Cannot differentiate between colors or shades of gray used in method(s)

Satisfactory Unsatisfactory Corrective Lenses Required

Deficiencies: None

Brightness Discrimination Requirements

Branch is Required to Determine Applicability

N/A Satisfactory Unsatisfactory Corrective Lenses Required

Remarks/Restrictions:

Administered By:

Reviewed & Approved By:

Signature: _____

NDT Level III Signature:

Resp. Level 3 Signature

Name: _____

Stan Banner

NDT Level III Name:

Resp. Level 3 Name:

Stan Banner

Location: _____

Edmonton

Date: _____

1 November 2012

Date: _____

1 November 2012

Next Examination Date: _____

1 November 2013

Welder's Log and Continuity Log

Exact Oilfield Developing Ltd.

"B" Pressure Welder's Log Control

Welder's Name Welder's Symbol	Ticket #	File #	P Number	F Number	Process	WPS Qualified To	Positions Qualified To	Thickness Range Qualified To	Minimum Pipe Diameter Qualified To	Expiry Date Of Ticket
Uphill Kim Lummerding "K"	# 18427	W-10793	P-1	F-6 F-4	GTAW/SMAW	EOD-8	All	.250" - .438"	1" OD	Nov. 15/2014
	# 16813	W-10793	P-1	F-3 F-4	SMAW	EOD-1-3	All	.188" - .684"	1" NPS	Aug. 23/2013
	# 16814	W-10793	P-1	F-3	SMAW	EOD-CSA-2	All	0.436"	1" NPS	Aug. 23/2013
"3" David Edwards Uphill	# 17087	W-10234	P1	F-3 F-4	SMAW	EOD-CSA-2	All	.250" - .186"	1" OD	Nov. 3/2013
	# 17086	W-10234	P-1	F-3 F-4	SMAW	EOD-1-3	All	.104" - Max	1" OD	Nov. 3/2013
Uphill Carmen Conrad "J"	# 17043	W-19732	P-1	F-3 F-4	SMAW	EOD-1-3	All	.104 - Max	1" OD	Oct. 24/2013
	# 17044	W-19732	P-1	F-3 F-4	SMAW	EOD-CSA-2	All	.250" - .186"	1" OD	Oct. 24/2013
Uphill Robin Edwards "R"	# 17181	W-21515	P-1	F-6 F-4	GTAW/SMAW	EOD-8	All	.250 - .438	1" OD	Dec. 7/2013
	#18676	W-21515	P-1 - P-8	F-6 F-5	GTAW/SMAW	EOD-3	All	.250" - .438"	1" OD	Feb. 12/2015
	# 18674	W-21515	P-1	F-3 F-4	SMAW	EOD-1-3	All	.104" - Max	1" OD	Feb. 12/2015
	# 18675	W-21515	P-1	F-3 F-4	SMAW	EOD-1-3	All	.250" - .438"	1" OD	Feb. 12/2015
Uphill Jeff White "2"	# 17168	W-21857	P-1 - P-8	F-6 F-5	GTAW/SMAW	EOD-3-1	All	.250" - .438"	1" OD	Nov. 30/2013
	# 18456	W-21857	P-1	F-6 F-4	GTAW/SMAW	EOD-8	All	.250" - .438"	1" OD	Nov. 26/2014
	# 18198	W-21857	P-1	F-3 F-4	SMAW	EOD-1-3	All	.104" - Max	1" OD	Sept. 20/2014
	# 118199	W-21857	P-1	F-3	SMAW	EOD-CSA-2	F/V/O	.560"	2.875"	Sept. 20/2014
Brent Ghostkeeper "G"	# 17288	W-17894	P-1 - P-8	F-6 F-5	GTAW/SMAW	EOD-9	All	.250" - .438"	1" OD	Jan. 2/2014
	# 17104	W-17894	P-1	F-6 F-4	GTAW/SMAW	EOD-8	All	.250" - .438"	1" OD	Nov. 7/2013
	# 17103	W-17894	P-1	F-3 F-4	SMAW	EOD-1-3	All	.104" - Max	1" OD	Nov. 7/2013

