Canadian Natural Resources Limited
GENERAL PRESSURE VESSEL INFORMATION **Job # 10.110452**

District: **Fort St John, B.C.**	Skid No.
Facility: **Flat Rock Compressor Station**	Location (LSD): **5-2-85-17 W6M**
Vessel Name Equipment Number: **Treater**	
Orientation: **Horizontal**	
Status: **In Service**	**Regulatory Inspection**

PRESSURE VESSEL NAMEPLATE DATA

"A" or "G" or "S" (Sask.) or BC Registration Number. **A2842374**		CRN Number: **H1645.231**	
Vessel serial number: 3784		Size: 6' x 20'	
Shell thickness: 9.5mm		Shell material: SA 516 70	
Head thickness: 12.4mm		Head material: SA 106 B	
Tube wall thickness:		Tube material:	
Tube diameter:		Tube length:	
Channel thickness:		Channel material:	
Design pressure	Shell: 75 PSI	Operating pressure	Shell: 37 PSI
	Tubes:		Tubes:
Design Temp.	Shell: 200 F	Operating Temp.	Shell: 120 F
	Tubes:		Tubes:
X-ray: NIL		Heat treatment: NIL	
Code parameters: non code		Coated: N/S	
Manufacturer: Penfabco Ltd.		Year built: 1993	
Corrosion allowance: 1.6mm		Manway: Yes	

PRESSURE SAFETY VALVE NAMEPLATE DATA

PSV Tag #	Manufacture	Model #	Serial #	Set Pressure (PSI)	Capacity (scfm)	Service Date
4079F	**Wellmark**	**W9503-60N**	**69622-1**	**75**	**3528**	**06-2008**
CRN #	Service By	Block Valve	Location	Size	Code Stamp	
N/S	**Unified**	**No**	**Top Shell**	**3" x 3"**	**UV NB**	

SERVICE CONDITIONS-INDICATE ALL THAT APPLY

Sweet	Sour X	Oil X	Gas X	Water X
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. <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

A2842374

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				No Insulation present.
External Condition Assess paint condition, areas peeling, record any corrosion, damage, etc (record location, size and depth of corrosion or damage)	X				Paint is in good condition – no exposed metal
Leakage Record any leakage at flanges, threaded joints, weep holes on repads, etc.	X				No leaking 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 is in good condition – no buckles or distortion. Paint intact – with little to no corrosion. Vessel grounded through the skid package. No signs of leakage.
Anchor Bolts Hammer tap to ensure secure. Look for cracking in treads or signs of deformation.	X				Firmly secured. No signs of 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				All threads engaged. No deflection – no leaks. Stud threads fully engaged, no gussets. Paint is in good overall condition.
Gauges Ensure gauges are visible, working, no leakage, and suitable for range of MAWP/ Temp.	X				Temperature Gauge (0-250F) Suitable for range Pressure Gauge (0-100 PSI) Suitable for MAWP Clear and clean.
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		Well supported – no deflection – all clamps and shoes in place. Piping is painted and is in good overall condition. Water dump piping spool to fiberglass piping should be replace low of 2.0mm detected on 3" std piping. General corrosion and pitting.
Valving Ensure no leaks are visible. Valves are properly supported and chained if necessary.	X				Well supported – no leaks.
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				PSV is set below MAWP of vessel. PSV Discharge piping is equal to inlet piping and is properly supported and routed. Car Seals Intact. Location: Top shell
NDE methods Was UT/ MPI done on vessel (MI coordinator to review results)	X				Ultrasonic corrosion survey carried out, metal thickness detected below nominal minus corrosion allowance. On Water dump piping

