

Existing Equipment Integrity Assessment Report

S-5

Date July 2023

Page 1 of 1

Inspect Date: July 27, 2023	Client: Yoho Resources	District: Inga, BC	LSD: 10-19-087-23W6
Facility:	Client Ref #	IRM Ref #	P003/P004
Equipment #: S-5	Description: Fuel Gas Scrubber	Jur# N/A	CRN: L9476.213
MFR: Larsen & D'Amico	Mfr S/N: S-14287	Mfr Date: 2009	Status: Operating

Fit for Service: Yes Suitable for Service: Yes PSV meets Code: Yes PSV set at or below MAWP: Yes
 Online PSV Inspection has been completed: Yes
 PSV Capacity Verified: N/A
 Repair / Alteration / PSV Calibration Required: No

Current Inspection Results

2023-07 II UT completed by RJC Integrity
 II | The vessel is located inside the Waukesah H24GL Comp Skid (#050954-01)
 The nameplate is securely attached to the nameplate bracket and is legible. The ground cable is securely connected to the skid.
 The external surfaces of the vessel are painted. The paint is in new-like condition. No corrosion or deformations were visible on the shell of the vessel. No cracks or deterioration were identified in the vessel welds. The vessel is anchored to brackets that are welded to the skid floor. The welds do not appear cracked or corroding, and the skirt adequately supports the vessel. The anchor bolts are right and secure. Only a single nut is present on teach anchor bolt. The piping systems are adequately supported. The valves appear to work correctly; no leaks were identified from the valves or piping connections. The gauges are easily legible, and no leaks were identified from the gauges. The caulking around the PSV outlet piping has failed.
 UT | No concerns noted
 PSV | The PSV has a nameplate securely attached with the ASME UV designator; it is correctly installed in the vertical position, supported, and piped to a safe location. The seal is intact and set at or below the MAWP of the vessel. The serial number listed on the nameplate matches the serial number listed on the service tag.
 Assessment completed by Aaron Bischoff | UT readings above Nom-C.A and MIL tolerance Tmin (12.5%),. No issues or concerns noted. FGS 10 year / 120 month acceptable. AJB.
 VE reviewed; no major concerns noted. AJB

Past PSV Servicing Results

SN C044094 2020-09 serviced by unified Valve. PSV Service report reviewed using PSV assessment calculator. PSV serviced by Unified Valve Fort St John. No issues or concerns at time of servicing, suggested interval of 5 years / 60 months. AJB

Past Inspection History Results

No historical inspections

NEXT NDE & Inspection Methods

<input checked="" type="checkbox"/> VE 2028	<input type="checkbox"/> VI	<input checked="" type="checkbox"/> UT 2033	<input type="checkbox"/> BW
<input type="checkbox"/> WF	<input type="checkbox"/> LF	<input type="checkbox"/> ET	<input type="checkbox"/> HIC
<input type="checkbox"/> CREEP	<input type="checkbox"/> BHN	<input type="checkbox"/> CDR	<input type="checkbox"/> MFL

Other:

Previous Inspection Plan

No historical ITP

Next Inspection Plan

Expected damage mechanisms and locations: General Erosion / Corrosion. Localized pitting possible.
 Primary Areas of degradation: Bottom head and piping elbows.
 NDE examinations (type & extent): VE on 5-year Interval – due July 2028; UT on 10-year DUE July 2033
 Preparation for next inspection: None
 PSV: Last service September 2020, report reviewed. Next PSV service due September 2025

Qualified

Inspector: Aaron Bischoff Qual: IBPV#644

Signature:



Report date: 20-Nov-2023 status: Final



Installation Inspection Report

Report No:

