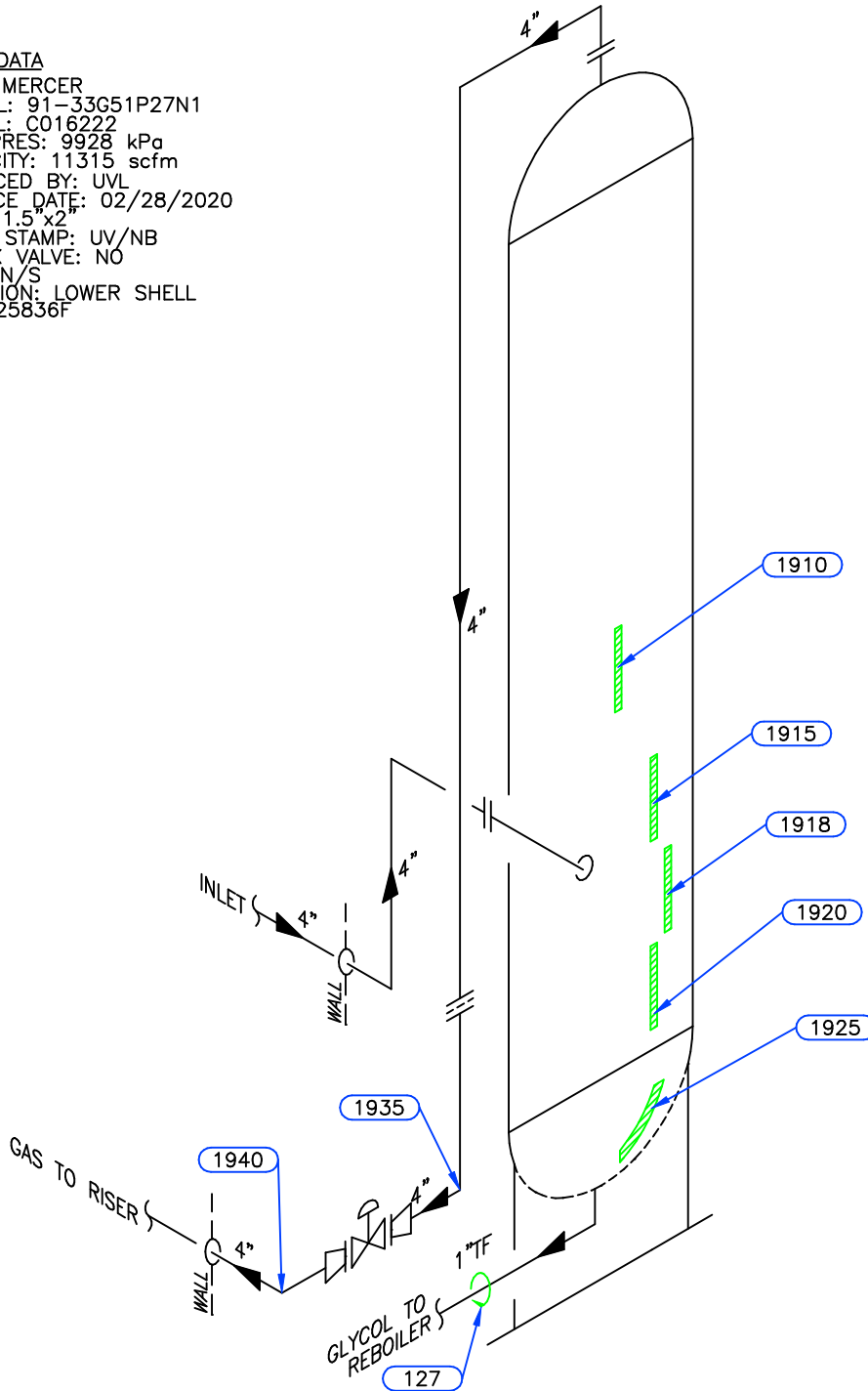


**PSV DATA**

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. **A** 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. Bld. 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
<b>1910</b>												
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:												
<b>1915</b>												
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.												
<b>1918</b>												
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.												
<b>1920</b>												
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:												
<b>1925</b>												
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.												
<b>1927</b>												
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

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Test Point	THICKNESS DATA				Flag	T-Min	C.A.	Nom.	Short Term	Long Term	Ave. mm/py	Retirement Date
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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.