GRB Enterprises Ltd
Edmonton Alberta
AOQP 7107(C)
WELDER PERFORMANCE QUALIFICATION CARD

Name: JEFF WHITE ABSA File Number: W-21857
 This card is issued pursuant to the Safety Codes Act and the Pressure Welders Regulation. The performance qualification is in accordance with Section IX of the ASME BPV Code and subject to the limitations on the reverse side.
 Date of Test: SEPT 20, 2012 Welder Signature: [Signature]
 Bruce Cormier 18198
 Welding Examiner (Print/Type) GRB Card No.

Performance Qualification GRB Card No. 18198

Process(es): SMAW Materials (P.No.): P1
 Filler Metal (F.No.): F3 F4 Min. Outside Pipe Diameter: 1" 00
 Max Deposited Weld Metal: 0.104" MAX WELD Position(s) Qualified: ALL
 Backing: WITHOUT WITH WITH Backing Gas: NONE
 Progression: UP HILL #E00 252
 SEPT 20, 2014 [Signature] Examiner File No.
 P.Q. Expiry Date Welding Examiner Signature

GRB Enterprises Ltd
Edmonton Alberta
AOQP 7107(C)
WELDER PERFORMANCE QUALIFICATION CARD

Name: JEFF WHITE ABSA File Number: W-21857
 This card is issued pursuant to the Safety Codes Act and the Pressure Welders Regulation. The performance qualification is in accordance with Section IX of the ASME BPV Code and subject to the limitations on the reverse side.
 Date of Test: SEPT 20, 2012 Welder Signature: [Signature]
 Bruce Cormier 18199
 Welding Examiner (Print/Type) GRB Card No.

Performance Qualification GRB Card No. 18199

Process(es): SMAW Materials (P.No.): P1
 Filler Metal (F.No.): F3 Min. Outside Pipe Diameter: 2.875"
 Max Deposited Weld Metal: 0.500" Position(s) Qualified: F, V, O
 Backing: WITHOUT WITH Backing Gas: NONE
 Progression: DOWNHILL #E00 252
 SEPT 20, 2014 [Signature] Examiner File No.
 P.Q. Expiry Date Welding Examiner Signature
 * 2662 NICK BREAK - PASS

GRB Enterprises Ltd
Edmonton Alberta
AOQP 7107(C)
WELDER PERFORMANCE QUALIFICATION CARD

Name: JEFF WHITE ABSA File Number: W-21857
 This card is issued pursuant to the Safety Codes Act and the Pressure Welders Regulation. The performance qualification is in accordance with Section IX of the ASME BPV Code and subject to the limitations on the reverse side.
 Date of Test: NOV 30, 2011 Welder Signature: [Signature]
 Bruce Cormier 17168
 Welding Examiner (Print/Type) GRB Card No.

Performance Qualification GRB Card No.

Process(es): GTAW SMAW P1 THROUGH Materials (P.No.): P8
 Filler Metal (F.No.): F6 F5 Min. Outside Pipe Diameter: 1" 00
 Max Deposited Weld Metal: 0.250" 0.438" Position(s) Qualified: ALL
 Backing: WITHOUT WITH WITH Backing Gas: WITH
 Progression: UP HILL #E00 252
 NOV 30, 2013 [Signature] Examiner File No.
 P.Q. Expiry Date Welding Examiner Signature

GRB Enterprises Ltd
Edmonton Alberta
AOQP 7107(C)
WELDER PERFORMANCE QUALIFICATION CARD

Name: JEFF WHITE ABSA File Number: W-21857
 This card is issued pursuant to the Safety Codes Act and the Pressure Welders Regulation. The performance qualification is in accordance with Section IX of the ASME BPV Code and subject to the limitations on the reverse side.
 Date of Test: NOV 26, 2012 Welder Signature: [Signature]
 Bruce Cormier 18456
 Welding Examiner (Print/Type) GRB Card No.

