Canadian Natural Resources Limited
GENERAL PRESSURE VESSEL INFORMATION **Job # 10.110674**

District: **Grande Prairie, AB**	Skid No.:
Facility: **Saddle Hills Gas Gathering**	Location (LSD): **DH: 16-28-75-07 w6m SL: 09-28-75-07 w6m**
Vessel Name Equipment Number: **Separator**	
Orientation: **Vertical**	
Status: **In Service**	**Regulatory Inspection**

PRESSURE VESSEL NAMEPLATE DATA

"A" or "G" or "S" (Sask.) or BC Registration Number. **A0465525**		CRN Number: **P 5726.23**	
Vessel serial number: 2001 6618 02E		Size: 16 in x 96 in	
Shell thickness: 25.4 mm		Shell material: SA 516-70N	
Head thickness: 26.2 mm		Head material: SA 516-70N	
Tube wall thickness:		Tube material:	
Tube diameter:		Tube length:	
Channel thickness:		Channel material:	
Design pressure	Shell: 9929 kPa (1440 PSI)	Operating pressure	Shell: 0 to 13790 kPa
	Tubes:		Tubes:
Design Temp.	Shell: 53°C	Operating temperature	Shell: -20 to 120°C
	Tubes:		Tubes:
X-ray: RT-1		Heat treatment: HT	
Code parameters: ASME VIII, Div 1		Coated: No	
Manufacturer: Alco Gas & Oil Production Equipment Ltd.		Year built: 2001	
Corrosion allowance: 3.2 mm		Manway: No	

PRESSURE SAFETY VALVE NAMEPLATE DATA

PSV Tag #	Manufacturer	Model #	Serial #	Set Pressure (PSI)	Capacity (scfm)	Service Date
G31725	**Consolidated**	**1912HC-SG**	**B138735X-1-2**	**1440**	**22898**	**08/2011**
CRN #	Service By	Block Valve	Location	Size	Code Stamp	
0G8442.5C	**Unified Valve**	**No**	**Upper shell**	**2"RF x 3" RF**	**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				**Minor paint chipping to <5% exposed metal.** **No corrosion. 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.** **Minor paint chipping to 5% 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.** **Clean, clear and in working condition. No leaks.** **Pressure gauge: 0 to 13790 kPa. Within range of MAWP.** **Temperature gauge: -20 to 120°C. Within range of MAWT** **Pressure gauge glass is damaged.**
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 chipped to 5% exposed metal with minor surface corrosion.**
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 at 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.**
NDE methods Was UT/ MPI done on vessel (MI coordinator to review results)	X				**Ultrasonic thickness survey carried out – no metal thickness detected below nominal minus corrosion allowance.**
Other					

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. Install a pressure gauge with range at or above MAWP of vessel.

Summary: Vessel is in overall good condition, visual external inspection and ultrasonic corrosion survey performed – no metal thickness detected below nominal minus corrosion allowance. Long term corrosion rate based on greatest thickness loss (head) 0.090mm per year. Retirement Date to "T"min is year 2128.

Vessel is fit for service.

Inspected By: Chris Maxsom **Date:** September 6, 2011

LSD

Overview – Skid

Overview – Vessel upper shell and PSV location

Overview – Vessel lower shell

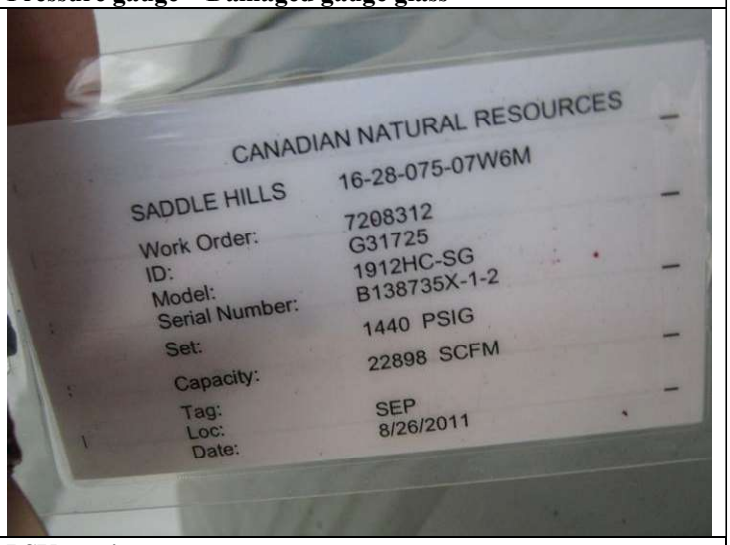
Data plate

Liquid level

Temperature gauge

Pressure gauge – Damaged gauge glass

PSV service tag



PSV service tag