Inspect Date: July 27, 2023				Client: Yoho Resources				District: Inga, BC				LSD: 10-19-087-23W6			
Facility:				Client Ref #				IRM Ref #							
Equipment #S-5				Description: Fuel Gas Scrubber				Jur# N/A				CRN L9476.213			
MFR: Larsen & D'Amico				Mfr S/N: S-14287				Mfr Date: 2009				Status: Operating			
Vessel	Orien	Lth/ht	OD	Code	MAWP	MAWT	MDMT	@	NOP	NOT	HT	RT			
	Vert	36"	8"	U	150	200	-20	150	145		Yes	None			
	Ext Ins. No				Int. coating:				Process conditions: Sweet Gas/Condensate				Manway: N/A		
Shell	Material	Nom	C/A	T/L	Material	Nom	C/A	Form	B/R	Material	Nom	C/A	Form		
	CS	0.250"	0.063"	Head	CS	0.500"	0.063"	FB	Head	CS	0.500	0.063	FB		
PSV # 11 Yoho		MFR: Mercer				Mfr S/N: C044094				Mfr Date: 05/17		Make/Model: 85-17151V09N11			
CRN 0G8841.5CR 1		Set 150psi		Cap 606scfm		Code UV/NB		Serv Co. Unified		Serv Tag 32520F		Last Serv Sep 2020			
	Size	Type	# Rating	Block Valve		Locked/Carsealed									
Inlet	1.0"	Thread	N/A	No				Location: Piping							
Outlet	1.0"	Thread	N/A	No				Vented to: Atmosphere							
PSV #		MFR:				Mfr S/N:				Mfr Date:		Make/Model:			
CRN		Set		Cap		Code		Serv Co.		Serv Tag		Last Serv			
	Size	Type	# Rating	Block Valve		Locked/Carsealed									
Inlet								Location:							
Outlet								Vented to:							

NOTE: All measurement are in metric, unless specifically noted – Pressure **kPa**, Temp **C**, Length/OD/Thk **mm**

EXTERNAL INSPECTION

Vessel			PSV			Piping & Instrumentation		
Item	Inspected	Disposition	Item	Inspected	Disposition	Item	Inspected	Disposition
Nameplate	Yes	Good	Properly supported	Yes	Good	Proper material	Yes	Good
Heads	Yes	Good	Nameplate	Yes	Good	Proper schedule	Yes	Good
Shell	Yes	Good	Service tag	Yes	Good	Proper flanges	N/A	
Insulation/cladding	N/A		Cap Seal	Yes	Good	Piping condition	Yes	Good
Coating	Yes	Good	Body - external	Yes	Good	Strains	Yes	Good
Supports/skirts	Yes	Good	Drainage	Yes	Good	Bolting	Yes	Good
Anchors	Yes	Good	Block valves	N/A		Supports/hangers	Yes	Good
Pads/foundations	Yes	Good	Locks/Carseals	N/A		Insulation	N/A	
Grounding	Yes	Good	SUMMARY			Coating/fireproofing	N/A	
Nozzles	Yes	Good				Instrumentation	N/A	
Bolting	N/A					Pumps & motors	N/A	
Cathodic protection	N/A					Gauges & recorders	Yes	Good

Fit for Service: Yes Suitable for Service: Yes PSV meets Code: Yes PSV set at or below MAWP: Yes

PSV Capacity Verified: **Client to verify.**

Repair / Alteration / PSV Calibration Required No **No issues noted.**

Vessel

NOTE: All measurements are in Imperial Units unless otherwise noted. Pressure (PSI), Temperature (deg F), Length/OD/Thickness Inches (IN).

The vessel is located inside the Waukesah H24GL Comp Skid (#050954-01)

The nameplate is securely attached to the nameplate bracket and is legible. The ground cable is securely connected to the skid.

The external surfaces of the vessel are painted. The paint is in new-like condition. No corrosion or deformations were visible on the shell of the vessel. No cracks or deterioration were identified in the vessel welds.

The vessel is anchored to brackets that are welded to the skid floor. The welds do not appear cracked or corroding, and the skirt adequately supports the vessel. The anchor bolts are right and secure. Only a single nut is present on each anchor bolt.