Performance Qualification GRB Card No. 18456

Process(es): GTAW SMAW Materials (P.No.): P1
 Filler Metal (F.No.): F6 F4 Min. Outside Pipe Diameter: 1" 00
 Max Deposited Weld Metal: 0.250" 0.438" Position(s) Qualified: ALL
 Backing: WITHOUT WITH WITH Backing Gas: NONE
 Progression: UP HILL #E00 252
 NOV 26, 2014 [Signature] Examiner File No.
 P.Q. Expiry Date Welding Examiner Signature

GRB Enterprises Ltd
Edmonton Alberta

AOQP 7107(C)

WELDER PERFORMANCE QUALIFICATION CARD

DAVID EDWARDS

Name

W-10234

ABSA File Number

Name

This card is issued pursuant to the Safety Codes Act and the Pressure Welders Regulation. The performance qualification is in accordance with Section IX of the ASME BPV Code and subject to the limitations on the reverse side.

NOV 3, 2011

Date of Test

David Edwards

Welder Signature

BRUCE CORMIER

Welding Examiner (Print/Type)

17086

GRB Card No.

Performance Qualification GRB Card No. 17086

Process(es) SMAW

Materials (P.No.) P1

Filler Metal (F.No) F3 F4

Min. Outside Pipe Diameter 1"00

Max Deposited Weld Metal 0.104" MAX.

Position(s) Qualified ALL

Backing WITHOUT

WITH WITH

Backing Gas NONE

Progression UPHILL

#E00 252

NOV 3, 2013

P.Q. Expiry Date

Bruce Cormier
Welding Examiner Signature

Examiner File No

GRB Enterprises Ltd
Edmonton Alberta

AOQP 7107(C)

WELDER PERFORMANCE QUALIFICATION CARD

DAVID

Name

EDWARDS

W-10234

ABSA File Number

Name

This card is issued pursuant to the Safety Codes Act and the Pressure Welders Regulation. The performance qualification is in accordance with Section IX of the ASME BPV Code and subject to the limitations on the reverse side.

NOV 3, 2011

Date of Test

David Edwards

Welder Signature

BRUCE CORMIER

Welding Examiner (Print/Type)

17087

GRB Card No.

Performance Qualification GRB Card No. 17087

Process(es) SMAW

Materials (P.No.) P1

Filler Metal (F.No) F3 F4

Min. Outside Pipe Diameter 1"00

Max Deposited Weld Metal 0.250" 0.186"

Position(s) Qualified ALL

Backing WITHOUT

WITH WITH

Backing Gas NONE

Progression DOWN HILL

UPHILL

#E00 252

NOV 3, 2013

P.Q. Expiry Date

Bruce Cormier
Welding Examiner Signature

Examiner File No



UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049 "type 3.1")

DATE: 08/25/12
TIME: 04:19:49
SERIAL NO: L0042723

MILL ORDER/ITEM NO DA00386 02	SHIPPER'S NO. R90436	P.O. NUMBER E1-3292	VEHICLE ID LT8171
SOLO TO ADDRESS U S STEEL TUBULAR PRODUCTS CANADA C/O COMCO PIPE & SUPPLY CO 333 7TH AVE SW STE 2150 CALGARY AB T2P 2Z1		MAIL TO ADDRESS U S STEEL TUBULAR PRODUCTS CANADA C/O COMCO PIPE & SUPPLY CO 333 7TH AVE SW STE 2150 CALGARY AB T2P 2Z1	
VENDOR USS TUBULAR PRODUCTS 2199 EAST 28TH ST. LORAIN, OH 44055			

