

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

Job 10.112902

District: Grande Prairie AB.	Skid No.
Facility: Clear Hills Gas Plant	Location (LSD): 16-11-88-13W6M
Vessel Name Equipment Number: Inlet Separator	
Orientation: Horizontal	
Status: In Service	Regulatory Inspection

PRESSURE VESSEL NAMEPLATE DATA

"A" or "G" or "S" (Sask.) or BC Registration Number. A0443632		CRN Number: N 2385.21	
Vessel serial number: PE5141		Size: 36 in. X 15ft.	
Shell thickness: 41.3 mm		Shell material: SA 516-70	
Head thickness: 43.0 mm		Head material: SA 516-70	
Tube wall thickness:		Tube material:	
Tube diameter:		Tube length:	
Channel thickness:		Channel material:	
Design pressure	Shell: 1440 PSI	Operating pressure	Shell:
	Tubes:		Tubes:
Design Temp.	Shell: 130 Deg F.	Operating temperature	Shell:
	Tubes:		Tubes:
X-ray: RT 1		Heat treatment: HT	
Code parameters: ASME VIII Div 1		Coated: No	
Manufacturer: Penfabco Ltd.		Year built: 1998	
Corrosion allowance: 3.2 mm		Manway: No	

PRESSURE SAFETY VALVE NAMEPLATE DATA

PSV Tag #	Manufacture / Model / Serial	Set Pressure (PSI / kPa)	Capacity (scfm)	Size	Block Valve	Location	Service by Date
C354	Farris//26JA13-120/SP //CE44007-2-A10	1440 PSI	35890 scfm	2.5"x 4"	No	Top shell	Powell 09, 2010

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's Owner-User Inspection Program)

Reports reviewed and accepted by:

Mechanical Integrity Coordinator _____ **Date** _____

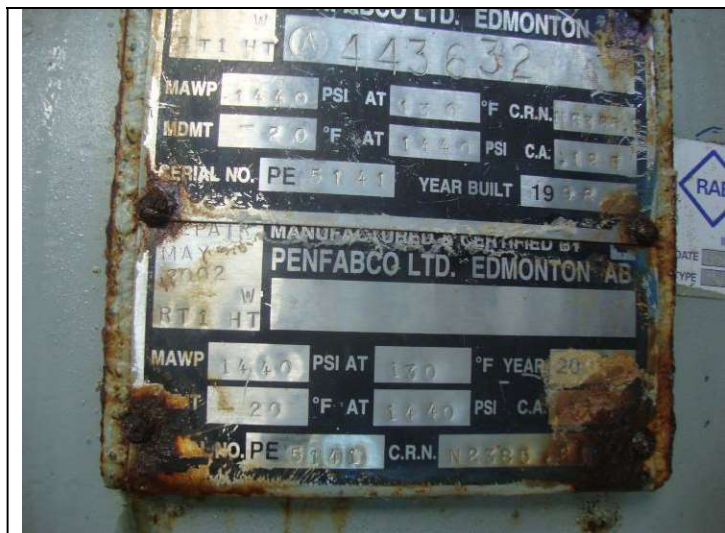
Fill out all forms as completely as possible. All information is important! Use back of sheets to record additional information or sketch if required. Copy of report to be filed by MIC at site, and copy sent to Chief Inspector

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	Vessel 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 peeling and blistering – corrosion on all exposed metal. Pit corrosion .010 inches deep.
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, 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				Saddles: Welded 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				Vessel saddles welded firmly to skid floor – no deformation.
Concrete foundation Check for cracks, spalling, etc.				X	
Ladder / Platform Describe general condition, ensure support is secure to vessel, and 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				Flanged and threaded nozzle joints are fully engaged. 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. Within operational range for service. Pressure gauge 0 – 1500 PSI Temperature gauge 0 – 250 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 peeling corrosion on all exposed metal, pitting and corrosion.
Valving 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				Location: Top shell - Set at MAWP of vessel. No block valve between vessel and PSV. Discharge piping is same size as valve out let. Seal in place.

<p>NDE methods Was UT/ MPI done on vessel (MI coordinator to review results)</p>	X			<p>Ultrasonic corrosion survey carried out – head, shell and pipe metal thickness detected below nominal minus corrosion allowance. Thickness calculations carried out: Shell – nominal thickness is 41.3mm / min thickness is 37.5mm / T min thickness is 36.3mm. UT point 420 (Lower Head) – nominal thickness is 43.0mm / min thickness is 38.5mm / T min thickness is 34.6mm. UT point 465 (2" Elbow) – nominal thickness is 8.7mm / min thickness is 5.3mm / T min thickness is 2.8mm.</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: Re- paint vessel and piping. Summary: This vessel is in good condition, visual external and ultrasonic thickness inspection carried out – head, shell and metal thickness detected below nominal minus corrosion allowance. Thickness calculations carried out to ensure sufficient metal exists for safe operation. Short term corrosion rate based on greatest thickness loss (shell) 0.500mm per year. Retirement Date to “T”min is year 2015. Vessel is fit for service.</p>				

Inspected By: Gerry Avery

Date: March 18, 2013



Vessel data plate



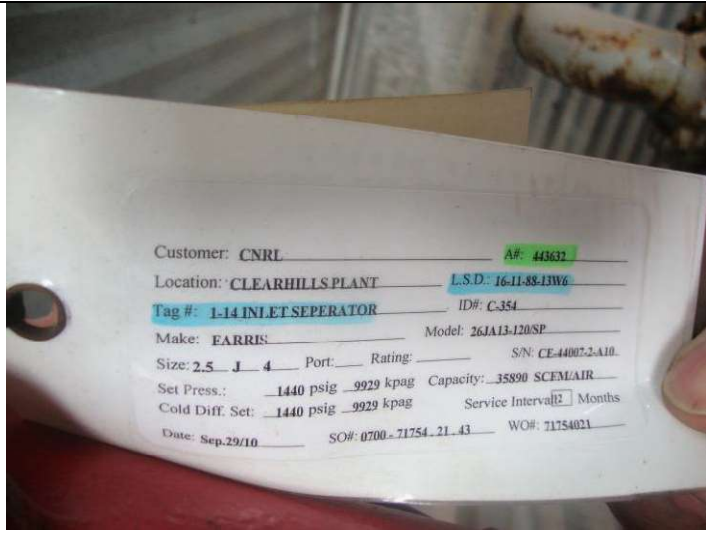
Temperature gauge



Pressure gauge



PSV



PSV Tag



Vessel overview



Corrosion on piping and top shell