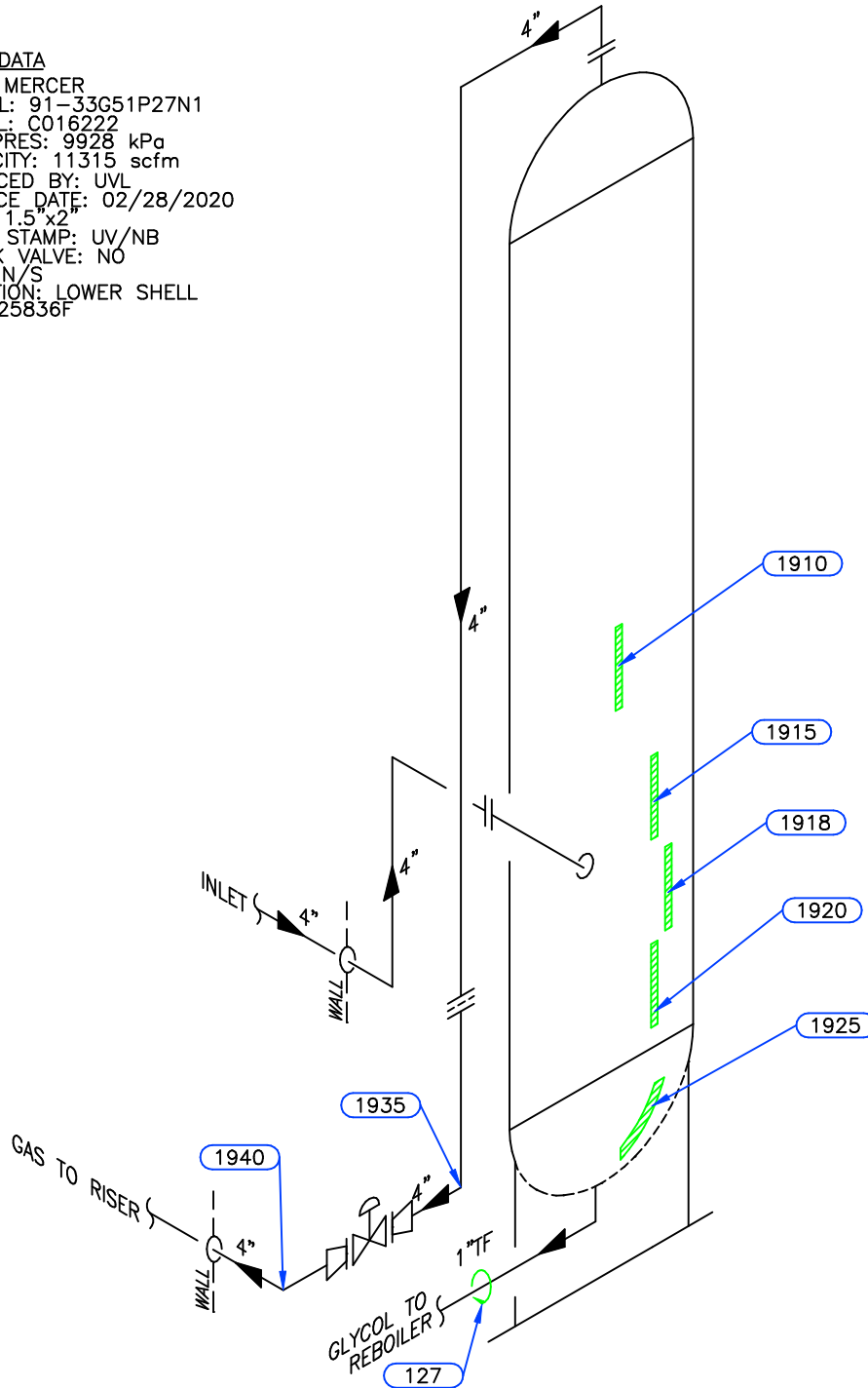


PSV DATA

MFG: MERCER
 MODEL: 91-33G51P27N1
 SERIAL: C016222
 SET PRES: 9928 kPa
 CAPACITY: 11315 scfm
 SERVICED BY: UVL
 SERVICE DATE: 02/28/2020
 SIZE: 1.5' x 2'
 CODE STAMP: UV/NB
 BLOCK VALVE: NO
 CRN: N/S
 LOCATION: LOWER SHELL
 TAG: 25836F



Equip. No. _____ Prov. Reg. No. Ⓐ C 35011 C.R.N. P-0620.21 Serial No. 032157-101 Yr. Inst. _____
 Code/Div. ASME VIII, DIV 1 Size: 24in x 24ft Manufacturer: PROPAK SYSTEMS Yr. Blt. 2003
 C. Stamp: _____ Service: SOUR PWHT: HT Radiography: RT-1 Insulated: NO