SPECIFICATION AND GRADE
PIPE CARBON SMLS STD PIPE ASTM A53-10 ASTM A106-10 GRADE B ASME SA53-2010 EDITION ASME SA106-2010 EDITION GRADE B CSA Z245.1-07 CAT I GRADE 290 EXCEPT MARKING BLK REG MILL COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75 *:ISO 15156-2 2009 ED AND MR-0103-2009_ED

MATERIAL COND: AS ROLLED	O.D.: 20.000 (508.000)		WALL: 0.375 (9.525)								
PRODUCT IDENTIFICATION	TENSILE TEST TYPE/ ORIENTATION	TEST COND.	GAUGE WIDTH IN	YIELD	EXT %	TENSILE	Y/T	ELONG %	HARDNESS	MIN HYDRO	DWELL (SEC)
				PSI		PSI		(IN 2")	SCALE: HRB	PSI	
				MIN: 42100	.50	MIN: 60100	MAX:	MIN:	MIN: 66.0	1430	5
				MAX: 71800		MAX: 110200	0.93	MAX: 28.0	MAX: 99.5		
MA3883 W963AA	STRIP/L/B	AR	1.500	52000	.50	68500	0.76	42.6	B 75.4	1430	5
WA4084 X864AA	STRIP/L/B	AR	1.500	50500	.50	66000	0.77	45.5	B 78.1	1430	5
** END OF DATA THIS SHEET **											

LEGEND:		L - LONGITUDINAL	T - TRANSVERSE	QT - QUENCH & TEMPERED	AR - AS ROLLED	B - BODY	W - WELD												
		U - UPSET	NM - NORMALIZED	SR - STRESS RELIEVED	TR - THERMOMECHANICAL ROLLED														
PRODUCT IDENTIFICATION	TYPE																	CE*	CE*
		C	MN	P	S	SI	CU	NI	CR	MO	AL	N	V	B	TI	CB	CO	CSA	MAX
MA3883	HEAT	15	1.03	0.09	0.04	23	14	0.05	0.04	0.02	0.26		0.03	0.003	0.002	0.001		0.33	0.35
MA3883 W963AA	PROD	13	1.03	0.10	0.03	24	14	0.05	0.04	0.01	0.22		0.02	0.004	0.004	0.003		0.31	0.33
MA3883 W963AA	PROD	14	1.06	0.10	0.03	24	15	0.06	0.03	0.01	0.26		0.02	0.004	0.004	0.003		0.33	0.35
WA4084	HEAT	15	1.03	0.08	0.04	20	11	0.05	0.06	0.03	0.30		0.02	0.004	0.000	0.003		0.33	0.35
WA4084 X864AA	PROD	13	1.06	0.08	0.01	22	10	0.05	0.06	0.03	0.17		0.02	0.001	0.003	0.003		0.31	0.34
WA4084 X864AA	PROD	15	1.08	0.08	0.01	22	10	0.05	0.06	0.03	0.17		0.02	0.001	0.004	0.006		0.34	0.36
** END OF DATA THIS SHEET **																			

* C.E. IS BASED ON THE FOLLOWING EQUATION(S). * SEE ADDITIONAL NOTES

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT. ELEMENTS REPORTED IN MASS FRACTION (%).

Order#: 264190 Seq: 1 PO#: 350-009686 Heat#: WA4084 Mill: U.S. Steel
Part#: P 20 STD S6 D B Part Desc: Pipe 20 (508mm O.D.) STANDARD SMLS /SA106-B DRL BEVELLED END (.375W)



UNITED STATES STEEL

TOBULAR PRODUCTS
 CERTIFIED TEST REPORT
 (IN ACCORDANCE WITH ISO 10474/EN10204/DIN50048 Type 3.1)

