

**Canadian Natural Resources Ltd.  
GENERAL PRESSURE VESSEL INFORMATION**

**Job# 10.111174**

District: <b>Fort St John, BC</b>	Skid No.
Facility: <b>South Buick Creek</b>	Location (LSD): <b>d-34-H / 94-A-14</b>
Vessel Name Equipment Number: <b>2 Phase Separator</b> <span style="float:right"><b>Moved to Umbach c-37-F/94-H-03</b></span>	
Orientation: <b>Vertical</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. A0506337		CRN Number: R-7760.2	
Vessel serial number: 2004-7235-01		Size: 42" X 10'	
Shell thickness: 57.1 mm		Shell material: SA-516-70	
Head thickness: 54.6 mm		Head material: SA-516-70	
Tube wall thickness:		Tube material:	
Tube diameter:		Tube length:	
Channel thickness:		Channel material:	
Design pressure	Shell: 15100 Kpa	Operating pressure	Shell: Zero
	Tubes:		Tubes:
Design Temp.	Shell: 38 deg C	Operating temperature	Shell: No gauge
	Tubes:		Tubes:
X-ray: RT-1		Heat treatment: Yes	
Code parameters: ASME Sec VIII		Coated: No	
Manufacturer: Alco Gas & Oil Ltd.		Year built: 2004	
Corrosion allowance: 3.2 mm		Manway: No	

**PRESSURE SAFETY VALVE NAMEPLATE DATA**

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

**SERVICE CONDITIONS-INDICATE ALL THAT APPLY**

Sweet	Sour <b>X</b>	Oil	Gas <b>X</b>	Water <b>X</b>
Amine	LPG	Condensate <b>X</b>	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>No insulation.</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 is in good overall condition – No chipped or exposed metal - no previous corrosion.</b>
<b>Leakage</b> Record any leakage at flanges, threaded joints, weep holes on repads, etc.	X				<b>No leaking detected.</b>
<b>Saddle</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>No saddle. No corrosion – no missing paint. Ground cable secured to vessel skid unit.</b>
<b>Anchor Bolts</b> Hammer tap to ensure secure. Look for cracking in treads or signs of deformation.	X				<b>Vessel is firmly anchored to skid structural steel.</b>
<b>Concrete foundation</b> Check for cracks, spalling, etc.				X	<b>None.</b>
<b>Ladder / Platform</b> Describe general condition, ensure support is secure to vessel, and describe any hazards.				X	<b>None.</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>All threads connections fully engaged. No deflection – no leaks. No gussets.</b>
<b>Gauges</b> Ensure gauges are visible, working, no leakage, and suitable for range of MAWP/ Temp.	X				<b>Gauges are visible, appears to be functional, no leaks and suitable for range of MAWP. No Pressure gauge. Temperature gauge: -40 to 70 deg C / -5 deg C @ gauge.</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>Well supported – no deflection – all clamps and shoes in place. Piping is painted and in good condition – no surface corrosion found.</b>
<b>Valving</b> Ensure no leaks are visible. Valves are properly supported and chained if necessary.	X				<b>Well supported – no leaks.</b>
<b>PSV</b> Ensure PSV is set at pressure at or below that of vessel.				X	<b>Removed for servicing.</b>
<b>NDE methods</b> Was UT/ MPI done on vessel (MI coordinator to review results)	X				<b>Ultrasonic thickness survey carried out-no metal thickness detected below nominal.</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)</p> <p><b>Recommendations: 1. Service the PSV prior to placing vessel into operation.</b></p> <p><b>Summary:</b> This vessel is in good over all condition, visual external and ultrasonic thickness survey carried out-no metal thickness detected below nominal. Long term corrosion rate based on greatest thickness loss – no corrosion rate to assess.</p> <p><b>Vessel is fit for service.</b></p>					

