

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

**Job# 10.113336**

<b>District: Grande Prairie AB.</b>	Skid No.
<b>Facility: Clear Hills Gas Gathering</b>	<b>Location (LSD): 6-15-88-12W6M</b>
<b>Vessel Name Equipment Number: Separator</b>	
<b>Orientation: Vertical</b>	
<b>Status: Out of Service</b>	<b>Regulatory Inspection</b>

**PRESSURE VESSEL NAMEPLATE DATA**

"A" or "G" or "S" (Sask.) or BC Registration Number.  <b>A2815118</b>		CRN Number:  K9067.21	
Vessel serial number: 6000A-V02		Size: 16 in. X 90 in.	
Shell thickness: 16.67mm		Shell material: SA 106-B	
Head thickness: 15.87mm		Head material: SA 516-70N	
Tube wall thickness:		Tube material:	
Tube diameter:		Tube length:	
Channel thickness:		Channel material:	
Design pressure	Shell: 720 PSI	Operating pressure	Shell:
	Tubes:		Tubes:
Design Temp.	Shell: 120 Deg F	Operating temperature	Shell:
	Tubes:		Tubes:
X-ray: RT 1		Heat treatment: yes	
Code parameters: ASME VIII, Div 1		Coated: no	
Manufacturer: Nusco		Year built: 1993	
Corrosion allowance: 3.2mm		Manway: no	

**PRESSURE SAFETY VALVE NAMEPLATE DATA**

PSV Tag #	Manufacture / Model / Serial	Set Pressure (PSI / kPa)	Capacity (scfm)	Size	Block Valve	Location	Service Date
C-545	Taylor/T-7900-2/C545	720PSI	2992	2X2	No	Side Shell	10/2010

**SERVICE CONDITIONS-INDICATE ALL THAT APPLY**

Sweet <input checked="" type="checkbox"/> X	Sour	Oil	Gas <input checked="" type="checkbox"/> X	Water
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 is 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 fair overall condition – minor exposed metal to 20percent of vessel. General corrosion noted.</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, 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>Skirt: Bolted directly to skid floor. No buckling or dents. No corrosion at attachment welds to vessel. Ground wire attached to skid.</b>
<b>Anchor Bolts</b> Hammer tap to ensure secure. Look for cracking in treads or signs of deformation.	X				<b>Anchor bolts are securely fastened. No deformation.</b>
<b>Concrete foundation</b> Check for cracks, spalling, etc.				X	<b>Steel skid</b>
<b>Ladder / Platform</b> Describe general condition, ensure support is secure to vessel, describe any hazards.				X	<b>No ladder</b>
<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>Stud threads are fully engaged to nuts – no short bolts. 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>Gauges starting to have residue buildup – no leakage. Suitable for operational range of vessel. Pressure gauge 0 – 2000 PSI/ temperature gauge -40 – 120 Deg F.</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 peeling to 20% of area- corrosion on exposed metal.</b>
<b>Valve:</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>Located on upper shell of vessel. Set at MAWP of vessel – PSV seal in place. Discharge piping is same size as valve outlet. No block valve between vessel and PSV.</b>

<b>NDE methods</b> Was UT/ MPI done on vessel (MI coordinator to review results)	X			<b>Ultrasonic corrosion survey carried out – pipe metal thickness detected below nominal minus corrosion allowance. Thickness calculations carried out: UT point 265 (2” elbow) – nominal thickness is 5.5mm / min thickness is 4.5mm / T min thickness is 1.6mm.</b>
<b>Other</b>			X	<b>Vessel skid is being used as a storage area.</b>

**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:** No Recommendations at this time.

**Summary:** This vessel is in good condition, visual external and ultrasonic thickness inspection carried out – pipe metal thickness detected below nominal minus corrosion allowance. Thickness calculations carried out to ensure sufficient metal exists for safe operation.

**Corrosion rate based on greatest thickness loss (shell) 0.045mm per year. Retirement Date to “T”min is year 2171.**

**Vessel is fit for service.**

**Inspected By:** Matt Wood (API 510 # 42758)

**Date:** Aug 29th, 2013

Photo Table



LSD



Overview



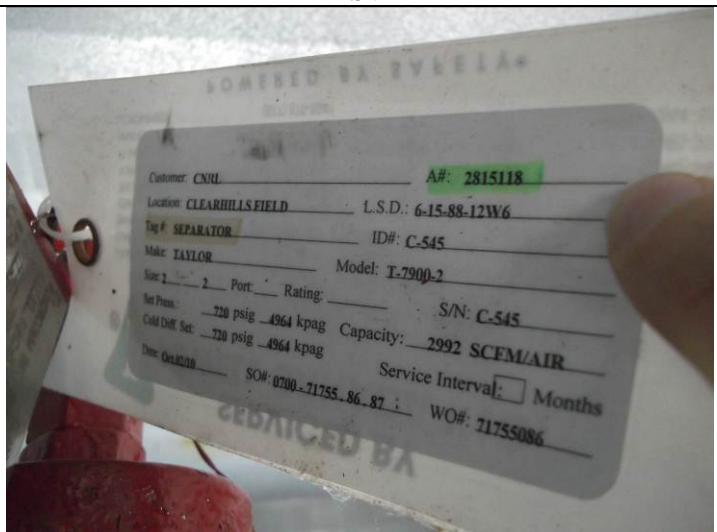
Data Plate



PSV



Base



PSV Service Tag



Pressure Gauge



Temperature Gauge