

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

Job # 10.112250

District: GP South	Skid No.
Facility: Firebird	Location (LSD): 13-20-96-09 W6M

Tank Name / Equipment Number: **Produced Water Tank 1000 BBL**

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. C50088		CRN Number:	
Tank serial number: 16805		Size: 17.0 ft. 3.0 in. X 24.0 ft.	
Shell thickness: 4.8mm		Shell material: SA 36	
Bottom thickness: 6.4mm		Bottom material: SA 36	
Deck thickness: 4.8mm		Deck material: SA 36	
Tube diameter:		Tube length:	
Channel thickness:		Channel material:	
Design pressure	Shell: Atmospheric	Operating pressure	Shell:
	Tubes:		Tubes:
Design Temp.	Shell:	Operating temperature	Shell:
	Tubes:		Tubes:
X-ray: No		Heat treatment: Nil	
Code parameters: API 12 F		Coated: Yes	
Manufacturer: Platinum Energy Services		Year built: 2005	
Corrosion allowance: Not Stated		Manway: yes	

PRESSURE SAFETY VALVE NAMEPLATE DATA

PSV Tag #	Manufacture	Model #	Serial #	Set Pressure (kPa)	Capacity (scfm)	Service Date
CRN #	Service By	Block Valve	Location	Size	Code Stamp	

SERVICE CONDITIONS-INDICATE ALL THAT APPLY

Sweet	Sour X	Oil	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'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 man way, nozzles, no damage present, and there is no egress of moisture.			X		Foam insulated – Two large open sections on shell. No signs of water ingress.
External Condition Assess paint condition, areas peeling, record any corrosion, damage, etc (record location, size and depth of corrosion or damage)		X			Mechanical damage to lower shell (evident internally).
Leakage Record any leakage at flanges, threaded joints, weep holes on repads, etc.	X				No leaks observed.
Base Assess condition of paint, fire protection, concrete. Look for corrosion, buckling, dents, etc. Is tank mounted above ground water level – on pilings? Ground wire attached?	X				Set above ground on pilings -tank is welded to skid frame and frame is welded to piling plates. No buckling or dents. No sign of leakage at attachment welds to tank. No ground wire present.
Anchor Bolts Hammer tap to ensure secure. Look for cracking in treads or signs of deformation. Is tank resting on deck – welded to supports?	X				Tank welded to piling supports.
Concrete foundation There may be a concrete ring under the tank. Check for cracks, spalling, etc.				X	
Ladder / Platform Describe general condition, ensure support is secure to vessel, describe any hazards.	X				Ladder firmly attached to vessel. Paint in good overall condition. No loose or broken sections.
Nozzle Assess paint, look for leakage, and ensure stud threads are fully engaged. Record any damage, deflection, etc. Are nozzles gusseted?	X				Firmly attached to shell. No signs of deflection. No signs of leaking.
Gauges Ensure gauges are visible, working, no leakage, and suitable for range of MAWP/ Temp. Remember some tanks require fuel gas or other positive protection so a pressure gauge may be installed.	X				Level indicator intact. Temp gauge clear and intact.
External Piping Ensure pipe is well supported. All clamps, supports, shoes, etc. in place. Look for evidence of structural overload, deflection, etc. Paint condition, insulation condition, any wet insulation, any external corrosion?	X				Well supported. No signs of deflection. No leaks observed.
Valving Ensure no leaks are visible. Valves are properly supported and chained if necessary.			X		Hole through corrosion on 4 inch nozzle. Stainless steel flange mated to carbon steel flange with no CP isolation kit installed.
PSV Ensure PSV is set at pressure at or below that of vessel.				X	No PSV on tank system. Vacuum breaker installed.
NDE methods Was UT/ MPI done on vessel (MI coordinator to review results)				X	None at this time.
Secondary Containment: This may be a double wall tank with a pressure gauge or level gauge indicator. Also a concrete or steel dike with vinyl liner – describe.	X				Steel ring wall around tank with vinyl liner – no leaks.
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.Replace corroded nozzle and install CP isolation kit. 2. Repair open sections of open insulation. 3. Install ground wire. Summary: Vessel is in overall good condition. Visual external inspection carried out.					

Internal Inspection Items	G	F	P	N/A	Comments
Coating Assess coating. Describe area coated, general condition of coating.			X		Coating failures resulting in hole through pitting/corrosion to floor. Coating is cracked in several locations along floor to shell weld location.
Anodes. How many, type, condition. % consumed. Are they being replaced?				X	None.
Internal Piping Is there any? If so, carbon or stainless steel. Describe condition, dents, corrosion, erosion, etc. Ensure supports are secure and any bolts are suitable for future use.	X				Oil skimmer piping is firmly attached. No signs of leaking. No deflection noted.
Baffles, deflector plates, etc. If present, describe condition. Look closely at welds attached to vessel wall.				X	No baffles or deflectors.
Bottom Note all corrosion, erosion or mechanical damage. (If vessel is horizontal identify direction of this head) Exchanger may have 2 pancake covers instead.			X		3 coating failures resulting in hole through pitting/corrosion to floor. Pitting/corrosion exists at floor to shell weld.
Deck Note all corrosion, erosion or mechanical damage. (If vessel is horizontal identify direction of this head) Exchanger may have 2 pancake covers instead.	X				Coating intact. No signs of damage or distortion.
Shell Sections Record number of shell sections. Record location, size and depth of all erosion, corrosion or mechanical damage. Describe general condition.			X		4 shell courses. Pitting/corrosion exists at floor to shell weld. Upper courses have tightly adhered to product. No signs of coating damage behind product scale.
Thermal Wells If present, describe condition and location.				X	No thermal wells
Heat Medium Coil Note all corrosion, erosion or mechanical damage.				X	None.
Fire Tube Note all corrosion, erosion or mechanical damage. Take thickness readings on selected areas of tube and carry out Magnetic Particle Inspection on tube welds.			X		Corrosion and pitting exists. Pitting depths measured to 0.200 inches. Product covered.