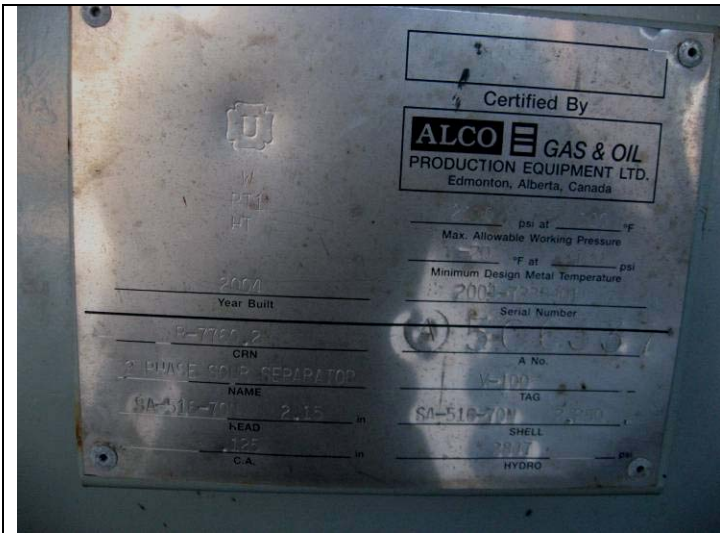
**Inspected By: Dellas Wiedman**

**Date: Dec 19, 2011**

<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	<b>Internal is not coated.</b>
<b>Anodes.</b> How many, type, condition. % consumed. Are they being replaced?				X	<b>No anodes.</b>
<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	<b>No internal piping.</b>
<b>Trays</b> How many? Type of material. Are valves in place. Check for erosion/ corrosion; wear on tray valve legs. Cleanliness?	X				<b>1 section in outlet area – firmly intact.</b>
<b>Baffles, deflector plates, etc.</b> If present, describe condition. Look closely at welds attached to vessel wall.				X	<b>No baffles or weir.</b>
<b>East Head</b> Note all corrosion, erosion or mechanical damage. (If vessel is horizontal identify direction of this head)				X	<b>Not viewable.</b>
<b>West Head</b> Note all corrosion, erosion or mechanical damage. (If vessel is horizontal identify direction of this head)	X				<b>Outlet head area – no corrosion or pitting detected.</b>
<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				<b>2 shell sections. Limited viewing through outlet nozzle – no corrosion or pitting detected.</b>
<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>Vane pack firmly in place – no distortion – no open areas.</b>
<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				<b>Limited viewing of welds – no corrosion or pitting detected.</b>
<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	X				<b>No repairs required on vessel.</b>
<b>NDE</b> Was any NDE done. ( MI coordinator to review results)				X	<b>No internal NDE at this time.</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> 1. Install PSV with set pressure at or below MAWP of vessel when installed at new location.  <b>Summary:</b> This vessel is in good condition, visual external and internal carried out, no corrosion or pitting detected.  <b>Vessel is fit for service</b></p>					

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**Data Plate**



**Overview**



**Saddles**



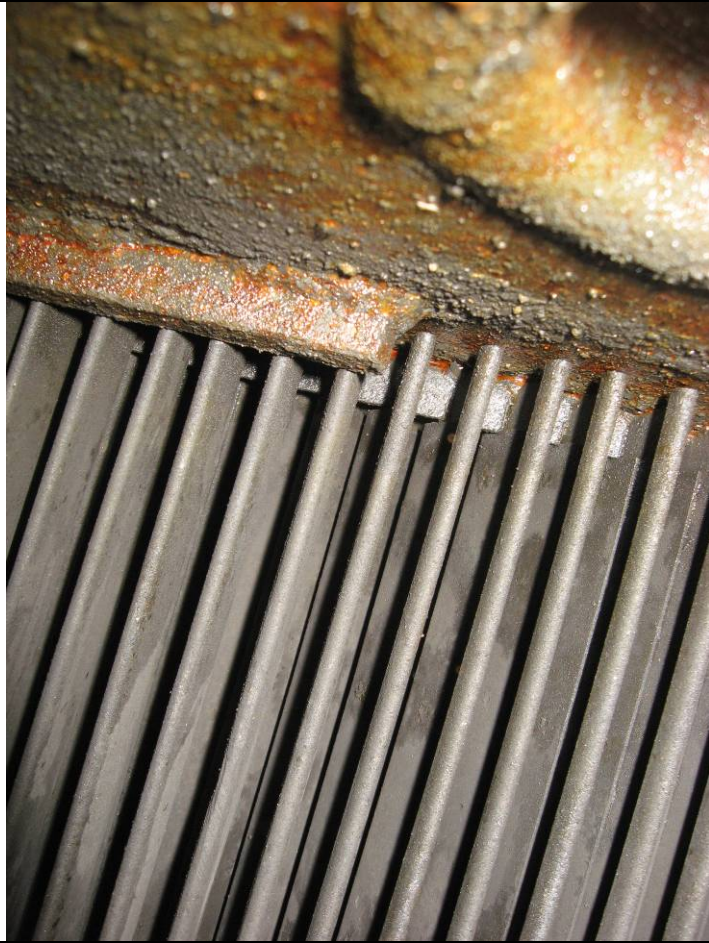
**Temp gauge**



**Outlet nozzle**



**Outlet nozzle to tray**



**Upper shell and Vane Pack**



**Vane Pack – Demister**



**Upper shell and tray**



**Closure and vane pack**