Canadian Natural Resources Limited
GENERAL PRESSURE VESSEL INFORMATION **Job # 10.110056**

District: Grande Prairie AB.	Skid No.
Facility: Knopcik Gas Gathering	**Location (LSD): 16-06-73-10W6M**
Vessel Name Equipment Number: Line Heater	
Orientation: Horizontal	
Status: In Service	**Regulatory Inspection**

PRESSURE VESSEL NAMEPLATE DATA

"A" or "G" or "S" (Sask.) or BC Registration Number. **A0475002**		CRN Number: K 1977.12	
Vessel serial number: 126-77-01-C		Size: 36 in. X 20 ft.	
Shell thickness: 6.4 mm		Shell material: SA 36	
Head thickness: 6.4 mm		Head material: SA 36	
Tube wall thickness:		Tube material:	
Tube diameter:		Tube length:	
Channel thickness:		Channel material:	
Design pressure	1st Pass: 2950 PSI	Operating pressure	Shell:
	2nd Pass: 2025 PSI		Tubes: 0 – 3000 PSI
Design Temp.	Shell: 200 Deg F	Operating temperature	Shell:
	Tubes: 200 Deg F		Tubes: -40 – 120 Deg F
X-ray: RT1		Heat treatment: yes	
Code parameters: ASME B31.3		Coated: no	
Manufacturer: Mar- Quinn		Year built: 2001	
Corrosion allowance: 3.2mm		Manway: no	

PRESSURE SAFETY VALVE NAMEPLATE DATA

PSV Tag #	Manufacture	Model #	Serial #	Set Pressure (kPa)	Capacity (scfm)	Service Date
CRN #	Service By	Block Valve	Location	Size	Code Stamp	

SERVICE CONDITIONS-INDICATE ALL THAT APPLY

Sweet	Sour X	Oil	Gas X	Water
Amine	LPG	Condensate	Air	Glycol
Other (Describe):				

Inspection Interval _____PSV Service Interval_____
(Determined by MIC in conjunction with Chief Inspector following guidelines of CNRL Owner-User Inspection Program)

Reports reviewed and accepted by:
Mechanical Integrity Coordinator_____Date_____

Fill out all forms as completely as possible. <u>All information</u> 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**				**Vessel insulated to 75%.** **No damage present- no egress of moisture.** **Sealed at skid building, saddles and nozzles.**
External Condition Assess paint condition, areas peeling, record any corrosion, damage, etc (record location, size and depth of corrosion or damage)	**X**				**Paint in good overall condition – No exposed metal.**
Leakage Record any leakage at flanges, threaded joints, weep holes on repads, etc.	**X**				**No leaks observed.**
Saddle/Skirt Assess condition of paint, fire protection, 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**				**Saddles: bolted directly to skid floor.** **No buckling or dents.** **No corrosion at attachment welds to vessel.** **Ground wire attached to skid.**
Anchor Bolts Hammer tap to ensure secure. Look for cracking in treads or signs of deformation.	**X**				**Anchor bolts are securely fastened.** **No deformation.**
Concrete foundation Check for cracks, spalling, etc.				**X**	
Ladder / Platform Describe general condition, ensure support is secure to vessel, describe any hazards.				**X**	
Nozzle Assess paint, look for leakage, and ensure stud threads are fully engaged. Record any damage, deflection, etc. Are nozzles gusseted?	**X**				**Stud threads are fully engaged to nuts – no short bolts.** **No damage or deflections – no leaks.** **Nozzles are not gusseted.**
Gauges Ensure gauges are visible, working, no leakage, and suitable for range of MAWP/ Temp.	**X**				**Clear and clean – no leakage.** **Suitable for operational range of vessel.** **Pressure gauge 0 – 3000 PSI/ temperature gauge -40 – 120 Deg F.**
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**				**Piping is well supported; no deflection, all clamps and supports are in place.** **Paint in good condition – no exposed metal.**
Valve: Ensure no leaks are visible. Valves are properly supported and chained if necessary.	**X**				**Valves are supported properly – no leaks.**
PSV Ensure PSV is set at pressure at or below that of vessel.				**X**	**No PSV on vessel- vented to atmosphere.**

NDE methods Was UT/ MPI done on vessel (MI coordinator to review results)	**X**				**Ultrasonic corrosion survey carried out: Pipe metal thickness detected below nominal minus corrosion allowance. Thickness calculations carried out:** **UT point 135 (3" Elbow) – nominal thickness is 7.6 mm / min thickness is 6.6 mm / T min thickness is 4.3 mm, using 13962 kPa** **UT point 140 (3" Elbow) – nominal thickness is 7.6 mm / min thickness is 6.5 mm / T min thickness is 4.3 mm, using 13962 kPa.**