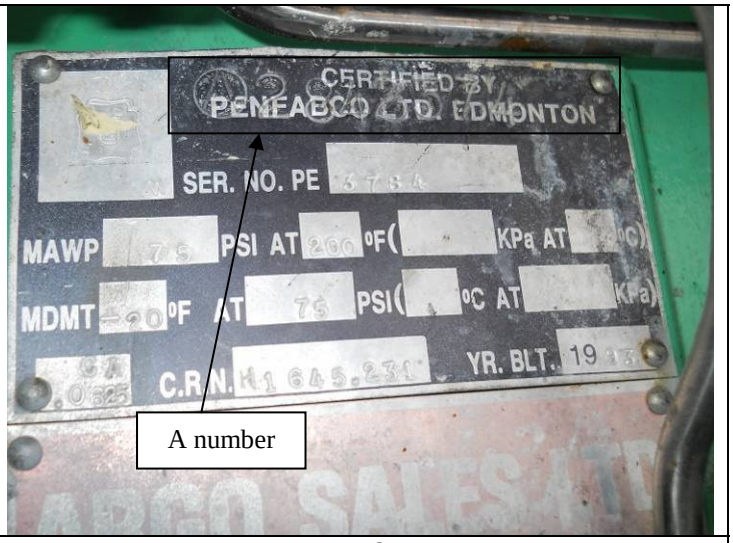
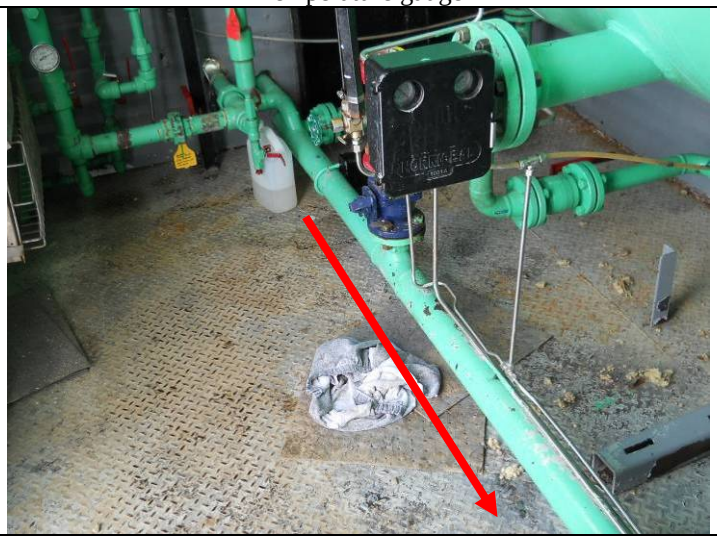
Recommendations or corrective actions : Vessel is Fit for Service or describe corrective actions required)
(MIC to review corrective actions with Operations, discuss with Chief Inspector where necessary, and get remedial action implemented)
Recommendations: 1) Replace Water Dump spool to fiber glass connection.
Summary: This vessel is in good condition, visual external and ultrasonic thickness inspection carried out – metal thickness detected below nominal minus corrosion allowance on water dump spool *replace. Review UT Survey
Vessel is fit for service.

Inspected By: **Dellas Weidman** **Date: Feb 04, 2011**

Internal Inspection Items	G	F	P	N/A	Comments
Coating Assess coating. Describe area coated, general condition of coating.		X			**Coating is in fair condition. Some minor failures at manways, shell and nozzles. Surface corrosion to depths of 0.010 inches at failed locations.** **These coating failures were patched with Davoe #142**
Anodes. How many, type, condition. % consumed. Are they being replaced?	X				**2 Anodes measuring 42 x 3 inches are installed in Treater. Consumption of approximately 10 %. Existing anodes will be installed.**
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				**Internal piping is in good condition. No signs of deflection. Well supported.**
Trays How many? Type of material. Are valves in place? Check for erosion/ corrosion; wear on tray valve legs. Cleanliness?				X	**No trays.**
Baffles, deflector plates, etc. If present, describe condition. Look closely at welds attached to vessel wall.	X				**Inlet deflector plating is intact. No signs of erosion. No damage or distortion. Coating intact.**
South Head Note all corrosion, erosion or mechanical damage. (If vessel is horizontal identify direction of this head)	X				**Head is in good condition. No corrosion or no pitting. No signs of damage or distortion.**
North Head Note all corrosion, erosion or mechanical damage. (If vessel is horizontal identify direction of this head)	X				**Head is in good condition. No corrosion or no pitting. No signs of damage or distortion.**
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				**Shell sections are in good condition. No signs of damage or distortion. No signs of erosion or corrosion.**
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		**Dirty and corroded.**
Welds Inspect all welds, including attachment welds. Record all service-related damages and if there is any discuss with Chief Inspector before closing.	X				**Good condition, no corrosion or pitting.**
Repairs Required. If yes, ensure procedure and copy of AB 40 is on file, and one sent to local ABSA, and Chief Inspector	X				**Patch repairs to coating were carried out.**
NDE Was any NDE done. (MI coordinator to review results)				X	**No internal NDE 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: Replace demister pad. Plan for possible complete coating of vessel next outage.
Summary: This vessel is in good overall condition, visual internal carried out. **Vessel is fit for service**

Inspected By: Mike Dutcher **Date: June 23, 2011**

	
	Data Plate
	
Overview	Temperature gauge
	
Overview	Water Dump Line

Overview

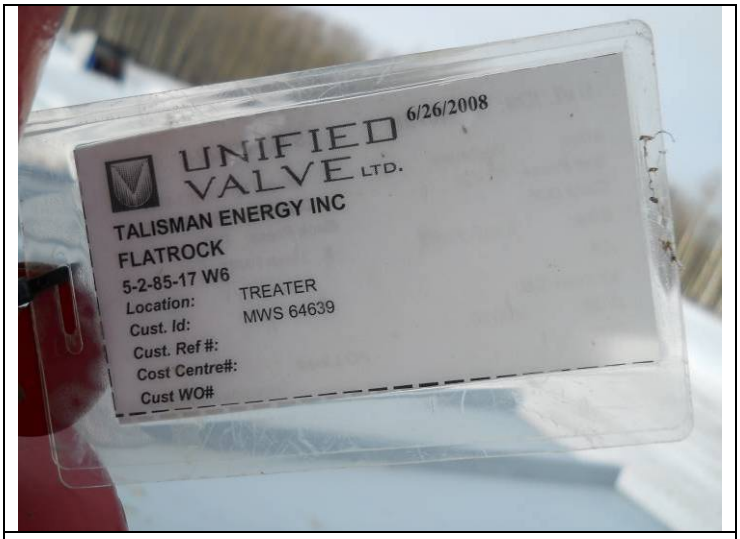
Overview

Overview

Overview

Overview

PSV Tag


UNIFIED VALVE LTD.
6/26/2008
TALISMAN ENERGY INC
FLATROCK
5-2-85-17 W6
Location: TREATER
Cust. Id: MWS 64639
Cust. Ref #:
Cost Centre#:
Cust WO#

