Canadian Natural Resources Limited
GENERAL PRESSURE VESSEL INFORMATION **Job # 05.003373**

District: **Fort St John, BC**	Skid No.
Facility: **Graham Compressor Station**	Location (LSD): **C-76-K/94-B-8**
Vessel Name & Equipment Number: **H.P. Flare Knockout**	
Orientation: **Horizontal**	
Status: **In service**	**Regulatory Inspection**

PRESSURE VESSEL NAMEPLATE DATA

Registration Number **C 34219**		CRN Number **P-6164.2**	
Vessel serial number: **04-94-M051-1**		Size: 6 ft x 20 ft	
Shell thickness: 9.5 mm		Shell material: SA 516 70	
Head thickness: 9.5 mm		Head material: SA 516 70	
Tube wall thickness:		Tube material:	
Tube diameter:		Tube length:	
Channel thickness:		Channel material:	
Design pressure	Shell: 14 PSI	Operating pressure	Shell:
	Tubes:		Tubes:
Design Temp.	Shell: 150 deg F	Operating temperature	Shell:
	Tubes:		Tubes:
X-ray: NIL		Heat treatment: NIL	
Code parameters: ASME VIII Div I		Coated: Yes	
Manufacturer: Pyramid		Built: 1994	
Corrosion allowance: NIL		Manway: No	

PRESSURE SAFETY VALVE NAMEPLATE DATA

PSV Tag no.	Manufacture	Model	Serial number	Set Pressure	Capacity	Size
*No PSV Present						

SERVICE CONDTIONS-INDICATE ALL THAT APPLY

Sweet	Sour X	Oil	Gas X	Water X
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** _____

C34219

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				Damage to outlet piping insulation and head of vessel.
External Condition Assess paint condition, areas peeling, record any corrosion, damage, etc (record location, size and depth of corrosion or damage)	X				Exposed areas of vessel show paint in good condition. No exposed metal.
Leakage: Record any leakage at flanges, threaded joints, weep holes on repads, etc.	X				No leakages at flanges or threaded joints.
Saddle: 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 securely bolted to supports Paint in good condition No Buckling or dents present. No signs of leaking. Ground is connected to skid.
Anchor Bolts Hammer tap to ensure secure. Look for cracking in treads or signs of deformation.	X				Vessel secured firmly to crosshead. No deformation.
Concrete foundation Check for cracks, spalling, etc.				X	
Ladder / Platform Describe general condition, ensure support is secure to vessel, 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				No Stud threads present. No leaks-damage or deflections. Nozzles are not gusseted Paint in good condition.
Gauges Ensure gauges are visible, working, no leakage, and suitable for range of MAWP/ Temp.				X	No gauges present
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				Piping is well supported – all clamps and supports are in place. No structural overloads or deflections. Pain in good condition no corrosion present.
Valving Ensure no leaks are visible. Valves are properly supported and chained if necessary.				X	No leaks detected Valves are properly supported.
PSV Ensure PSV is set at pressure at or below that of vessel. Discharge piping is same size as inlet to valve and is properly supported and routed. Ensure no block valves between psv and vessel or if there are they are locked open.				X	No PSV present.
NDE methods Was UT/ MPI done on vessel (MI coordinator to review results)	X				Ultrasonic corrosion survey carried out, pipe metal thickness detected below nominal. Critical thickness calculations carried out to ensure sufficient metal exists for safe operation.

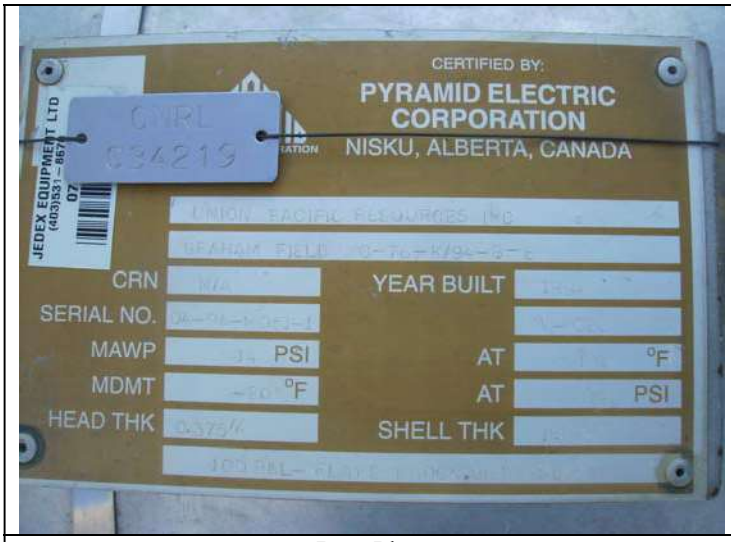
Recommendations or corrective actions : Vessel is Fit for Service or describe corrective actions required)
(MIC to review corrective actions with Operations, discuss with Chief Inspector where necessary, and get remedial action implemented)
Recommendations: 1) Repair damaged areas of cladding
Summary: This Vessel is in overall good condition, visual external inspection and ultrasonic corrosion survey performed, pipe metal thickness detected below nominal. Critical thickness calculations carried out to ensure sufficient metal exists for safe operation.
Vessel is fit for service.