The piping systems are adequately supported. The valves appear to work correctly; no leaks were identified from the valves or piping connections.

The gauges are easily legible, and no leaks were identified from the gauges.

The caulking around the PSV outlet piping has failed.

PSV

The PSV has a nameplate securely attached with the ASME UV designator; it is correctly installed in the vertical position, supported, and piped to a safe location. The seal is intact and set at or below the MAWP of the vessel. The serial number listed on the nameplate matches the serial number listed on the service tag.

Inspector: Ryan Cadieux

Qual: ISI# 001279

Signature:

Report
date: 27-Jul-2023Report
status: Final

Report No:

ADDITIONAL NOTES & PHOTOS



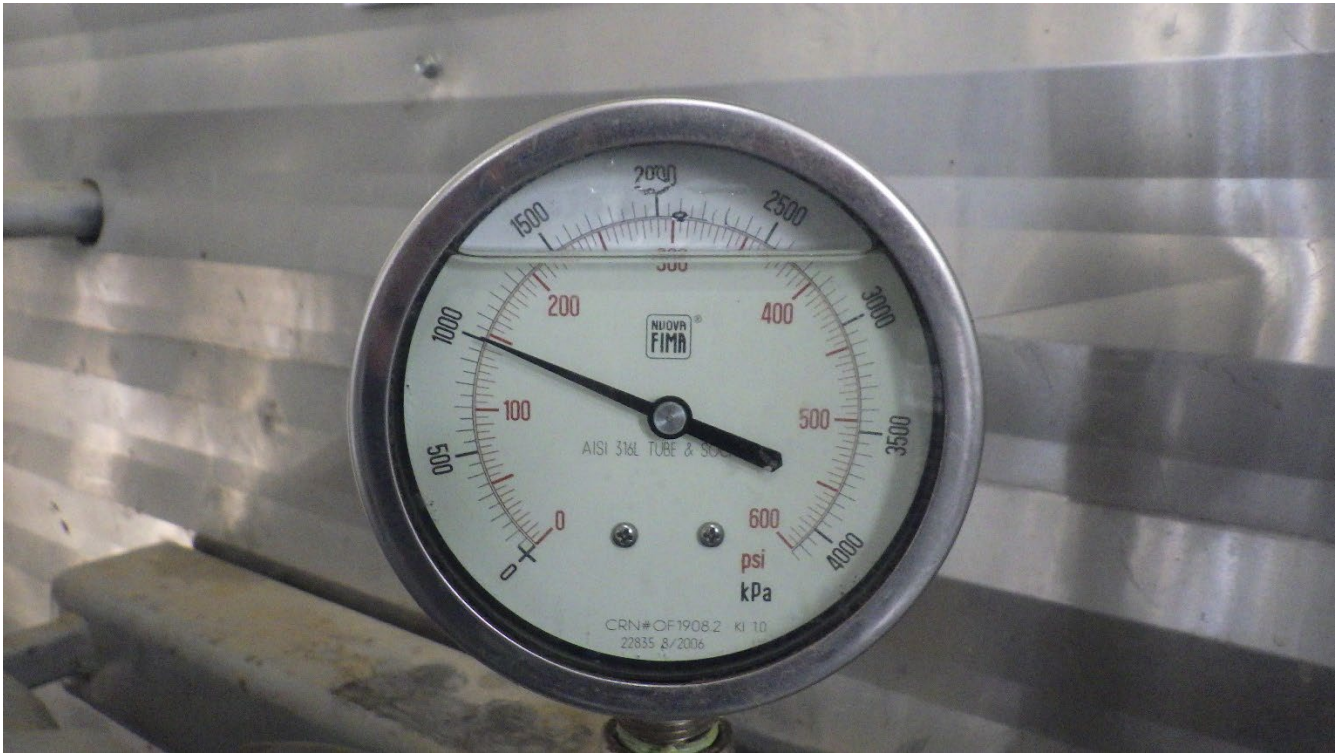
Report No:



