

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

Job # 05.003187

District: Fort St. John, BC	Skid No.
Facility: North Jedney	Location (LSD): a-62-E/94-G-8
Vessel Name Equipment Number: Flare Knockout Drum	
Orientation: Horizontal	
Status: In Service	Regulatory Inspection

PRESSURE VESSEL NAMEPLATE DATA

"A" or "G" or "S" (Sask.) or BC Registration Number. C 35076		CRN Number: Non Code	
Vessel serial number: 98 0056		Size: 6 ft. X 12ft	
Shell thickness: 10.0 mm		Shell material: SA 516 70N	
Head thickness: 9.5 mm		Head material: SA 516 70N	
Tube wall thickness:		Tube material:	
Tube diameter:		Tube length:	
Channel thickness:		Channel material:	
Design pressure	Shell: 14.7 PSI	Operating pressure	Shell:
	Tubes:		Tubes:
Design Temp.	Shell: 100 F	Operating temperature	Shell:
	Tubes:		Tubes:
X-ray: Nil		Heat treatment: Nil	
Code parameters: Non Code		Coated: yes	
Manufacturer: Tornado Flare Systems Inc.		Year built: 1998	
Corrosion allowance: 1.6mm		Manway: yes	

PRESSURE SAFETY VALVE NAME PLATE DATA

PSV Tag #	Manufacture	Model #	Serial #	Set Pressure (kPa)	Capacity (scfm)	Service Date
Not required						
CRN #	Service By	Block Valve	Location	Size	Code Stamp	

SERVICE CONDITIONS-INDICATE ALL THAT APPLY

Sweet	Sour X	Oil	Gas X	Water
Amine	LPG	Condensate X	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 manways, nozzles, no damage present, and there is no egress of moisture.	x				100 % insulated vessel Minor damage/buckling to cladding Cladding not sealed at manway and Hoisting Lug
External Condition Assess paint condition, areas peeling, record any corrosion, damage, etc (record location, size and depth of corrosion or damage)	x				
Leakage Record any leakage at flanges, threaded joints, weep holes on repads, etc.	x				No signs of leakage
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				Saddle is in good condition with no signs of buckling or distortion. Saddle is mounted onto piling platforms with stitch welding Vessel is grounded to pilings/saddle
Anchor Bolts Hammer tap to ensure secure. Look for cracking in treads or signs of deformation.				x	
Concrete foundation Check for cracks, spalling, etc.				x	
Ladder / Platform Describe general condition, ensure support is secure to vessel, and describe any hazards.				x	
Nozzle Assess paint, look for leakage, and ensure stud threads are fully engaged. Record any damage, deflection, etc. Are nozzles gusseted?	x				Nozzles show no signs of leakage All flange bolts are fully engaged. No signs of damage or deflection.
Gauges Ensure gauges are visible, working, no leakage, and suitable for range of MAWP/ Temp.	x				A vacuum gauge sits atop the vessel. This gauge has a range of 0 – 60 psi and is in good condition
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				The piping is well supported with no deflection.
Valving Ensure no leaks are visible. Valves are properly supported and chained if necessary.	x				Valving is well supported. No signs of leakage.
PSV Ensure PSV is set at pressure at or below that of vessel.				x	Not required
NDE methods Was UT/ MPI done on vessel (MI coordinator to review results)	x				Ultrasonic thickness survey carried out in 2008– no corrosion or pitting detected.
Other					
Recommendations or corrective actions : Vessel is Fit for Service (MIC to review corrective actions with Operations, discuss with Chief Inspector where necessary, and get remedial action implemented) See internal inspection for summary and recommendations.					

