Skid No.     Skid No.     Graphenessor Station   Location (LSD): c-29-L/94-B-09     Vessel Name Equipment Number: Flare Knock Out Drum     Orientation: Horizontal     Status: In Service   Regulatory Inspection     TRESSURE VESSEL NAMEPLATE DATA     Vessel Name Equipment Number: A0439148   CRN Number: Lot82.21     Vessel serial number: 004013-50   Size: 96 in x 120 in     Shell matcrial: SA 516 70N     Head material: SA 516 70N     Head material: SA 516 70N     Tube wall mickness: 9.5 mm   Shell material: SA 516 70N     Tube wall mickness: 9.5 mm   Shell material: SA 516 70N     Tube wall material: SA 516 70N <t< th=""><th colspan="11">Canadian Natural Resources Limited GENERAL PRESSURE VESSEL INFORMATION Job 10.112837</th></t<>	Canadian Natural Resources Limited GENERAL PRESSURE VESSEL INFORMATION Job 10.112837											
Vessel Name Equipment Number: Flare Kove to Ut Drum     Orientation: Horizowsky of BC Registration Number: AddS018     RESURE VESSURE	District: Fort St	Skid No.										
Vessel Name Equipment Number: Flare Kove to Ut Drum     Orientation: Horizowsky of BC Registration Number: AddS018     RESURE VESSURE												
Orientation: Horizontal     Regulatory Inspection     Status:   INSPECTION NUMBER:     CRN Number:   CRN Number:   CRN Number:     Ad459148   Size: 96 in x 120 in     Vessel serial number: 004013-50   Size: 96 in x 120 in     Shell material: SA 516 70N     Head material: SA 516 70N     Head material: SA 516 70N     Tube waterial:     Tube waterial:     Tube dimaterial: SA 516 70N     Tube waterial:     Channel material:     Shell: 50 PSI   Shell: 100 F     Tube:   Shell:   Shell:     Year built: 2000   Code Yea   Shell:     Shell: 100 F   Shell: <td></td> <td></td> <td>ock Out Drum</td> <td></td> <td colspan="6"></td>			ock Out Drum									
Regulatory Inspection     Versessure VESSEL NAMEPLATE DATA     VA" or "G" or "S" (Sask.) or BC Registration Number. A0459148   CRN Number: Lot82.1     Vessel serial number: 04013-50   Size: 96 in x 120 in     Shell material: SA 516 70N     Head material: SA 516 70N     Head material: SA 516 70N     Head material: SA 516 70N     Tube diameteri     Tube material: SA 516 70N     Tube diameteri     Channel material: SA 516 70N     Tube diameteria: SA 516 70N     Shell: 100 F   Set Perseure diameteria: SA 516 70N<		•										
PRESSURE VESSEL NAMEPLATE DATA       ""A" or "G" or "S" (Sask.) or BC Registration Number. A0459148     CRN Number: L6182.21       Vessel serial number: 004013-50     Size: 96 in x 120 in       Shell material: SA 516 70N       Head material: SA 516 70N       Head material: SA 516 70N       Head material: SA 516 70N       Tube material: SA 516 70N       Tube material: SA 516 70N       Channel material: SA 516 70N       Tube material: SA 516 70N       Channel material: SA 516 70N       Tube material:       Operating pressure       Shell: 100 F       Tubes:       Tubes:       Year Will, Div 1       Coated: Yes       Manufacture? Nusco       Year Will, 2000       Corrosion allowance: Nil       Manufacture / Model / Set Pressure (PSI / kPa)       Set VII, Div 1       Manufacture / Model / Set Pressure (PSI / kPa)       Set VII (Div 1       Set VII (Div 1					R	egulatory Inspe	ection					
A0459148L 6182.21Vessel serial number: 0.04013-50Size: 96 in x 120 inShell material: SA 516 7000000000000000000000000000000000000			PRESSURE VES	SEL NA		<u> </u>						
Shell thickness: 9.5 mm    Head thickness: 7.9 mm    Tube and thickness    Tube and thickness: 7.9 mm    Tube and thickness: 7.9	"A" or "G		stration Number.		CRN Number:							
$ \begin{array}{c c c c c } \mbox{Head material: SA 516 70N} $$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$	Vessel serial num	ber: 004013-50			Size: 96 in x 120 in							
Tube wall thickness:   Tube material:     Tube diameter:     Tube length:     Channel material:     Channel material:     Channel material:     Channel material:     Operating pressure   Shell: 50 PSI     Tubes:   Channel material:     Tubes:   Shell: 100 F     Coated: Yes     Manufacturer: Nuscor   Coated: Yes     Total coated: Yes     Manufacture / Model / Set Pressure (PSI / kPa)   Size   Block Uccation Service by Date     Service CONDITION Service (PSI / kPa)   Size   Size   Location Service by Date												
Tube length:     Channel thickness:   Channel material:     Channel material:     Design pressure   Shell: 50 PSI   Channel material:     Tubes:   Operating pressure   Shell:					Head material: SA 516 70N							