DATE: 10/09/10
 TIME: 04:48:45
 SERIAL NO: L0033572

10/09/10 8:37 AM

BILL ORDER ITEM NO TT03331 04		SHIPPER'S NO. R82662		P.O. NUMBER 4887730-00		0018258							
MATERIAL COND: AS ROLLED				OD: 20.000 (508.000)		to (mm)		WALL: 0.500 (12.700)					
PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	MIN COLLAPSE	CHARPY V-NOTCH IMPACT TESTING								
					DIR	TEST LOC	TEMP	SIZE	TEST COND.	FILES			% BREAK
					1	2	3	AVG	1	2	3	AVG	
DEC													
M01427 R373AA		OK		** END OF DATA THIS SHEET **									
LEGEND L - LONGITUDINAL T - TRANSVERSE B - BODY W - WELD HAZ - HEAT AFFECTED ZONE													
TESTING / INSPECTION INFORMATION													
TEST / INSPECTION				YES	RESULTS / COMMENTS								
FULL LENGTH VISUAL				X									
FULL LENGTH EMI				X	OD X		OD/D		L X		L/T		10.0% NOTCH
FULL LENGTH MPI													
FULL LENGTH UT				X	ID		OD/D		L		L/T		10.0/10.0% NOTCH
END AREA INSPECTION (PLAIN END)					MPI		UT						
SPECIAL END AREA (SEA) INSP					MPI		UT						
FULL LENGTH DRIFT					DRIFT MANDREL SIZE:								
ADDITIONAL NOTES/COMMENTS													
<p>MELTED AND MANUFACTURED IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT.</p> <p>*C.E. IS BASED ON THE FOLLOWING EQUATION(S): FOR CARBON MIN: .13 TO MAX: .30, $CE=C+(Mn/6)+(Cr+Mo+V)/5+(Ni+Cu)/15$ WITH .43 MAX C.E. FOR CARBON MIN: .01 TO MAX: .21, $CE=C+F(Mn/6+Si/24+Cu/15+Ni/20+Cr/5+Mo/5+V/5+Nb/5+5B)$ WITH .40 MAX C.E.</p> <p>*NOTE A SEE ATTACHED REPORT FOR HARDNESS RESULTS. PRODUCT WAS HOT ROLLED AND HOT FINISHED</p>													

United States Steel -> 7804637433

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS.

PREPARED BY THE OFFICE OF: R. HARRIS - MANAGER, Q.A.

DATE 10/09/10

**



UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049 "type 3.1")

DATE: 10/09/10
TIME: 04:48:45
SERIAL NO: L0033572

2

MILL ORDER/ITEM NO TT03331 04		SHIPPER'S NO. RB2662		P.O. NUMBER 4887730-00		VEHICLE LD LTS214													
SOLD TO ADDRESS CCTF CORP 5407 53 AVENUE NW EDMONTON AB T6B 3G2				MAIL TO ADDRESS 20 XH A106				VENDOR USS TUBULAR PRODUCTS 2199 EAST 28TH ST. LORAIN, OH 44055											
SPECIFICATION AND GRADE PIPE CARBON SMLS STD PIPE ASTM A53-*07 ASTM A106-*08 GRADE B ASME SA53-*2007 EDITION ASME SA106-*2007 EDITION GRADE B CSA Z245.1-*07 CAT I GRADE 290 EXCEPT MARKING BLK REG MILL COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75 *:2003/COR.1:2005 AND MR0103-2007 2523566 2520061																			
MATERIAL COND: AS ROLLED				O.D.: 20.000 (508.000)		WALL: 0.500 (12.700)													
PRODUCT IDENTIFICATION	TENSILE TEST TYPE/ ORIENTATION	TEST COND.	GALVE WIDTH IN	YIELD		TENSILE		Y/T	ELONG % (IN 2")	HARDNESS SCALE	MIN HYDRO PSI	DWELL (SEC)							
				MIN: PSI	MAX: PSI	MIN: PSI	MAX: PSI												
MA1427 R373AA	STRIP/L/B	AR	1.500	49200	.50	72500	0.68	45.3	*NOTE A	1900	5								
				** END OF DATA THIS SHEET **															
LEGEND: L - LONGITUDINAL T - TRANSVERSE QT - QUENCH & TEMPERED AR - AS ROLLED B - BODY W - WELD U - UPSET NM - NORMALIZED SR - STRESS RELIEVED TR - THERMOMECHANICAL ROLLED																			
PRODUCT IDENTIFICATION	TYPE	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Al	N	V	B	Ti	Cb	Co	CE*	C.E.*
MA1427	HEAT	.18	100	008	002	.21	.17	.12	.05	.01	.026		.00	0001	.001	.001		.38	.38
MA1427 R373AA	PROD	.18	106	013	003	.23	.17	.11	.06	.01	.038		.00	0004	.004	.011		.39	.39
MA1427 R373AA	PROD	.14	107	009	003	.20	.16	.12	.06	.00	.026		.00	0000	.002	.004		.33	.35
				** END OF DATA THIS SHEET **															
*C.E. IS BASED ON THE FOLLOWING EQUATION(S): * SEE ADDITIONAL NOTES																			

