

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

Job # 10.110674

District: Grande Prairie, AB	Skid No.:
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Facility: Saddle Hills Gas Gathering	Location (LSD): 03-36-74-07 w6m
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Vessel Name Equipment Number: **Inlet Separator**

Orientation: **Vertical**

Status: In Service	Regulatory Inspection
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PRESSURE VESSEL NAMEPLATE DATA

“A” or “G” or “S” (Sask.) or BC Registration Number. A0440987	CRN Number: M 7382.231
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Vessel serial number: 119-77-98	Size: 24 in x 128 in
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Shell thickness: 28.6 mm	Shell material: SA 516-70N
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Head thickness: 27.5 mm	Head material: SA 516-70N
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Tube wall thickness:	Tube material:
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Tube diameter:	Tube length:
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Channel thickness:	Channel material:
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Design pressure	Shell: 10204 kPa (1480 PSI)	Operating pressure	Shell: 0 to 10342 kPa
	Tubes:		Tubes:

Design Temp.	Shell: 38°C	Operating temperature	Shell: -40 to 50°C
	Tubes:		Tubes:

X-ray: RT-1	Heat treatment: Nil
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Code parameters: ASME VIII, Div 1	Coated: No
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Manufacturer: Mar-Quinn Industries Limited	Year built: 1998
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Corrosion allowance: 3.2 mm	Manway: No
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PRESSURE SAFETY VALVE NAMEPLATE DATA

PSV Tag #	Manufacturer	Model #	Serial #	Set Pressure (PSI)	Capacity (scfm)	Service Date
UVL 54274G	Mercer	81-34251P27G21	677928	1440 PSI	11527	07/09
CRN #	Service By	Block Valve	Location	Size	Code Stamp	
0G8841.5C	Unified Valve	No	Upper shell	1.5 x 2"	UV/NB	

SERVICE CONDITIONS-INDICATE ALL THAT APPLY

Sweet	Sour X	Oil	Gas X	Water X
Amine	LPG	Condensate X	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** _____

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 is not insulated.
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 condition. No exposed metal. No damage.
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				Vessel skirt is bolted to skid floor. No evidence of corrosion at shell to skirt weld – no leaks. Paint in good condition – no exposed metal. No distortion. No buckles. Skid package is mounted to pilings above ground level. Skid package has ground wire attached.
Anchor Bolts Hammer tap to ensure secure. Look for cracking in treads or signs of deformation.	X				Anchor bolts are securely fastened.
Concrete foundation Check for cracks, spalling, etc.				X	Steel skid.
Ladder / Platform Describe general condition, ensure support is secure to vessel, describe any hazards.				X	No ladder or platform attached.
Nozzle Assess paint, look for leakage, and ensure stud threads are fully engaged. Record any damage, deflection, etc. Are nozzles gusseted?	X				Threaded nozzle joints are fully engaged. Studs are fully engaged to nuts – no short bolts. PSV nozzle is gusseted. Remainder of nozzles no gussets. No damage. No deflections. Paint in good condition. No exposed metal.
Gauges Ensure gauges are visible, working, no leakage, and suitable for range of MAWP/ Temp.	X				Pressure, temperature and liquid level gauges attached. Pressure gauge: 0 to 10340 kPa. Within range of MAWP. Temperature gauge: -40 to 50°C. Within range of MAWT. Clean, clear and in working condition. No leaks.
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. All clamps, supports and shoes are in place. No structural overloads or deflections noted. Paint in good condition.
Valving Ensure no leaks are visible. Valves are properly supported and chained if necessary.	X				Valves are properly supported. No leak detected.
PSV Ensure PSV is set at pressure at or below that of vessel.	X				Located on upper shell – set below MAWP of vessel. Discharge piping is same size as valve outlet. Valve is properly supported and routed. PSV seal in place. No block valve between PSV valve and vessel.

