

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

**Job: 10.113674**

District: <b>Grande Prairie AB.</b>	Skid No.
Facility: <b>North Sturgeon</b>	Location (LSD): <b>10-29-71-23-W6M</b>
Vessel Name Equipment Number: <b>Free Water Knockout</b>	
Orientation: <b>Horizontal</b>	
Status: <b>Out of Service</b>	<b>Regulatory Inspection</b>

**PRESSURE VESSEL NAMEPLATE DATA**

“A” or “G” or “S” (Sask.) or BC Registration Number.  <b>A0102369</b>	CRN Number:  A8372.2		
Vessel serial number: L0-116	Size: 10ft. X 30 ft.		
Shell thickness: 9.5mm	Shell material: SA 285-C		
Head thickness: 9.5mm	Head material: SA 285-C		
Tube wall thickness:	Tube material:		
Tube diameter:	Tube length:		
Channel thickness:	Channel material:		
Design pressure	Shell: 50 PSI	Operating pressure	Shell:
	Tubes:		Tubes:
Design Temp.	Shell:	Operating temperature	Shell:
	Tubes:		Tubes:
X-ray: Nil	Heat treatment: Nil		
Code parameters: ASME VIII Div 1	Coated: No		
Manufacturer: National Tank Ltd.	Year built: 1972		
Corrosion allowance: not stated	Manway: Yes		

**PRESSURE SAFETY VALVE NAMEPLATE DATA**

PSV Tag #	Manufacture / Model / Serial	Set Pressure (PSI / kPa)	Capacity (scfm)	Size	Block Valve	Location	Service by Date

**SERVICE CONDITIONS-INDICATE ALL THAT APPLY**

Sweet	Sour <input checked="" type="checkbox"/>	Oil	Gas <input checked="" type="checkbox"/>	Water <input checked="" type="checkbox"/>
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

<b>External Inspection Items</b>	G	F	P	N/A	<b>Comments</b>
<b>Insulation</b> Verify sealed around manways, nozzles, no damage present, and there is no egress of moisture.				X	<b>Vessel not insulated.</b>
<b>External Condition</b> Assess paint condition, areas peeling, record any corrosion, damage, etc (record location, size and depth of corrosion or damage)	X				<b>Paint in good condition on saddles – no exposed metal.</b>
<b>Leakage</b> Record any leakage at flanges, threaded joints, weep holes on repads, etc.	X				<b>No leaks observed.</b>
<b>Saddle/skirt</b> 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				<b>Saddles: Bolted directly to skid floor. No buckling or dents. No corrosion at attachment welds to vessel. Ground wire attached to skid building.</b>
<b>Anchor Bolts</b> Hammer tap to ensure secure. Look for cracking in treads or signs of deformation.	X				<b>Vessel saddles bolted firmly to skid floor – no deformation.</b>
<b>Concrete foundation</b> Check for cracks, spalling, etc.	X				<b>No spalling or visible cracks.</b>
<b>Ladder / Platform</b> Describe general condition, ensure support is secure to vessel, and describe any hazards.				X	
<b>Nozzle</b> Assess paint, look for leakage, and ensure stud threads are fully engaged. Record any damage, deflection, etc. Are nozzles gusseted?	X				<b>Flanged and threaded nozzle joints are fully engaged. No damage or deflections – no leaks. Nozzles are not gusseted.</b>
<b>Gauges</b> Ensure gauges are visible, working, no leakage, and suitable for range of MAWP/ Temp.	X				<b>Clear and clean – no leaks. Within operational range for service – temperature gauge 0- 250 Deg F. pressure gauge 0 – 100 PSI.</b>
<b>External Piping</b> 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				<b>Piping is well supported; no deflection, all clamps and supports are in place. Paint in good condition – no exposed metal.</b>
<b>Valving</b> Ensure no leaks are visible. Valves are properly supported and chained if necessary.	X				<b>Valves are supported properly – no leaks.</b>
<b>PSV</b> Ensure PSV is set at pressure at or below that of vessel.				X	<b>No PSV- removed.</b>
<b>NDE methods</b> Was UT/ MPI done on vessel (MI coordinator to review results)	X				<b>Ultrasonic corrosion survey carried out, no metal thickness detected below nominal minus corrosion allowance.</b>
<b>Other</b>					
<p><b>Recommendations or corrective actions : Vessel is Fit for Service or describe corrective actions required)</b>  (MIC to review corrective actions with Operations, discuss with Chief Inspector where necessary, and get remedial action implemented)  <b>Recommendations:</b> No recommendations.  <b>Summary: This vessel is in good condition, visual external and ultrasonic thickness inspection carried out – no metal thickness detected below nominal minus corrosion allowance.</b>  <b>Vessel is fit for service.</b></p>					