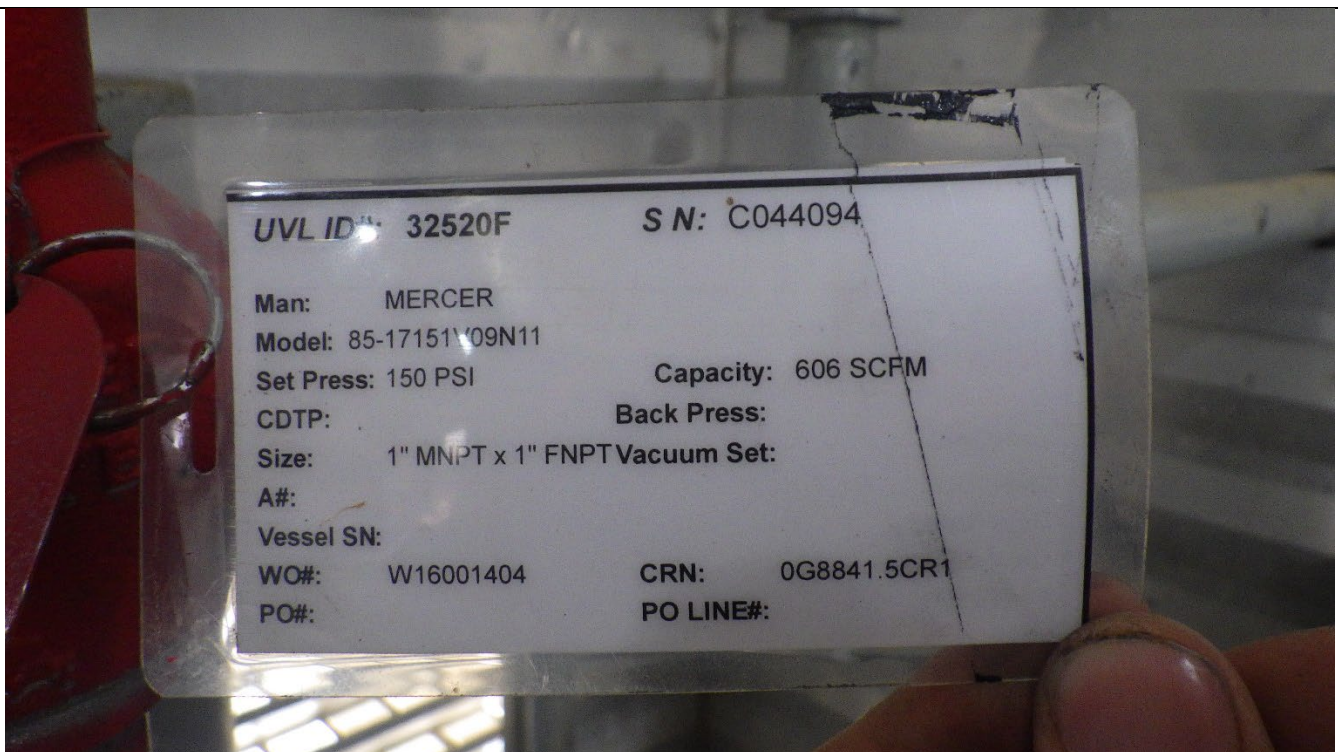
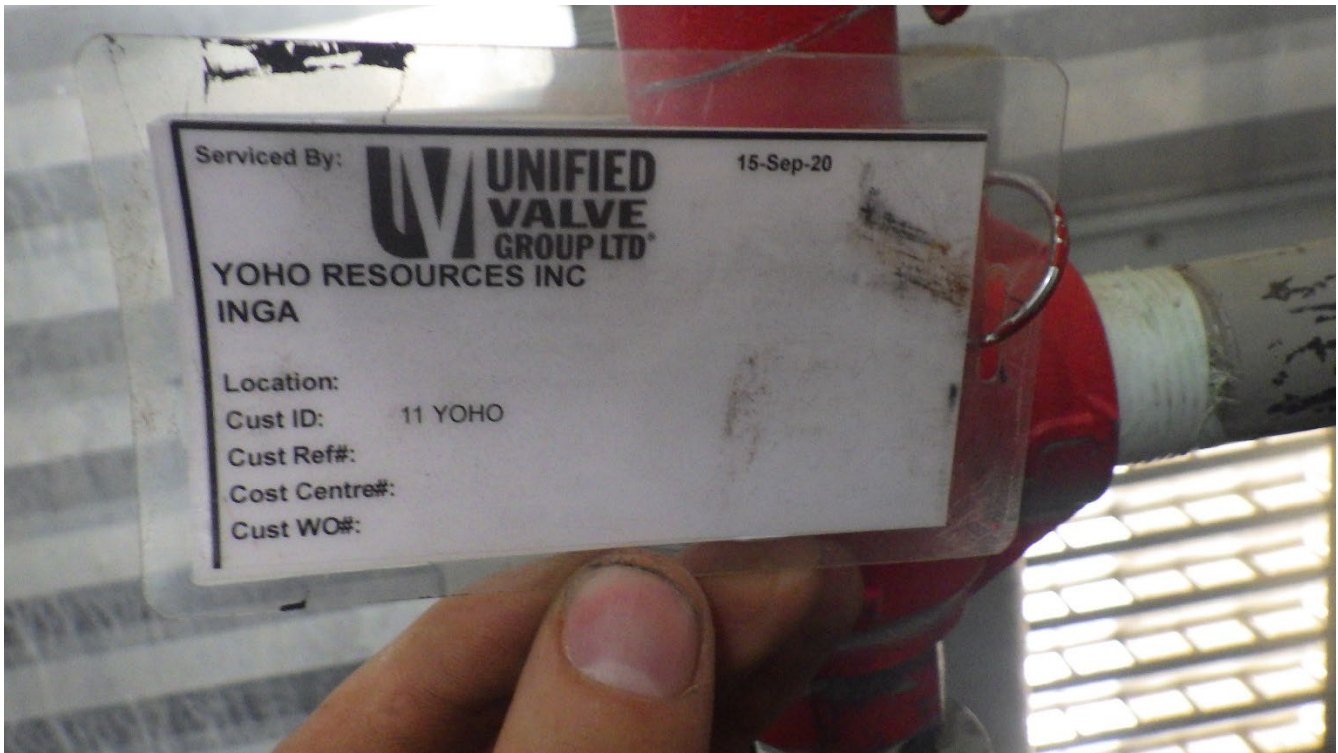
Report No:



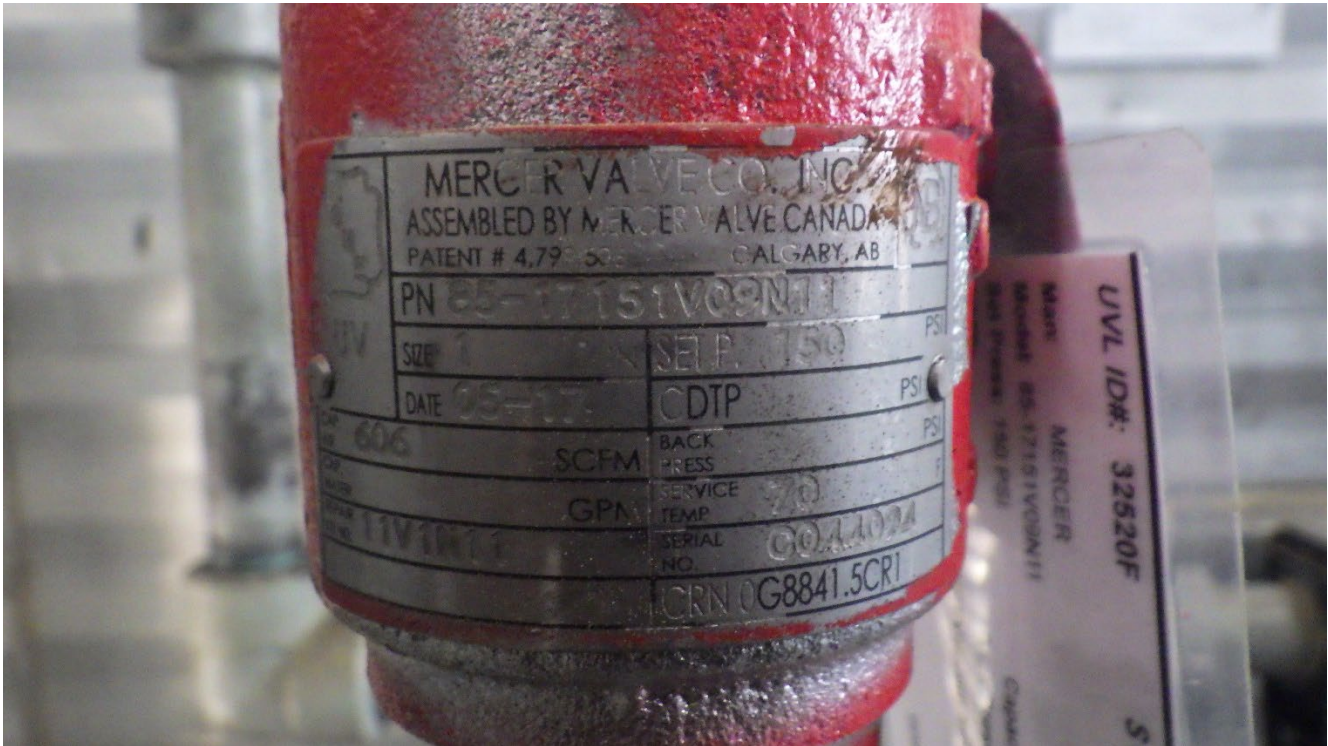
Report No:



