

**Canadian Natural Resources Limited
GENERAL PRESSURE VESSEL INFORMATION**

Job # 105.00774

District: Ft St John B.C.		Skid No.				
Facility: West Blueberry Battery		Location (LSD): 12 – 29 – 88 – 25 – W6M				
Vessel Name & Equipment Number: Line Heater						
Orientation: Horizontal						
Status: Operating		Regulatory Inspection				
PRESSURE VESSEL NAMEPLATE DATA						
Registration Number A 403525		CRN Number N 5217.21				
Vessel serial number: C 756A.CB		Size: 48 in. x 16 ft. S/S				
Shell thickness: 9.5 mm		Shell material: SA 36				
Head thickness: 9.5 mm		Head material: SA 36				
Tube wall thickness:		Tube material:				
Tube diameter:		Tube length:				
Channel thickness:		Channel material:				
Design pressure	Shell: 21609 Kpa	Operating pressure	Shell: 0 – 30000 Kpa			
	Tubes:		Tubes:			
Design Temp.	Shell: 93 deg C	Operating temperature	Shell:			
	Tubes:		Tubes:			
X-ray: RT 1		Heat treatment: HT				
Code parameters: ASME B31.3		Coated: No				
Manufacturer: Rushton		Built: 1998				
Corrosion allowance:		Manway: No				
PRESSURE SAFETY VALVE NAMEPLATE DATA						
PSV Tag #	Manufacture	Model #	Serial #	Set Pressure (kPa)	Capacity (scfm)	Service Date
8845F	Mercer	81-17151T15G21	184351	1200 PSI	4138	06/2008
CRN #	Service By	Block Valve	Location	Size	Code Stamp	
0G8841.5C	Unified	No	Top Shell / Inlet Sep	1" x 1"	UV/NB	
SERVICE CONDITIONS-INDICATE ALL THAT APPLY						
Sweet	Sour X	Oil X		Gas X	Water X	
Amine	LPG	Condensate		Air	Glycol X	
Other (Describe):						

Inspection Interval _____ **PSV Service Interval** _____
 (Determined by MIC in conjunction with Chief Inspector following guidelines of CNRL's Owner-User Inspection Program)

Reports reviewed and accepted by:
Mechanical Integrity Coordinator _____ **Date** _____

Fill out all forms as completely as possible. All information is important! Use back of sheets to record additional information or sketch if required.
 Copy of report to be filed by MIC at site, and copy sent to Chief Inspector.

External Inspection Items	G	F	P	N/A	Comments
Insulation Verify sealed around manways, nozzles, no damage present, and there is no egress of moisture.	X				No open or torn sections on reboiler section.
External Condition Assess paint condition, areas peeling, record any corrosion, damage, etc (record location, size and depth of corrosion or damage)	X				Paint is in good overall condition – No chipped or exposed metal - no previous corrosion.
Leakage Record any leakage at flanges, threaded joints, weep holes on repads, etc.	X				No leakage at flanges, threaded joints
Skirt Assess condition of paint, fire protection, and concrete. Look for corrosion, buckling, dents, etc. Look at vessel surface area near supports. Verify no signs of leakage at attachment to vessel and attachment welds are acceptable. Ground wire attached?	X				No distortion to saddles – no mechanical damage. No corrosion at saddle to shell welds – no leaks. Paint is in good condition – no corrosion. Skid package is grounded.
Anchor Bolts Hammer tap to ensure secure. Look for cracking in treads or signs of deformation.	X				All bolts tight and secure no signs of deformation.
Concrete foundation Check for cracks, spalling, etc.				X	Steel skid.
Ladder / Platform Describe general condition, ensure support is secure to vessel, and describe any hazards.				X	No ladders or platforms required.
Nozzle Assess paint, look for leakage, and ensure stud threads are fully engaged. Record any damage, deflection, etc. Are nozzles gusseted?	X				Threaded fittings are fully engaged. Other bolted flanges are in good condition – no short studs. No gussets. No deflection noted – no leaks.
Gauges Ensure gauges are visible, working, no leakage, and suitable for range of MAWP/ Temp.	X				Temperature gauge on heater – good condition and within range for service. Pressure gauge for fuel gas feed to burner – good condition and within range for service.
External Piping Ensure pipe is well supported. All clamps, supports, shoes, etc. in place. Look for evidence of structural overload, deflection, etc. Paint condition, external corrosion?	X				Well supported – no deflection – all clamps in place. Paint is in good condition – no exposed metal.
Valving Ensure no leaks are visible. Valves are properly supported and chained if necessary.	X				Valves well supported – no leaks.
PSV Ensure PSV is set at pressure at or below that of vessel.				X	No PSV required.

<p>NDE methods Was UT/ MPI done on vessel (MI coordinator to review results)</p>			X	<p>Ultrasonic thickness survey carried out – 2 inch outlet piping metal thickness detected below nominal minus corrosion allowance. UT point 2740 is a 2 inch pipe – nominal is 8.7 mm / min is 7.2 mm / T min thickness is 5.3 mm. The remainder of the piping to and from the separator is in very poor condition and requires change out.</p>
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Recommendations or corrective actions : Vessel is Fit for Service or describe corrective actions required)

(MIC to review corrective actions with Operations, discuss with Chief Inspector where necessary, and get remedial action implemented)

Recommendations: 1. Change out the piping to and from the line heater / separator – min thickness is 1.8 mm – refer Summary: This vessel is in good overall condition, visual external and ultrasonic thickness survey carried out, UT point 2740 is a 2 inch pipe – nominal is 8.7 mm / min is 7.2 mm / T min thickness is 5.3 mm. The remainder of the piping to and from the separator is in very poor condition and requires change out.

Long term corrosion rate based on greatest thickness loss (shell) 0.025mm per year. Retirement Date to “T”min is year 2166. Line Heater is fit for service but the piping to and from the separator / line heater configuration is in poor condition and requires change out.

Inspected By: Joseph Holdstock

Date: Aug 05, 2010.



LSD Location



Site overview



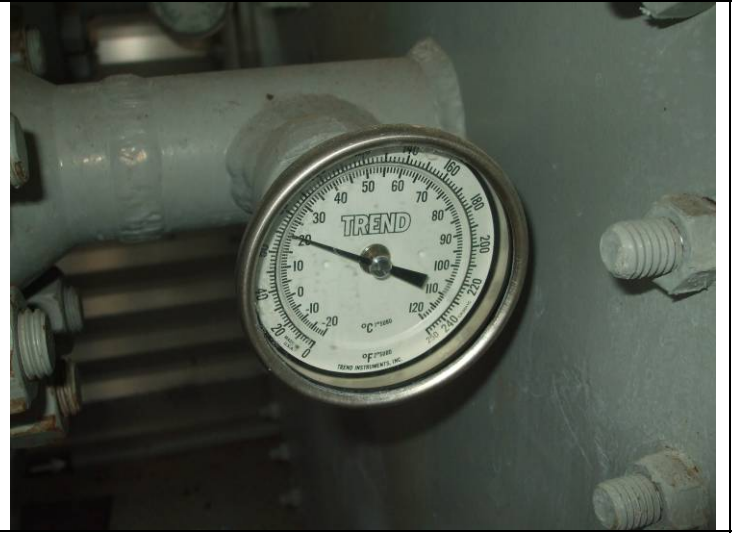
Data plate



Vessel overview



Vessel overview



Temperature gauge