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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:

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

**Job 4025400**

District: <b>Fort Saint John, BC</b>	Skid No.
Facility: <b>Pee Jay Solution Gas</b>	Location (LSD): <b>d-39-E / 94-A-16</b>
Vessel Name Equipment Number: <b>Glycol Contactor</b>	
Orientation: <b>Vertical</b>	
Status: <b>In Service</b>	<b>Regulatory Inspection</b>

**PRESSURE VESSEL NAMEPLATE DATA**

"A" or "G" or "S" (Sask.) or BC Registration Number. <b>C35011</b>		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
<b>25836F</b>	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


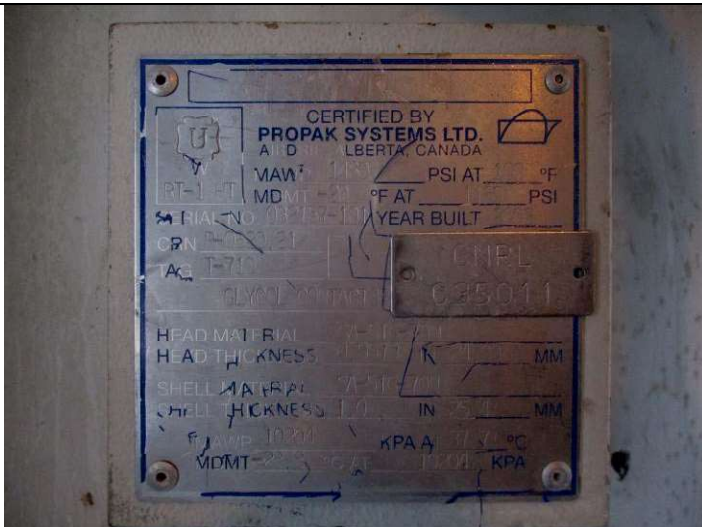


External Inspection Items	G	F	P	N/A	Comments
<b>Insulation</b> Verify sealed around manways, nozzles, no damage present, and there is no egress of moisture.	X				<b>Vessel is insulated outside skid – insulation wrap – no exposed areas.</b>
<b>External Condition</b> Assess paint condition, areas peeling, record any corrosion, damage, etc (record location, size and depth of corrosion or damage)	X				<b>Paint in good general condition – no exposed metal.</b>
<b>Leakage</b> Record any leakage at flanges, threaded joints, weep holes on repads, etc.	X				<b>No leaks.</b>
<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				<b>Skirt is in good condition – no buckles or distortion. No corrosion at skirt to head area – no leaks.  Ground attached to skid.</b>
<b>Anchor Bolts</b> Hammer tap to ensure secure. Look for cracking in treads or signs of deformation.	X				<b>Firmly bolted to skid deck.</b>
<b>Concrete foundation</b> Check for cracks, spalling, etc.				X	<b>None.</b>
<b>Ladder / Platform</b> Describe general condition, ensure support is secure to vessel, and describe any hazards.				X	<b>None.</b>
<b>Nozzle</b> Assess paint, look for leakage, and ensure stud threads are fully engaged. Record any damage, deflection, etc. Are nozzles gusseted?	X				<b>All flanged and threaded fittings are fully engaged – No short studs. No deflection – no leaks. Paint is in good condition – no corrosion.</b>
<b>Gauges</b> Ensure gauges are visible, working, no leakage, and suitable for range of MAWP/ Temp.	X				<b>Pressure gauge: No pressure gauge. Temperature gauge: 0 to 250 deg F.</b>
<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				<b>Piping is well supported; no deflection, all clamps and supports are in place. Paint is in good condition – no corroded areas.</b>
<b>Valving</b> Ensure no leaks are visible. Valves are properly supported and chained if necessary.	X				<b>Well supported – no leaks.</b>
<b>PSV</b> Ensure PSV is set at pressure at or below that of vessel.	X				<b>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.</b>

<p><b>NDE methods</b> Was UT/ MPI done on vessel (MI coordinator to review results)</p>	X			<p><b>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.</b></p>
<p><b>Recommendations or corrective actions: (Vessel is Fit for Service or describe corrective actions required)</b>  (MIC to review corrective actions with Operations, discuss with Chief Inspector where necessary, and get remedial action implemented)  <b>Recommendations:</b> 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.  <b>Summary:</b> This vessel is in good condition, visual external and ultrasonic thickness inspection carried out – accelerated corrosion rate from 2015 inspection.  <b>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.</b>  <b>Vessel is fit for service.</b></p>				

*[Signature]* API 20981 / IBPV 275  
**Inspected By:** Dellas Wiedman

**Date:** Feb 1, 2021

Photo Table

	
<p><b>LSD</b></p>	<p><b>Data Plate</b></p>
	
<p><b>Overview</b></p>	<p><b>Overview</b></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#: