Canadian Natural Resources Limited
GENERAL PRESSURE VESSEL INFORMATION **Job 10.113250**

District: **Fort St. John**	Skid No.
Facility: **Milligan Battery**	Location (LSD): **b-63-G/94-H-02**
Vessel Name Equipment Number: **Glycol Heater**	
Orientation: **Horizontal**	
Status: **In Service**	**Regulatory Inspection**

PRESSURE VESSEL NAMEPLATE DATA

"A" or "G" or "S" (Sask.) or BC Registration Number. **CN 5056**		CRN Number: **NON CODE**	
Vessel serial number: 1161		Size: 48 in. x 15 ft.	
Shell thickness: 6.4 mm		Shell material: SA 36	
Head thickness: 6.4 mm		Head material: SA 36	
Tube wall thickness:		Tube material:	
Tube diameter:		Tube length:	
Channel thickness:		Channel material:	
Design pressure	Shell: 8 oz.	Operating pressure	Shell:
	Tubes:		Tubes:
Design Temp.	Shell:	Operating temperature	Shell:
	Tubes:		Tubes:
X-ray: No		Heat treatment: No	
Code parameters: NON CODE		Coated: No	
Manufacturer: NATCO		Year built: 1981	
Corrosion allowance: 3.2 mm		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 X	Oil	Gas X	Water X
Amine	LPG	Condensate	Air	Glycol X
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. <u>All information</u> 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**				**Cladding and insulation in good overall condition – no damage – no egress of moisture**
External Condition Assess paint condition, areas peeling, record any corrosion, damage, etc (record location, size and depth of corrosion or damage)	**X**				**Paint in good overall condition – no corrosion or damage – no exposed metal**
Leakage Record any leakage at flanges, threaded joints, weep holes on repads, etc.	**X**				**No leaks detected**
Saddle/skirt 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**				**Saddle: Paint in good overall condition – no corrosion – no buckling or dents – no leaks at attachment welds – ground wire attached to skid**
Anchor Bolts Hammer tap to ensure secure. Look for cracking in treads or signs of deformation.	**X**				**Vessel is securely bolted to skid floor – no deformation**
Concrete foundation Check for cracks, spalling, etc.				**X**	**None**
Ladder / Platform Describe general condition, ensure support is secure to vessel, and describe any hazards.				**X**	**None**
Nozzle Assess paint, look for leakage, and ensure stud threads are fully engaged. Record any damage, deflection, etc. Are nozzles gusseted?	**X**				**Nozzle paint in good condition – no leakage – stud threads are fully engaged – no damage – nozzles are not gusseted**
Gauges Ensure gauges are visible, working, no leakage, and suitable for range of MAWP/ Temp.	**X**				**Gauges are clear and functional – within range for service**
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 in place – no evidence of structural overload – no deflections – paint in good condition**
Valving Ensure no leaks are visible. Valves are properly supported and chained if necessary.	**X**				**Valves properly supported – no sign of leaks**
PSV Ensure PSV is set at pressure at or below that of vessel.				**X**	**No PSV**
NDE methods Was UT/ MPI done on vessel (MI coordinator to review results)	**X**				**Ultrasonic corrosion survey carried out – shell metal thickness detected below nominal.** **UT point 3603 (Top Shell) – nominal thickness is 6.4mm / min thickness is 5.4mm .**
Other					

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:
Summary: This vessel is in good condition, visual external and ultrasonic thickness inspection carried out – shell metal thickness detected below nominal.
Vessel is fit for service.

Inspected By: **Date:**

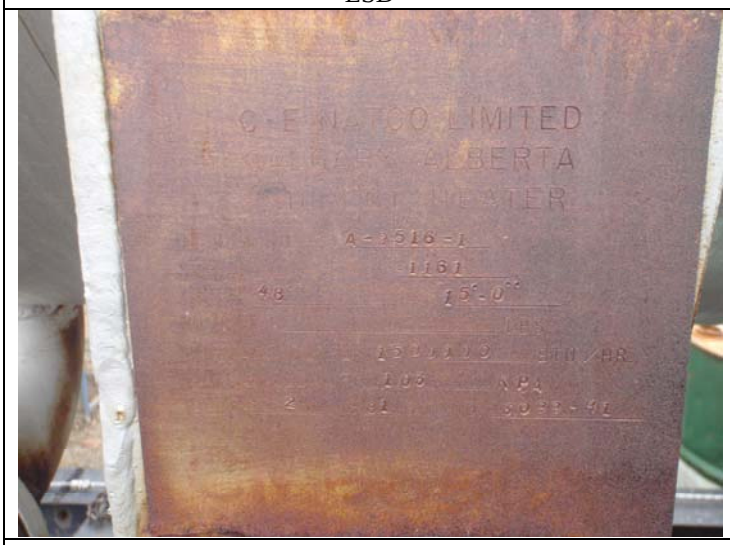
Internal Inspection Items	G	F	P	N/A	Comments
Coating Assess coating. Describe area coated, general condition of coating.				X	**No internal coating**
Anodes. How many, type, condition. % consumed. Are they being replaced?				X	**None**
Internal Piping Is there any? If so, carbon or stainless steel. Describe condition, dents, corrosion, erosion, etc. Ensure supports are secure and any bolts are suitable for future use.	X				**1 inch fuel gas heat pass piping – good overall condition – well supported – no external corrosion – fire tube and gas coil in good overall condition – no corrosion or damage**
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				**Deflector and screen in good overall condition – no damage or corrosion - attachment welds in good condition**
South Head Note all corrosion, erosion or mechanical damage. (If vessel is horizontal identify direction of this head)	X				**Good overall condition – no corrosion or mechanical damage**
North Head Note all corrosion, erosion or mechanical damage. (If vessel is horizontal identify direction of this head)	X				**Good overall condition – no corrosion or mechanical damage**
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			**One shell section - fair overall condition – corrosion to 0.050 inch on upper shell in vapor barrier with moderate scaling**
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				**Welds are in good condition –minor corrosion 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	**None**
NDE Was any NDE done. (MI coordinator to review results)	X				**MPI carried out on fire tube – no cracking detected**

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: Vessel is in overall good condition, visual external inspection and ultrasonic corrosion survey performed—no metal thickness detected below nominal minus the corrosion allowance.
Vessel is fit for service.

Inspected By: Andrew Neis / Dellas Wiedman **Date:** June 22, 2013

LSD

Overview



Data Plate

Burner removed

Line heater internal

Internal nozzle – general surface corrosion and scaling

	
Fire Tube	Scaling and general corrosion on upper shell