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT.



UNITED STATES STEEL

TUBULAR PRODUCTS
 CERTIFIED TEST REPORT
 (IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049 "type 3.1")

DATE: 08/25/12
 TIME: 04:19:49
 SERIAL NO: L0042723

MILL ORDER/ITEM NO DA00386 02		SHIPPERS NO. R90436		P.O. NUMBER E1-3292		0017938												
MATERIAL COND: AS ROLLED				O.D.: 20.000 (508.000)		WALL: 0.375 (9.525)												
PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	MIN COLLAPSE	D/R	TEST LOC.	TEMP.	SIZE	TEST COND.	CHARPY V-NOTCH IMPACT TESTING FT.-LBS				% SHEAR				
										1	2	3	AVG	1	2	3	AVG	
MA3883 W963AA WA4084 X864AA		OK OK																
** END OF DATA THIS SHEET **																		
LEGEND L - LONGITUDINAL T - TRANSVERSE B - BODY W - WELD HAZ - HEAT AFFECTED ZONE TESTING / INSPECTION INFORMATION																		
TEST / INSPECTION		YES		RESULTS / COMMENTS														
FULL LENGTH VISUAL		X																
FULL LENGTH EMI		X		OD <u> X </u> OD/D <u> </u> L <u> X </u> UT <u> </u> 10.0% NOTCH														
FULL LENGTH MPI																		
FULL LENGTH UT		X		ID <u> </u> OD/D <u> X </u> L <u> </u> UT <u> X </u> 10.0/10.0% NOTCH														
END AREA INSPECTION (PLAIN END)				MPI <u> </u> UT <u> </u>														
SPECIAL END AREA (SEA) INSP				MPI <u> </u> UT <u> </u>														
FULL LENGTH DRIFT				DRIFT MANDREL SIZE:														
ADDITIONAL NOTES/COMMENTS MELTED AND MANUFACTURED IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT. *C.E. IS BASED ON THE FOLLOWING EQUATION(S): FOR CARBON MIN: .13 TO MAX: .30, CE=C+(MN/6)+(CR+MO+V)/5+(NI+CU)/15 WITH .43 MAX C.E. FOR CARBON MIN: .01 TO MAX: .21, CE=C+F(MN/6+SI/24+CU/15+NI/20+CR/5+MO/5+V/5+Nb/5+5B) WITH .40 MAX C.E. PRODUCT WAS HOT ROLLED AND HOT FINISHED																		

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS

PREPARED BY THE OFFICE OF: BRAD KOURY - MANAGER, Q.A.

DATE 08/25/12

Order#: 264190 Seq: 1 PO#: 350-009686 Heat#: WA4084 Mill: U.S. Steel
 Part#: P 20 STD S6 D B Part Desc: Pipe 20 (508mm O.D.) STANDARD SMLS AISA 106-B DRL BEVELLED END (.375W)