Inspected By: Mike Dutcher / Dellas Wiedman

Date: 26 May 2009

Internal Inspection Items	G	F	P	N/A	Comments
Coating Assess coating. Describe area coated, general condition of coating.	X				Vessel is 100 % coated with previous patch repairs. Minor erosion of coating on shell area and Manway. See pictures
Anodes. How many, type, condition. % consumed. Are they being replaced?				X	
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				2 inch steam coil (carbon) well supported with no signs of deflection. Coating has minor erosion. See pictures
Trays How many? Type of material. Are valves in place. Check for erosion/ corrosion; wear on tray valve legs. Cleanliness?				X	
Baffles, deflector plates, etc. If present, describe condition. Look closely at welds attached to vessel wall.	X				One deflector plate at inlet. Plate is well coated. Welds are in good condition.
Top Head Note all corrosion, erosion or mechanical damage. (If vessel is horizontal identify direction of this head)	X				North Head No corrosion evident. Coating is in good condition.
Bottom Head Note all corrosion, erosion or mechanical damage. (If vessel is horizontal identify direction of this head)	X				South Head No corrosion evident. Coating is in good condition.
Shell Sections 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				Two sections of shell No signs of corrosion or mechanical damage Minor erosion to coating. See pictures
Demister pad Is it in place? Is it clean? If any corrosion is apparent in vessel, lift pad and check top head for corrosion.				X	
Welds Inspect all welds, including attachment welds. Record all service-related damages and if there is any discuss with Chief Inspector before closing.	X				All welds in good condition. No damage noted
Repairs Required. If yes, ensure procedure and copy of AB 40 is on file, and one sent to local ABSA, and Chief Inspector				X	See recommendations.
NDE Was any NDE done. (MI coordinator to review results)				X	No internal NDE.
<p>Recommendations or corrective actions : Vessel is Fit for Service (MIC to review corrective actions with Operations, discuss with Chief Inspector where necessary, and get remedial action implemented)</p> <p>Recommendations: 1. Cladding to be resealed at upper shell lifting lug. 2. Cladding to be properly sealed at manway to prevent possible C.U.I. (corrosion under insulation). 2. Coating to be patch repaired at next available outage – completed May 27 – 2009.</p> <p>Summary: This vessel is in good condition, visual external and internal carried out – internal is 100% coated with epoxy – a few minor failed areas at man way (hand patched this outage) – no corrosion or pitting detected.</p> <p>Vessel is fit for service.</p>					

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Date: 26 May 2009

External Pictures



LSD



Data Plate



Vessel Overview



Saddle/Pilings



Vent Pressure Gauge



Ground



Buckling of Cladding



Cladding at Manway not sealed



Opening in Cladding at Lifting Lug



Internal Pictures



South head and suction piping



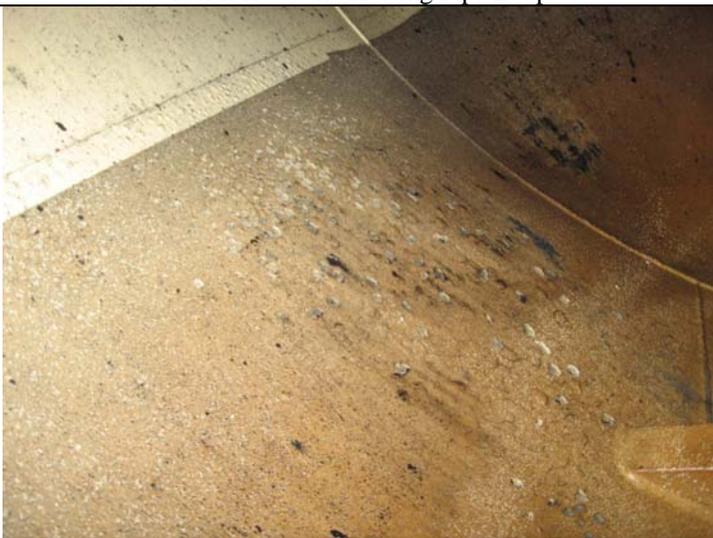
South Head and Outlet Nozzle



North Head and Heating Pipe Loop



North Head and Inlet Deflector Plate



Coating Damage – lower west shell



Minor Coating Damage and patching – lower east shell



Heating Pipe Loop – Mounting Secure



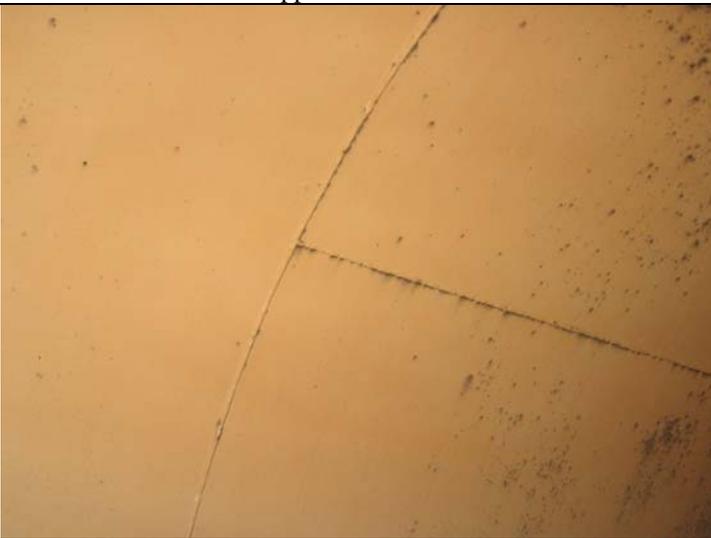
Coating chipped on piping



Upper Level Float



Lower level Float



Shell welds



Coating Damage at Manway