

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

Job # 10.110194

District: Ft. St. John, BC	Skid No.
Facility: Inga Battery	Location (LSD): 06-19-88-23 W6M
Vessel Name Equipment Number: Glycol Contactor	
Orientation: Vertical	
Status: In Service	Regulatory Inspection

PRESSURE VESSEL NAMEPLATE DATA

"A" or "G" or "S" (Sask.) or BC Registration Number. A0416326		CRN Number: K-8584.213	
Vessel serial number: PE 4811		Size: 20 in x 28 ft	
Shell thickness: 25.4 mm		Shell material: SA 516 70N	
Head thickness: 27.2 mm		Head material: SA 516 70N	
Tube wall thickness:		Tube material:	
Tube diameter:		Tube length:	
Channel thickness:		Channel material:	
Design pressure	Shell: 9929 kPa	Operating pressure	Shell:
	Tubes:		Tubes:
Design Temp.	Shell: 38°C	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: 1997	
Corrosion allowance: 3.2 mm		Manway: No	

PRESSURE SAFETY VALVE NAMEPLATE DATA

PSV Tag #	Manufacturer	Model #	Serial #	Set Pressure (PSI)	Capacity (scfm)	Service Date
5589F	Mercer	8143251-P27G21	A94239	1440	11527	06/2008
CRN #	Service By	Block Valve	Location	Size	Code Stamp	
0G2606.5C	Unified Valve	No	Mid shell	2" x 2"	UV/NB	

SERVICE CONDITIONS-INDICATE ALL THAT APPLY

Sweet	Sour X	Oil	Gas X	Water X
Amine	LPG	Condensate	Air	Glycol X

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:

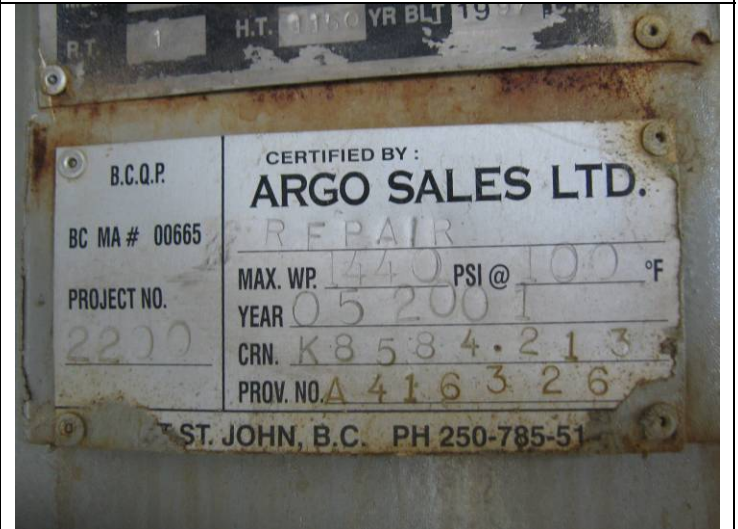
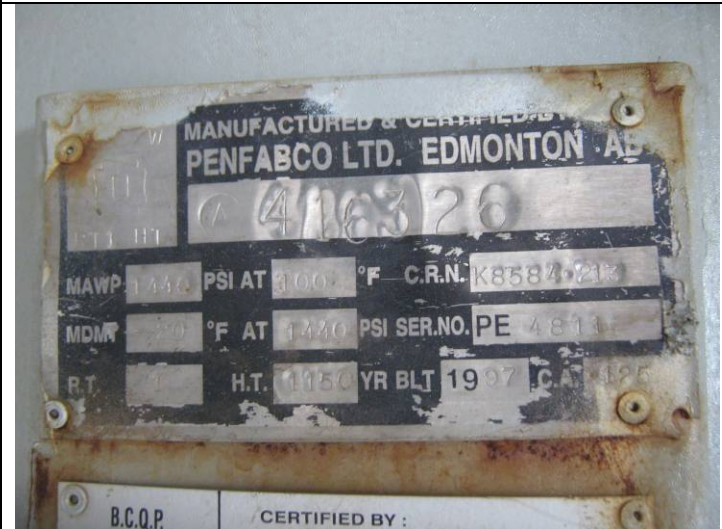
Mechanical Integrity Coordinator _____ **Date** _____

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. Roof closure is not sealed – egress of moisture.
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 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				Skirt is bolted to skid floor. No evidence of corrosion at shell to skirt weld – no leaks. No distortion. No buckles. Paint in good condition – no exposed metal. Skid package is mounted on pilings at 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				Vessel is securely bolted to skid floor. No cracking. No deformation.
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				Ladder is securely fastened to vessel.
Nozzle Assess paint, look for leakage, and ensure stud threads are fully engaged. Record any damage, deflection, etc. Are nozzles gusseted?	X				Studs are fully engaged to nuts – no short bolts. Threaded nozzle joints are fully engaged. 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, temperature and liquid level gauges attached. Clean, clear and in working condition. Pressure gauge: 0 to 10000 kPa. Within range of MAWP. Temperature gauge: -10 to 115°C. Within range of MAWT.
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 – no exposed metal. Studs and nuts have minor surface corrosion
Valving Ensure no leaks are visible. Valves are properly supported and chained if necessary.	X				Valves are properly supported. No leaks detected.
PSV Ensure PSV is set at pressure at or below that of vessel.	X				Located on mid 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 corrosion survey carried out – head metal thickness detected below nominal minus corrosion allowance. Thickness calculations carried out: UT point 1720 (Bottom Head) – nominal thickness is 27.2mm / min thickness is 25.0mm / T min thickness is 19.1mm.
Recommendations: 1. Seal roof closure 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) 0.157mm per year. Retirement Date to “T”min is year 2049. Vessel is fit for service.					



LSD

Overview – Skid



Data plate #1

Data plate #2



Overview – Upper shell



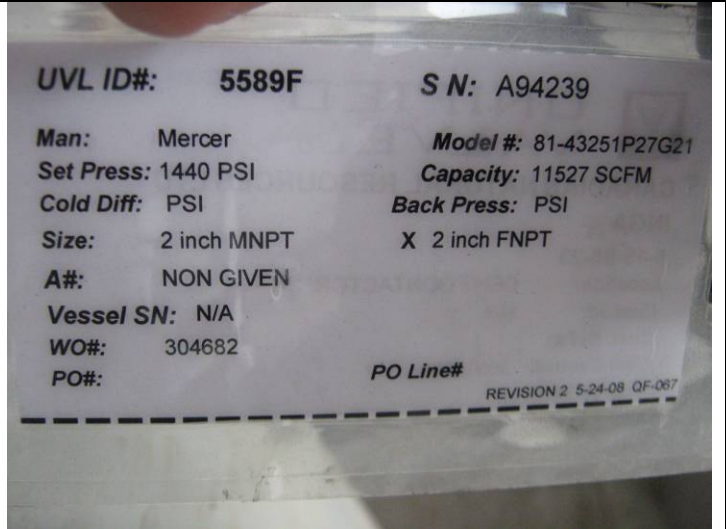
Overview – Lower shell and PSV location



Roof closure not sealed – egress of moisture



Skirt



Liquid level

PSV service tag