Design & Materials Data

HEAD:
 Top Mat'l. SA 516 70N Top Nom. 24.3mm Top C.A. 3.2mm
 Btm. Mat'l. SA 516 70N Btm. Nom. 24.3mm Btm. C.A. 3.2mm

CHANNEL:
 Material: _____ Nominal: _____ C.A. _____

BOOT
 Head Mat'l. _____ Head Nom. _____ Head C.A. _____
 Shell Mat'l. _____ Shell Nom. _____ Shell C.A. _____

SHELL
 Material: SA 516 70N Nominal: 25.4mm C.A. 3.2mm

MAWP Shell Side: 10204 kPa @ Temp. 38°C
 MAWP Tube Side: _____ @ Temp. _____

CLIENT	CANADIAN NATURAL RESOURCES LTD	
FACILITY	PEE JAY SOLUTION	
	LSD d-39-E/94-A-16	
ITEM	GLYCOL CONTACTOR	
BY: KB/AN	DATE: 01/2015	DWG.# 12A

UTS DATA

CLIENT: CANADIAN NATURAL RESOURCES LTD
EQUIPMENT: GLYCOL CONTACTOR
CRN#: P-0620.21
PROV REG: C 35011
TESTED ON STREAM

FACILITY: PEE JAY SOLUTION
SERVICE: SOUR
LOCATION: d-39-E/94-A-16
RTD JOB #: 4025400
REFER TO DRAWING: 12A

Test Point	THICKNESS DATA				Flag	T-Min	C.A.	Nom.	Short Term	Long Term	Ave. mm/py	Retirement Date
1910												
Description: MID SHELL												
	2015	1	2021	2								
Min. Thick.	25.1		23.9		22.20	21.9	3.2	25.40	.2	.2		
Average:	25.3		24.3						.16	.16		2031
Analysis:												
1915												
Description: MID SHELL												
	2015	1	2021	2								
Min. Thick.	25.8		22.4		22.20	21.9	3.2	25.40	.56	.56		
Average:	26		22.8						.53	.53		2022
Analysis: 02/2021 MIN SCAN AT MID BAND.												
1918												
Description: LOWER SHELL												
	2021	2										
Min. Thick.	23				22.20	21.9	3.2	25.40				
Average:	23.7								0	0		2029
Analysis: 02/2021 MIN SCAN AT MID BAND.												
1920												
Description: LOWER SHELL												
	2015	1	2021	2								
Min. Thick.	26.6		26.4		22.20	21.9	3.2	25.40	.03	.03		
Average:	26.8		26.6						.03	.03		2156
Analysis:												
1925												
Description: BOTTOM HEAD												
	2015	1	2021	2								
Min. Thick.	24.9		24.5		21.10	21.1	3.2	24.30	.07	.07		
Average:	25.2		24.9						.05	.05		2072
Analysis: 02/2021 MIN SCAN AT NOZZLE.												
1927												
Description: 1" CIRC NOZZLE												
	2015	1	2021	2								
Min. Thick.	8.7		8.6		3.20	2.5	3.2	6.40	.02	.02		
Average:	8.9		8.8						.02	.02		2387
Analysis: 02/2021 THICKNESS CALCULATIONS CARRIED OUT TO 1.2mm. API 510 REFERENCES 2.5mm AS MINIMUM THICKNESS REQUIRED FOR PRESSURE VESSELS AND PIPING.												

UTS DATA

CLIENT: CANADIAN NATURAL RESOURCES LTD
EQUIPMENT: GLYCOL CONTACTOR PIPING
CRN#:
PROV REG:
TESTED ON STREAM

FACILITY: PEE JAY SOLUTION
SERVICE: SOUR
LOCATION: d-39-E/94-A-16
RTD JOB #: 4025400
REFER TO DRAWING: 12A

Test Point	THICKNESS DATA				Flag	T-Min	C.A.	Nom.	Short Term	Long Term	Ave. mm/py	Retirement Date
1935												
Description: 4" 90° ELBOW												
	2015	1	2021	2								
Min. Thick.	7.6		7.5		7.53	4.1	1.1	8.60	.02		.02	
Average:	7.8		7.6						.03		.03	
Analysis: RETIREMENT DATE 2225.												
<hr/>												
1940												
Description: 4" 90° ELBOW												
	2015	1	2021	2								
Min. Thick.	7.6		7.6		7.53		1.1	8.60	0		0	
Average:	7.8		7.8						0		0	
Analysis:												
<hr/>												
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**Canadian Natural Resources Limited
GENERAL PRESSURE VESSEL INFORMATION**