<p>NDE methods Was UT/ MPI done on vessel (MI coordinator to review results)</p>	<p>X</p>			<p>Ultrasonic thickness survey carried out – pipe metal thickness detected below nominal minus corrosion allowance. Ultrasonic corrosion survey carried out – pipe metal thickness detected below nominal minus corrosion allowance. Thickness calculations carried out: 2” Nozzle – nominal thickness is 8.7mm / min thickness is 8.3mm / T min thickness is 2.9mm. 2” Elbow – nominal thickness is 8.7mm / min thickness is 7.6mm / T min thickness is 2.9mm. 3” Elbow nominal thickness is 5.5mm / min thickness is 4.3mm / T min thickness is 4.2mm.</p>
<p>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: None 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. Vessel is fit for service.</p>				

Inspected By: Chris Maxsom

Date: October 20, 2011



LSD

Overview – Skid



Overview – Upper shell and PSV location

Overview – Lower shell

CERTIFIED BY	
MAR-QUINN INDUSTRIES LTD.	
LEDUC • ALBERTA • CANADA	
W R I J	PROVINCIAL REGISTRATION NUMBER A440987
ITEM SEPARATOR	MODEL VERTICAL 3 PHASE
SIZE 609MM X 3251MM	VOLUME 0.668 M ³
SERIAL No. 119-77-98	DATE BUILT APRIL - 1998
C.R.N. No. M-7382,251	M.A.W.P. & TEMP. 1480 PSIG 100 °F
JOB No. 1977	M.A.W.P. & TEMP. 10200 kPa 38 °C
NOM. SHELL THICKNESS 78.6 mm	SHELL MATERIAL SA-516-70
MIN. HEAD THICKNESS 77.48 mm	HEAD MATERIAL SA-516-70
CORROSION ALLOWANCE 3.2 mm	M.D.M.T. -20 °C -20 °F



Data plate

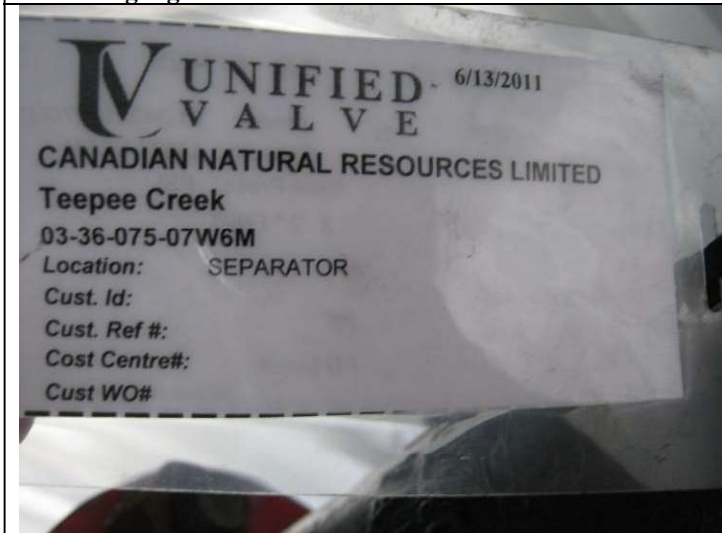
Liquid level



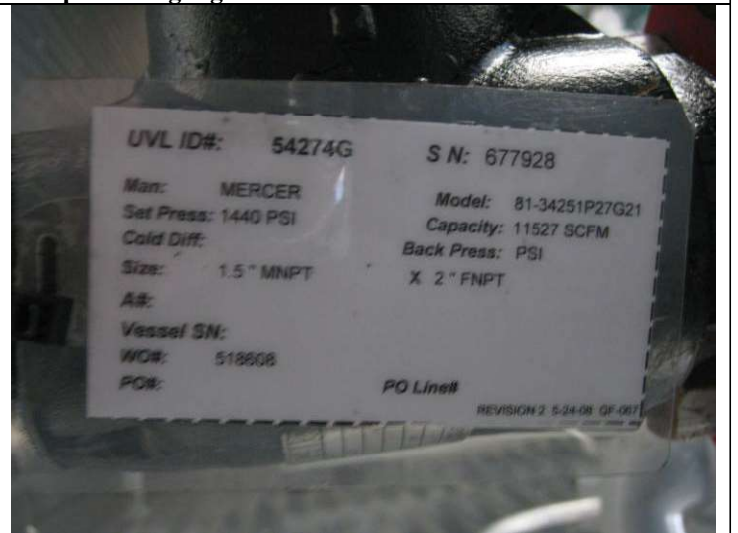
Pressure gauge



Temperature gauge



PSV service tag



PSV service tag