PSV Tag

Fire Tube Manway

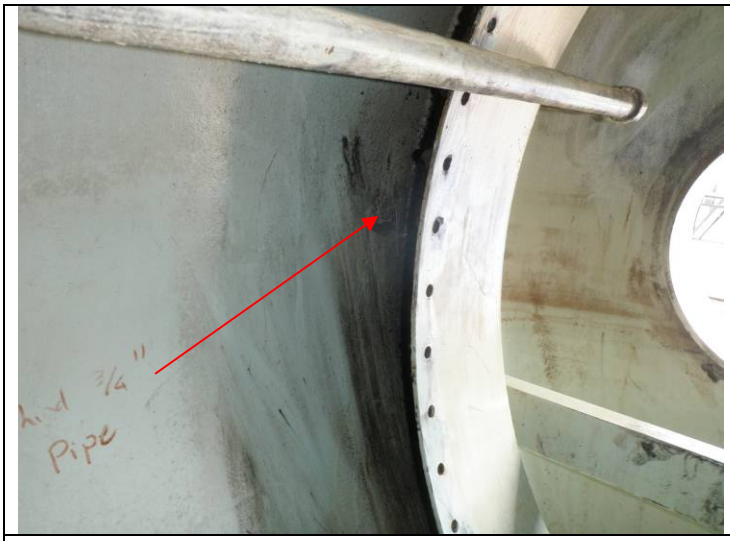
Previous coating repairs

Overview

Lower shell with anode support post

Upper head

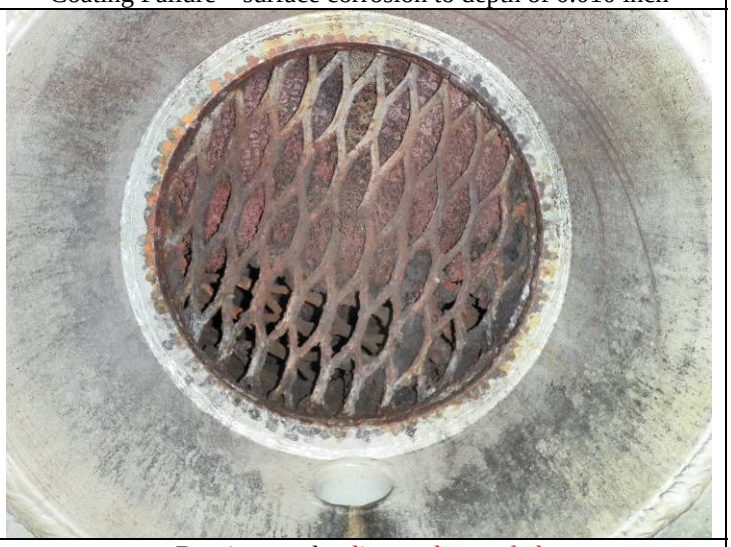
Lower Head



Coating failure at shell

Coating Failure – surface corrosion to depth of 0.010 inch

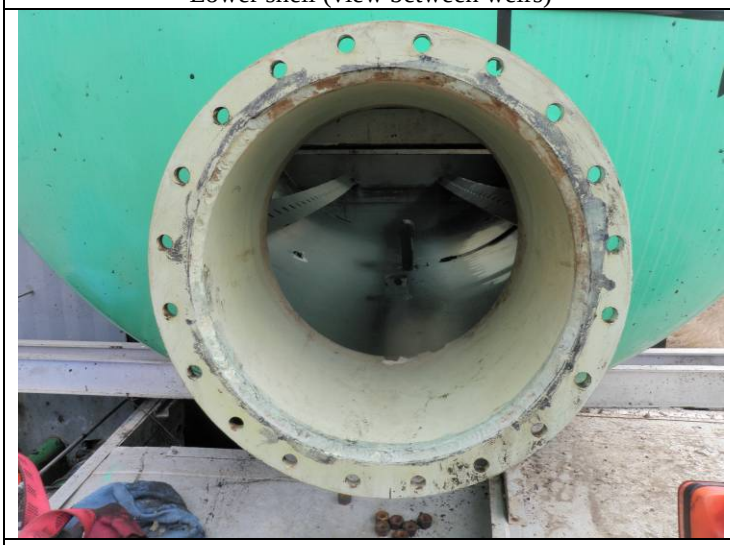
Demister location



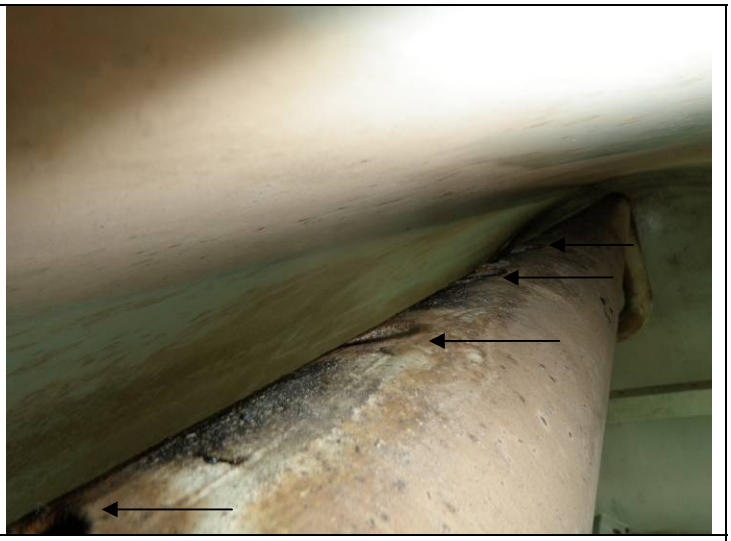
Demister pad – dirty and corroded

Typical nozzle

Floats

	
Lower shell (view between weirs)	Upper shell (view between weirs)
	
Manway	West Head
	
Overview	Lower shell

Upper shell and inlet piping



Inlet piping distribution holes

Manway cover

Manway Cover

Fire Tube

Typical Anode – 10 % loss