Job 4025400

District: Fort Saint John, BC		Skid No.					
Facility: Pee Jay Solution Gas		Location (LSD): d-39-E / 94-A-16					
Vessel Name Equipment Number: Glycol Contactor							
Orientation: Vertical							
Status: In Service		Regulatory Inspection					
PRESSURE VESSEL NAMEPLATE DATA							
"A" or "G" or "S" (Sask.) or BC Registration Number. C35011		CRN Number: P 6020.21					
Vessel serial number: 032157-101		Size: 24 in x 24 ft.					
Shell thickness: 25.4 mm		Shell material: SA 516 70N					
Head thickness: 24.3 mm		Head material: SA 516 70N					
Tube wall thickness:		Tube material:					
Tube diameter:		Tube length:					
Channel thickness:		Channel material:					
Design pressure	Shell: 1480 PSI	Design pressure	Shell:				
	Tubes:		Tubes:				
Design Temp.	Shell: 100°F	Design Temp.	Shell:				
	Tubes:		Tubes:				
X-ray: RT 1		Heat treatment: Yes					
Code parameters: ASME VIII, Div 1		Coated: No					
Manufacturer: Propak Systems		Year built: 2003					
Corrosion allowance: 3.2 mm		Man way: No					
PRESSURE SAFETY VALVE NAMEPLATE DATA							
PSV Tag Shell	Manufacture // Model // Serial	Set Pressure (PSI / kPa)	Capacity (scfm / usgpm)	Block Valve	Size	Location	Service by / Date
25836F	Mercer / 91-33G51P27N1 / C016222	1440 PSI	11315 scfm	No	1.5 x 2	Lower shell	Feb 28, 2020
SERVICE CONDITIONS-INDICATE ALL THAT APPLY							
Sweet X	Sour	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 Canadian Natural Resources Limited'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				Vessel is insulated outside skid – insulation wrap – no exposed areas.
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 general condition – no exposed metal.
Leakage Record any leakage at flanges, threaded joints, weep holes on repads, etc.	X				No leaks.
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				Skirt is in good condition – no buckles or distortion. No corrosion at skirt to head area – no leaks. Ground attached to skid.
Anchor Bolts Hammer tap to ensure secure. Look for cracking in treads or signs of deformation.	X				Firmly bolted to skid deck.
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 flanged and threaded fittings are fully engaged – No short studs. No deflection – no leaks. Paint is in good condition – no corrosion.
Gauges Ensure gauges are visible, working, no leakage, and suitable for range of MAWP/ Temp.	X				Pressure gauge: No pressure gauge. Temperature gauge: 0 to 250 deg F.
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 deflection, all clamps and supports are in place. Paint is in good condition – no corroded areas.
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.	X				Located on lower shell – set below MAWP of vessel. Discharge piping is the same size as the outlet to PSV. No block valve present. Seal is intact. PSV vents to closed header.


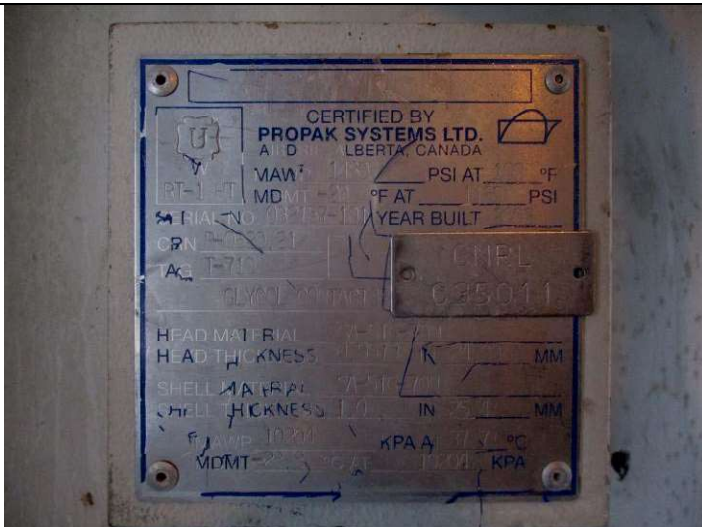


<p>NDE methods Was UT/ MPI done on vessel (MI coordinator to review results)</p>	X			<p>Ultrasonic corrosion survey carried out - pipe metal thickness detected below nominal thickness detected below nominal minus corrosion allowance. There is an increased rate of corrosion at the seal pan area – UT point 1915 – Min thickness is 22.4 mm / nominal thickness is 25.4 mm. In 2010 the minimum thickness was 25.8 mm. UT point 1935 (4” Elbow) – nominal thickness is 8.6mm / min thickness is 1.1mm / T min thickness is 4.1mm.</p>
<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) Recommendations: 1. Monitor corrosion on regular set frequency. 2. Plan for a caustic wash on this contactor – it appears that the seal pan may have an amount of solids built up inside the ring causing under deposit corrosion. Summary: This vessel is in good condition, visual external and ultrasonic thickness inspection carried out – accelerated corrosion rate from 2015 inspection. Corrosion rate based on greatest thickness loss – min thickness is 22.4 mm / thickness in 2015 was 25.8 mm = loss of 3.4 mm in 6 years = .556 mm per year = T min based on MAWP (1480 PSI) is 21.6 mm = retirement date of yr 2022. Vessel is fit for service.</p>				

[Signature] API 20981 / IBPV 275

Inspected By: Dellas Wiedman

Date: Feb 1, 2021

Photo Table

	
<p>LSD</p>	<p>Data Plate</p>
	
<p>Overview</p>	<p>Overview</p>



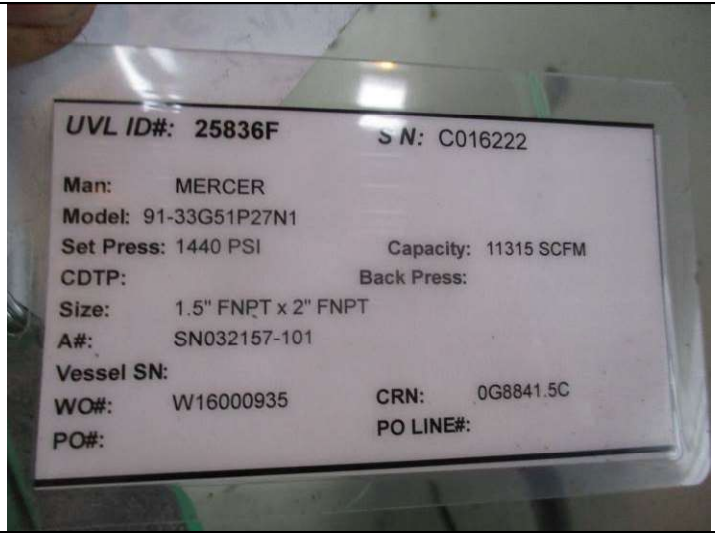
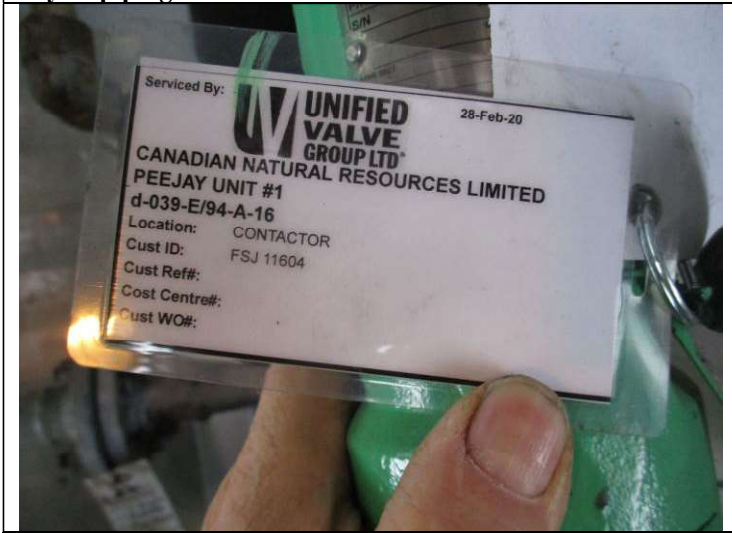
Anchor bolts

Temperature gauge



Glycol piping

PSV



PSV Service Tag

PSV Service Tag

Serviced By: **UNIFIED VALVE GROUP LTD.** 28-Feb-20
CANADIAN NATURAL RESOURCES LIMITED
 PEEJAY UNIT #1
 d-039-E/94-A-16
 Location: CONTACTOR
 Cust ID: FSJ 11604
 Cust Ref#:
 Cost Centre#:
 Cust WO#:

UVL ID#: 25836F S N: C016222
 Man: MERCER
 Model: 91-33G51P27N1
 Set Press: 1440 PSI Capacity: 11315 SCFM
 CDTP: Back Press:
 Size: 1.5" FNPT x 2" FNPT
 A#: SN032157-101
 Vessel SN:
 WO#: W16000935 CRN: 0G8841.5C
 PO#: PO LINE#: