

Canadian Natural Resources Limited
GENERAL PRESSURE VESSEL INFORMATION

Job # 10.111019

District: Grande Prairie, AB		Skid No.					
Facility: Knopcik Oil Battery		Location (LSD): 08-34-73-10 w6m					
Vessel Name Equipment Number: Test Separator							
Orientation: Horizontal							
Status: Not In Service		Regulatory Inspection					
PRESSURE VESSEL NAMEPLATE DATA							
"A" or "G" or "S" (Sask.) or BC Registration Number. A0139682		CRN Number: D 5372.2					
Vessel serial number: 80-147-01		Size: 30 in x 10 ft					
Shell thickness: 19.1 mm		Shell material: SA 516-70N					
Head thickness: 17.2 mm		Head material: SA 516-70N					
Tube wall thickness:		Tube material:					
Tube diameter:		Tube length:					
Channel thickness:		Channel material:					
Design pressure	Shell: 4585 kPa (665 PSI)	Operating pressure	Shell: 0 to 2068 kPa				
	Tubes:		Tubes:				
Design Temp.	Shell: 38°C	Operating temperature	Shell: -40 to 70°C				
	Tubes:		Tubes:				
X-ray: RT-2		Heat treatment: Nil					
Code parameters: ASME VIII, Div 1		Coated: No					
Manufacturer: KML Custom Fabricators		Year built: 1980					
Corrosion allowance: 3.2 mm		Manway: No					
PRESSURE SAFETY VALVE NAMEPLATE DATA							
PSV Tag Shell	Manufacturer / Model / Serial	Set Pressure (PSI)	Capacity (scfm / usgpm)	Size	Block Valve	Location	Service By / Date
G31599	Taylor / T-8200-2 / 0077820-355	500	3841 scfm	2 x 2	No	Top shell	Tyco 11/1/2011
PSV Tag Tube	Manufacturer / Model / Serial	Set Pressure (PSI)	Capacity (scfm / usgpm)	Size	Block Valve	Location	Service By / Date
SERVICE CONDITIONS-INDICATE ALL THAT APPLY							
Sweet X	Sour	Oil X		Gas		Water X	
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** _____

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 chipping and abrasion to 5% exposed metal with minor surface corrosion. No damage.
Leakage Record any leakage at flanges, threaded joints, weep holes on repads, etc.	X				No leaks observed. Vessel was out of service at time of inspection
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 saddle is welded to skid floor. No evidence of corrosion at shell to saddle weld – no leaks. Paint chipped to 5% exposed metal with minor surface corrosion. No distortion. No buckles. No ground wire attached. Vessel is grounded through pilings.
Anchor Bolts Hammer tap to ensure secure. Look for cracking in treads or signs of deformation.				X	None.
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. Nozzles are not gusseted. 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 and temperature gauges attached. Pressure gauge: 0 to 2068 kPa. Not within range of MAWP. Temperature gauge: -40 to 70°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 is chipped to 5% exposed metal – no 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. Seal is intact? Supported properly? Discharges to closed header or atmosphere?	X				PSV not installed at time of inspection – 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 vessel and PSV inlet.
NDE methods Was UT/ MPI /PT conducted on vessel – identify areas. (MI coordinator to review results)	X				Ultrasonic thickness survey carried out – no metal thickness detected below nominal minus corrosion allowance.
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 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 (shell) 0.016mm per year. Retirement Date to “T”min is year 2284. Vessel is fit for service.					

Inspected By: Chris Maxsom

Date: November 9, 2011



LSD

Overview – Skid



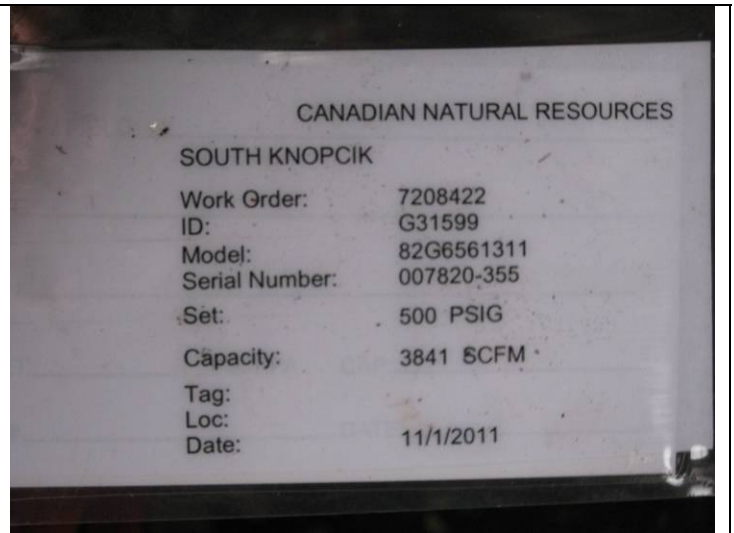
Data plate

Overview - Vessel



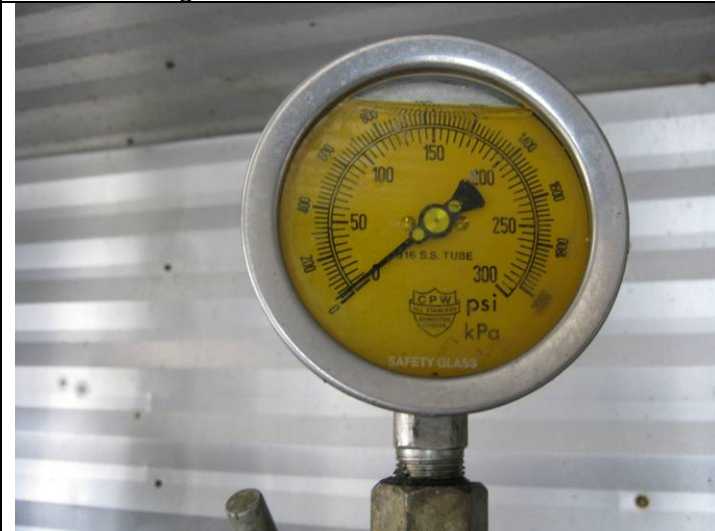
Saddle

PSV not installed at time of inspection



PSV service tag

PSV service tag



Pressure gauge

Temperature gauge