Inspected By: Gerry Avery // D. Wiedman

Date: September 11, 2013

<b>Internal Inspection Items</b>	<b>G</b>	<b>F</b>	<b>P</b>	<b>N/A</b>	<b>Comments</b>
<b>Coating</b> Assess coating. Describe area coated, general condition of coating.				X	Vessel not coated.
<b>Anodes.</b> How many, type, condition. % consumed. Are they being replaced?		X			5 anodes all are missing.
<b>Internal Piping</b> 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				Well supported – no overloads or deflections. Scale on surface – no pit corrosion.
<b>Trays</b> How many? Type of material. Are valves in place? Check for erosion/ corrosion; wear on tray valve legs. Cleanliness?	X				Inlet tray welded to shell - no mechanical damage – surface corrosion and dry product scale on surface.
<b>Baffles, deflector plates, etc.</b> If present, describe condition. Look closely at welds attached to vessel wall.	X				Screens welded in place – no mechanical damage or dents. Weir welded to shell – no bent sections – no pit corrosion on attachment welds.
<b>Top Head</b> Note all corrosion, erosion or mechanical damage. (If vessel is horizontal identify direction of this head)	X				Fire tube head covers bolted securely – no mechanical damage. Scale and corrosion on surface – no pitting noted.
<b>Bottom Head</b> Note all corrosion, erosion or mechanical damage. (If vessel is horizontal identify direction of this head)	X				No mechanical damage or dents. Surface scale and corrosion – no pitting.
<b>Shell Sections</b> Record number of shell sections. Record location, size and depth of all erosion, corrosion or mechanical damage. Describe general condition. If any corrosion greater than corrosion allowance is observed in either shell or head, discuss with Chief Inspector before closing vessel.	X				3 shell sections. – No dents or mechanical damage. Nozzles are unobstructed. Man ways in good overall condition. Gasket seating face - clean – no mechanical damage or corrosion. Troughs in place supported – no dents or damaged areas.
<b>Demister pad</b> Is it in place? Is it clean? If any corrosion is apparent in vessel, lift pad and check top head for corrosion.				X	
<b>Welds</b> Inspect all welds, including attachment welds. Record all service-related damages and if there is any discuss with Chief Inspector before closing.	X				No service related damage – or erosion. Surface corrosion no pitting.
<b>Repairs Required.</b> If yes, ensure procedure and copy of AB 40 is on file, and one sent to local ABSA, and Chief Inspector					
<b>NDE</b> Was any NDE done. ( MI coordinator to review results)					
<p><b>Recommendations or corrective actions : Vessel is Fit for Service or describe corrective actions required)</b> (MIC to review corrective actions with Operations, discuss with Chief Inspector where necessary, and get remedial action implemented)</p> <p><b>Recommendations: No recommendations at this time.</b></p> <p><b>Summary:</b> Vessel is in overall good condition, visual external inspection and ultrasonic corrosion survey performed—no metal thickness detected below nominal minus the corrosion allowance.</p> <p><b>Vessel is fit for service.</b></p>					

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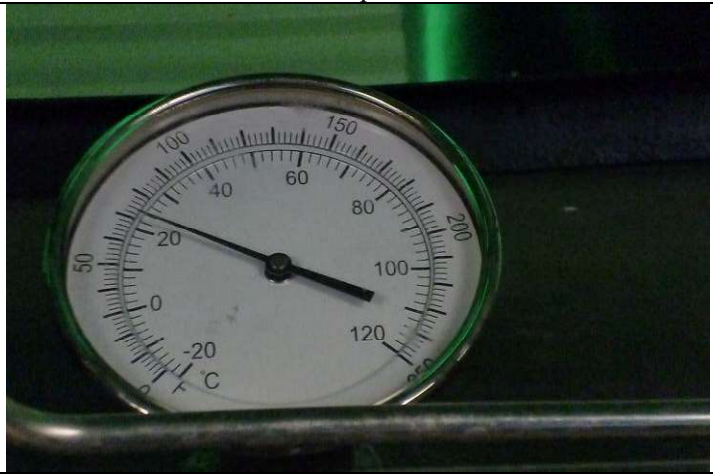
Date: September 11, 2013



Data plate



Data plate



Temperature gauge



Pressure gauge



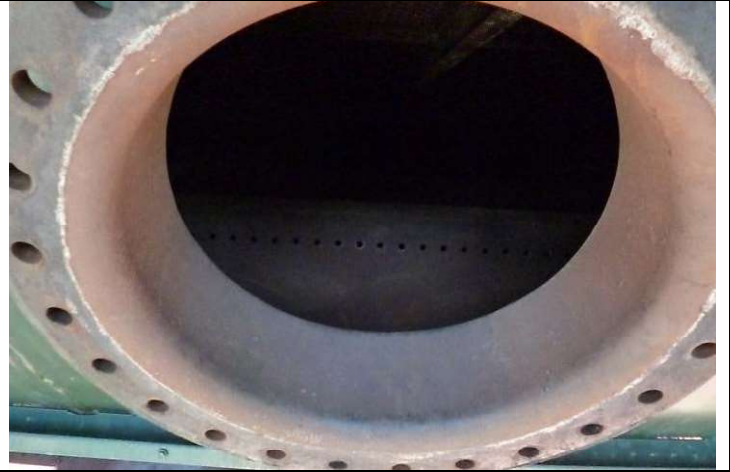
Saddle bolted to floor



Vessel overview



Top man way



Man way



Head view



Piping upper shell



View between screens



Man way attachment weld



Shell weld



troghs



float



Anode nozzle



Troughs overview



Weir attachment weld



Under side of screens



Drain piping



Drain piping



Fire tube opening covered



Fire tube supports



Weir attachment weld



Anchor pin



Upper view of weir



Piping in place