Channel thickness:     Shell:     50 PSI     Operating pressure     Shell:     Shell:       Design pressure     Tubes:     Tubes:     Tubes:     Tubes:     Tubes:     Tubes:     Tubes:     Shell:     Tubes:     Tubes:     Shell:     Tubes:     Tubes:     Shell:     Shell:     Tubes:     Shell:     Tubes:     Shell:     Tub		ess:										
$\begin{array}{c c c c c } \begin pressure & Shell: 50 PSI & \end{tites} & \end{tites} & Shell: 50 PSI & \end{tites} & \end{titts} & $												
Design pressureShell:Shell:Shell:Tubes:Tubes:Tubes:Shell:Tubes:Shell:Tubes:Shell:Tubes:Shell:	Channel thicknes				Cha	annel material:		1				
$   100 \ F   1$	Design pressure		Operating pressure			Shell:						
$ \begin{array}{c c c c c c } \hline \begin Temp. \\ \hline \begin Temp. \\ \hline \begin Temp. \\ \hline \begin Temps. \\ \hline \begi Temps.$		Tubes:	Tubes:					Tubes:				
X-ray: NilHeat treatment: NoCode parameters: ASME VIII, Div 1Coated: YesManufacturer: NuscoYear built: 2000Corrosion allowance: NilManway: YesPRESSURE SAFETY VALVE NAMEPLATE DATAPSV Tag #Manufacture / Model / SerialSet Pressure (PSI / kPa)Capacity (scfm)SizeBlock ValveLocation by DateService by DateSweetSour XOilImage: Condensate XAirGlycol XAmineLPGImage: Condensate XAirGlycol X					Operating temperature		ure	Shell:				
Code parameters: ASME VIII, Div 1   Coated: Yes     Manufacturer: Nusco   Year built: 2000     Corrosion allowarce: Nil   Manuwar: Yes     PRESSURE SAFETY VALVE NAMEPLATE DATA     PSV Tag #   Manufacture / Model / Set Pressure (PSI / kPa)   Size   Block Valve   Location   Service by Date     PSV Tag #   Manufacture / Model / Set Pressure (PSI / kPa)   Size   Block Valve   Location   Service by Date     PSV Tag #   Manufacture / Model / Serial   Set Pressure (PSI / kPa)   Capacity (scfm)   Size   Block Valve   Location   Service by Date     Sweet   Sour X   Oil   Gas   Water X     Amine   LPG   Condensate X   Air   Glycol X	Tubes:							Tubes:				
Manufacturer: NuscoYear built: 2000Corrosion allowarce: NitManufacture / Model / SerialSet Pressure (PSI / kPa)Year built: 2000PSV Tag #Manufacture / Model / SerialSet Pressure (PSI / kPa)Capacity (scim)SizeBlock ValveLocation (point)Service (point)PSV Tag #Manufacture / Model / SerialSet Pressure (PSI / kPa)Capacity (scim)SizeBlock ValveLocationService (point)PSV Tag #Manufacture / Model / SerialSet Pressure (PSI / kPa)Capacity (scim)SizeBlock ValveLocationService (point)PSV Tag #Manufacture / Model / SerialSet Pressure (PSI / kPa)Capacity (scim)SizeBlock NalveLocationService (point)PSV Tag #Manufacture / Model / SerialSet Pressure (PSI / kPa)Capacity (scim)SizeBlock NalveLocationService (point)PSV Tag #Manufacture / Model / SerialSet Pressure (point)CapacitySizeBlock NalveLocationService (point)SweetSour XOilImage: Service XSairGasImage: Service XSairGalveGalveGalveAmineLPGImage: Service XAirAirGilycol XGilycol XGalveGalveGalveGalveGalveGalveGalveGalveGalveGalveGalveGalveGalveGalveGalveGalveGalveGalve<	X-ray: Nil					Heat treatment: No						
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     PSV Tag #   Manufacture / Model / Serial   Set Pressure (PSI / kPa)   Capacity (scfm)   Size   Block Valve   Location   Service by Date     Service CONDITIONS - INDICATE ALL THAT APPL     Sweet   Sour X   Oil   Gas   Water X     Amine   LPG   Condensate X   Air   Glycol X												
PRESSURE SAFETY VALVE NAMEPLATE DATA     PSV Tag #   Manufacture / Model / Serial   Set Pressure (PSI / kPa)   Capacity (scfm)   Size   Block Valve   Location   Service by Date     Image: Capacity Serial   Set Pressure (PSI / kPa)   Capacity (scfm)   Size   Block Valve   Location   Service by Date     Service CONDITIONS-INDICATE ALL THAT APPLY     Service CONDITIONS-INDICATE ALL THAT APPLY     Sweet   Sour X   Oil   Gas   Water X     Amine   LPG   Condensate X   Air   Glycol X												
PSV Tag #Manufacture / Model / SerialSet Pressure (PSI / kPa)Capacity (scfm)Size $B_{irck}$ ValveLocationService by DateImage: SerialImage: SerialImage												
Serial     (PSI / kPa)     (scfm)     Valve     by Date       Image: Serial     Image: PSI / kPa)     (scfm)     Image: PSI / kPa)     Ima)		PRES	SSURE SAFETY	Y VALV	E NA	MEPLATE DA	ATA					
SweetSour XOilGasWater XAmineLPGCondensate XAirGlycol X	PSV Tag #				2				Location			
SweetSour XOilGasWater XAmineLPGCondensate XAirGlycol X												
Amine LPG Condensate X Air Glycol X		SERVIC	E CONDITION	S-INDI	CAT	E ALL THAT	APPL	Y		<u> </u>		
	Sweet	eet Sour X (		Oil	Dil			Gas		Water X		
Other (Describe):	Amine LPG Co			Cond	ndensate X			Air		Glycol X		
	Other (Describe):											