Inspected By: D. Wiedman / Matt Heatcoat **Date**: October 15 – 2008

Internal Inspection Items	G	F	P	N/A	Comments
Coating Assess coating. Describe area coated, general condition of coating.	X				**This Vessel is 100% internally coated and is in good overall condition.**
Anodes. How many, type, condition. % consumed. Are they being replaced?	X				**Two anodes were found both were in good condition – less than 2% consumed.**
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				**Good overall condition, clean and coated, no visible pitting, or corrosion noted that time of inspection.**
Trays How many? Type of material. Are valves in place? Check for erosion/ corrosion; wear on tray valve legs. Cleanliness?				X	**None.**
Baffles, deflector plates, etc. If present, describe condition. Look closely at welds attached to vessel wall.				X	**None.**
West Head Note all corrosion, erosion or mechanical damage. (If vessel is horizontal identify direction of this head)	X				**Previous corrosion damage, coated & in good condition – no new corrosion or erosion was found. Good overall condition.**
East Head Note all corrosion, erosion or mechanical damage. (If vessel is horizontal identify direction of this head)	X				**No mechanical damage, corrosion or erosion was found. Good overall 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 can sections were found to form the vessel & it is 100% internally coated and is in good overall condition. No mechanical damage, corrosion or erosion was noted.**
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	**None.**
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 visible welds are 100% coated & appear to be in good overall condition.**
Repairs Required. If yes, ensure procedure and copy of AB 40 is on file, and one sent to local ABSA, and Chief Inspector				X	**None.**
NDE Was any NDE done. (MI coordinator to review results)	X				**None at this time.**

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. No recommendations at this time.
Summary: This vessel is in good overall condition, visual internal inspection carried out – internal is coated with epoxy – no failed areas of coating – no previous corrosion or pitting.
Vessel is fit for service.

Inspected By: Joe Holdstock **July-08-2009**



Data Plate

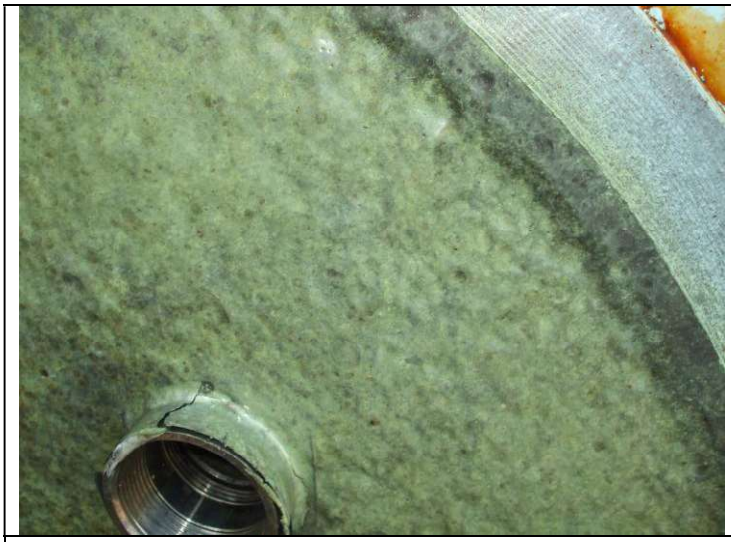
Overview

Damaged cladding

Overview

Outlet Line

	
Overview	East Head
	
Lower Shell coated previous pitting overview	West Head Overview
	
Lower West end head coated with previous pitting	Manway overview

	
Manway cover previous pitting	