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: No recommendations at this time.
Summary: Vessel is in overall good condition, visual external inspection and ultrasonic corrosion survey performed – pipe metal thickness detected below nominal minus corrosion allowance. Thickness calculations carried out to ensure sufficient metal exists for safe operation.
Long term corrosion rate based on greatest thickness loss – Piping only, Nominal thickness is 7.6 mm / min thickness is 6.6 mm / T min thickness is 4.3 mm – Corrosion rate is .1 mm per year = yr 2034

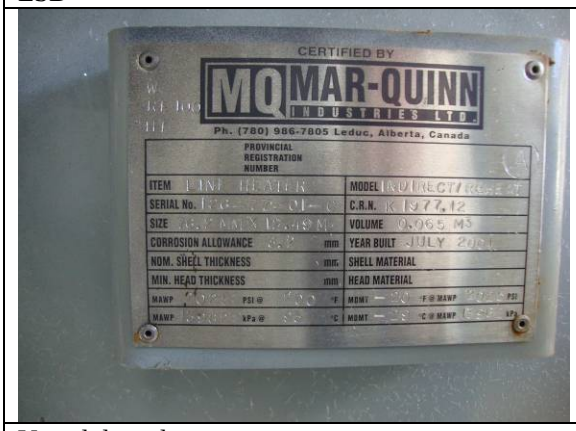
Vessel is fit for service.

Inspected By: Gerry Avery **Date:** February 25, 2011

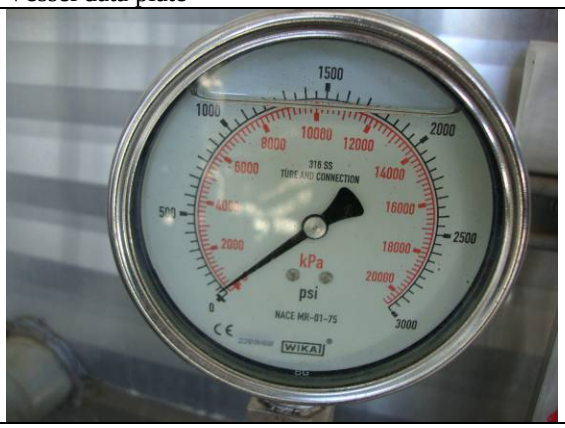
Photo Table

LSD

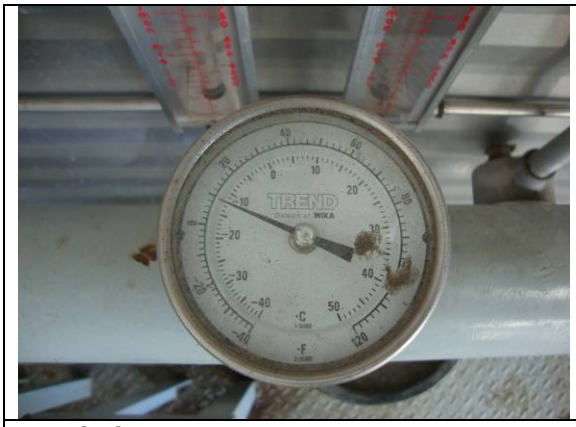
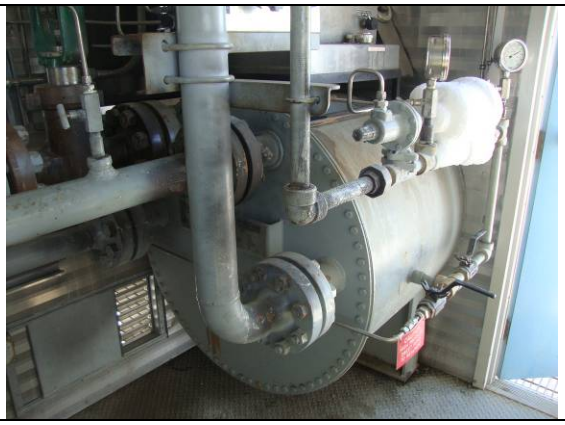
Vessel data plate



Vessel data plate



Vessel tube pressure gauge

	
Vessel tube temperature gauge	Vessel inlet overview
	
Vessel overview	