

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

Job # 05.001958

District: Ft. St. John B.C.	Skid No.
Facility: Halfway Battery	Location (LSD): 05-12-87-25-W6M.
Vessel Name Equipment Number: Group Separator	
Orientation: Horizontal	
Status: In Service	Regulatory Inspection

PRESSURE VESSEL NAMEPLATE DATA

“A” or “G” or “S” (Sask.) or BC Registration Number. A 439359	CRN Number: L 2812. 213		
Vessel serial number: 012941-1	Size: 46 in OD X 175 in. S/S		
Shell thickness: 50.8 mm	Shell material: SA 516 70 N		
Head thickness: 50.4 mm	Head material: SA 516 70 N		
Tube wall thickness:	Tube material:		
Tube diameter:	Tube length:		
Channel thickness:	Channel material:		
Design pressure	Shell: 1345 psi	Operating pressure	Shell:
	Tubes:		Tubes:
Design Temp.	Shell: 200 deg. F	Operating temperature	Shell:
	Tubes:		Tubes:
X-ray: RT-1	Heat treatment: Yes		
Code parameters: ASME VIII Div. 1	Coated: No		
Manufacturer: Opsco	Year built: 1998		
Corrosion allowance: 3.2 mm	Manway: Yes		

PRESSURE SAFETY VALVE NAMEPLATE DATA

PSV Tag #	Manufacture	Model #	Serial #	Set Pressure	Capacity (scfm)	Set Date
8242F	Farris	27FA45-1720/S7	CE-403771-3-KE	1345 psi	8410	06/24/05
CRN #	Service By	Block Valve	Location	Size	Code Stamp	
OGO386.9C	UFL	No	Top Shell	1.5 in X 2 in	UV	

SERVICE CONDITIONS-INDICATE ALL THAT APPLY

Sweet	<u>Sour</u>	<u>Oil</u>	<u>Gas</u>	<u>Water</u>
Amine	LPG	<u>Condensate</u>	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	Non insulated vessel.
External Condition Assess paint condition, areas peeling, record any corrosion, damage, etc (record location, size and depth of corrosion or damage)	X				Paint loose at the 7:00 and 4:00 o'clock positions with slight surface corrosion occurring at these areas – no pitting.
Leakage Record any leakage at flanges, threaded joints, weep holes on repads, etc.	X				Oil outlet piping – gasket seating face at vessel is seeping product.
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				No distortion to saddles – no Mechanical damage noted – no leaks at saddle to shell welds. Slight surface corrosion occurring at the floor to saddle interface – no pitting. Skid package is grounded.
Anchor Bolts Hammer tap to ensure secure. Look for cracking in treads or signs of deformation.	X				- All bolts firmly attached.
Concrete foundation Check for cracks, spalling, etc.				X	Steel skid.
Ladder / Platform Describe general condition, ensure support is secure to vessel, describe any hazards.				X	- No ladders or platforms required.
Nozzle Assess paint, look for leakage, and ensure stud threads are fully engaged. Record any damage, deflection, etc. Are nozzles gusseted?	X				Slight corrosion occurring at the nozzle bolts and flange area – no pitting. - No damage or deflection noted, no gussets. - No leakage noted.
Gauges Ensure gauges are visible, working, no leakage, and suitable for range of MAWP/ Temp.	X				Temperature and pressure gauge attached – within range for operation.
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 – no evidence of overload or deflection. Paint is fair with slight surface corrosion occurring at the clamp areas on the inlet piping – no pitting.
Valving Ensure no leaks are visible. Valves are properly supported and chained if necessary.	X				All valves supported, no leaks noted. No chains required
PSV Ensure PSV is set at pressure at or below that of vessel.	X				- Located on top shell – set at MAWP of vessel. - Seal intact – no block valve – discharge piping same size as outlet orifice.
NDE methods Was UT/ MPI done on vessel (MI coordinator to review results)	X				Ultrasonic thickness survey carried out, piping metal thickness detected below nominal minus corrosion allowance – Calculations carried out to ensure sufficient metal exists for safe operation. No change from 2005 corrosion survey.
<p>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)</p> <p>Recommendations: 1. Re seal leaking flange on oil outlet nozzle.</p> <p>Summary: This vessel is in good overall condition, ultrasonic thickness survey carried out, piping metal thickness detected below nominal minus corrosion allowance – Calculations carried out to ensure sufficient metal exists for safe operation.</p> <p>Vessel is fit for service.</p>					

Internal Inspection Items	G	F	P	N/A	Comments
Coating Assess coating. Describe area coated, general condition of coating.	X				None.
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	None.
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				Little to no mechanical damage, 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				Little to 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 shell sections were found to form the Shell. The shell is in good overall condition, the lower shell has pits to approximately 0.120" deep through out the 6:00 position between the two weir plates. No signs of mechanical damages were 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				Demister pad is reasonably clean in place and intact no apparent mechanical damage.
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 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				Ultrasonic thickness carried out on the shell lowest reading found was 1.875" thick.
<p>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)</p> <p>Recommendations: 1. Coat lower section of shell with inhibitor to prevent further metal loss.</p> <p>Summary: This vessel is in good over all condition, visual internal / external carried out.</p> <p>Vessel is fit for service.</p>					



Data plate



Vessel overview



South head



Lower shell pitting to 0.120"



Lower shell pitting to 0.120"



Lower shell pitting to 0.120"



Lower shell pitting to 0.120" @ manway



Manway