## Inspection Interval

## \_PSV Service Interval\_

Date

(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\_\_\_\_\_

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	Р	N/A	Comments
<b>Insulation</b> Verify sealed around manways, nozzles, no damage present, and there is no egress of moisture.	x				Tar over foam insulation in good overall condition – small isolated tares
<b>External Condition</b> Assess paint condition, areas peeling, record any corrosion, damage, etc (record location, size and depth of corrosion or damage)			X		Paint in poor condition - Under belly has paint loss and surface corrosion to 100% - pitting to 0.020 inch
<b>Leakage</b> Record any leakage at flanges, threaded joints, weep holes on repads, etc.	x				No leaks observed
<b>Saddle/skirt</b> 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 in good overall condition: bolted directly to skid frame – no buckling or dents – no corrosion or leaks at attachment welds – skid sits on wood blocks – ground wire attached to pilings
Anchor Bolts Hammer tap to ensure secure. Look for cracking in treads or signs of deformation.	x				Vessel is securely welded to skid frame – no sign of deformation
<b>Concrete foundation</b> Check for cracks, spalling, etc.				X	None
Ladder / Platform Describe general condition, ensure support is secure to vessel, and describe any hazards.				X	None
<b>Nozzle</b> Assess paint, look for leakage, and ensure stud threads are fully engaged. Record any damage, deflection, etc. Are nozzles gusseted?		X			Nozzle paint in poor condition – drain nozzle paint loss and surface corrosion to 100%– all stud threads fully engaged – no leaks – no damage or deflection – nozzles are not gusseted
<b>Gauges</b> Ensure gauges are visible, working, no leakage, and suitable for range of MAWP/ Temp.				X	No gauges
<b>External Piping</b> 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 in place – no evidence of structural overload – no deflection – paint in good condition – no corrosion
<b>Valving</b> Ensure no leaks are visible. Valves are properly supported and chained if necessary.	x				Valves properly supported – no sign of leaking
<b>PSV</b> 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) Other				X	Unable to Perform UT inspection at this time due to Heavy External Corrosion.

**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. Vessel needs to be cleaned up and Painted. 2. Schedule for Internal Inspection. Summary: This vessel is in fair condition, visual external inspection carried out.

Vessel is fit for service.