Report No:



Report No:



Report No:





Corrosion Survey Report

(780) 242-2204
RyanC@RJCIntegrity.com
www.RJCIntegrity.com

Client: Yoho Resources Date: Thursday, July 27, 2023	SN.S-14287 - UT - 001 - RC
---	-----------------------------------

Work Location: Inga, BC Examination Standard: ASME V Article 4 - 2021 Acceptance Standard: Client's Spec. RJC Procedure: RJC-UT-001 Rev.0	Scanning Surface: O.D. Material: Carbon Steel Surface Condition: Painted Temperature: Ambient	Job No.: 2023-0033 P.O. No.: W.O. No.: Other:
--	--	--

Instrument: Olympus Model: Epoch 600 Serial No.: 140708306 Cal Due Date: Monday, January 15, 2024	Couplant: UTX Calibration Block: C.S. Step Wedge Serial No. 3886-20 Calibration Block: Scanning Limitation: See comments below
--	---

Probe	Ser. No.	Angle	MHz	Crystal Size / Type	Primary Ref. Reflector / Amp. / Distance / dB	Scan Sens.	Calibrated Range
V-110	180002	0°	5 MHz	0.500" / Single	1st Back wall	As required	0.100" - 1.000"

Purpose: To perform an ultrasonic thickness survey. Results: Refer to attached pages for recorded data. Notes: 1. Thickness readings do NOT include paint thickness. 2. * = Assumed nominal thickness 3. Piping wall loss between 12.6% - 30% = Caution 4. Piping wall loss greater then 30% = Urgent	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="6" style="background-color: #f4a460;">VESSEL DATA</th></tr> <tr> <th colspan="6" style="background-color: #f4a460;">Vessel Description: Fuel Gas Scrubber</th></tr> <tr> <td style="width: 15%;">A No.:</td><td style="width: 15%;">N/A</td><td style="width: 15%;">Vessel ID:</td><td style="width: 15%;">N/S</td><td style="width: 15%;">Manufacturer:</td><td style="width: 30%;">Larsen & D'Amico</td></tr> <tr> <td>CRN No.:</td><td>L9476.213</td><td>Year Built:</td><td>2009</td><td>District:</td><td>Inga, BC</td></tr> <tr> <td>Serial No.:</td><td>S-14287</td><td>C.A.:</td><td>0.063"</td><td>LSD:</td><td>10-19-087-23W6</td></tr> </table>	VESSEL DATA						Vessel Description: Fuel Gas Scrubber						A No.:	N/A	Vessel ID:	N/S	Manufacturer:	Larsen & D'Amico	CRN No.:	L9476.213	Year Built:	2009	District:	Inga, BC	Serial No.:	S-14287	C.A.:	0.063"	LSD:	10-19-087-23W6
VESSEL DATA																															
Vessel Description: Fuel Gas Scrubber																															
A No.:	N/A	Vessel ID:	N/S	Manufacturer:	Larsen & D'Amico																										
CRN No.:	L9476.213	Year Built:	2009	District:	Inga, BC																										
Serial No.:	S-14287	C.A.:	0.063"	LSD:	10-19-087-23W6																										

Interpretation is in accordance with the above mentioned standards, to the best of my professional ability.			
Print: Ryan Cadieux	CGSB/SNT Level: II/II	Reg. No.: 18219	Sign: <i>Ryan Cadieux</i>
Client Representative:			
Print:	Date:	Sign:	

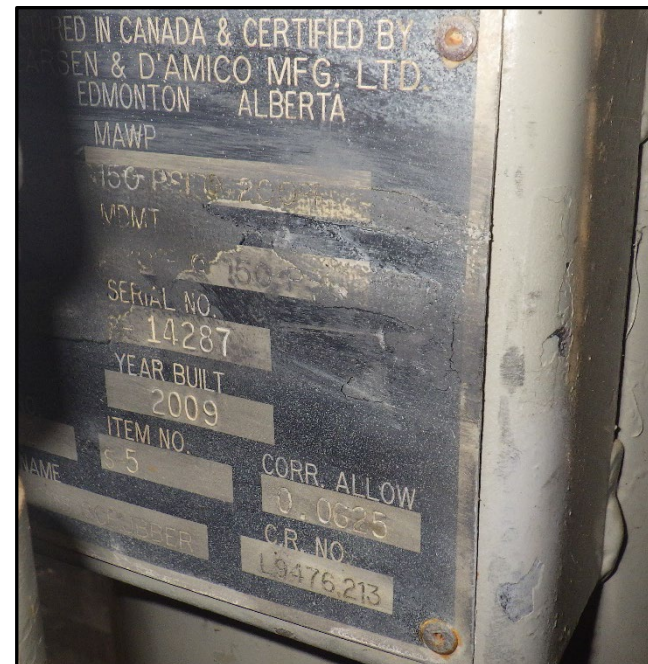
Band ID	Location	Direction	Material	Nominal (in)	CA (in)		Baseline (in)	Previous (in)	Current (in)	% Wall Loss	Tmin (in)	STCR (mpy)	LTCR (mpy)	Years Remaining	
000	Top Shell	T - B	Carbon Steel	0.250	0.063	Year:	2009		2023						Acceptable
						Min:	0.250		0.233	6.80%	0.187	0.00	1.21	20	
						Avg:			0.234						
Comments:															
005	Bottom Shell	T - B	Carbon Steel	0.250	0.063	Year:	2009		2023						Acceptable
						Min:	0.250		0.232	7.20%	0.187	0.00	1.29	20	
						Avg:			0.234						
Comments:															
						Year:									#DIV/0!
						Min:				#DIV/0!	0.000	#DIV/0!	#DIV/0!	#DIV/0!	
						Avg:									
Comments:															
						Year:									#DIV/0!
						Min:				#DIV/0!	0.000	#DIV/0!	#DIV/0!	#DIV/0!	
						Avg:									
Comments:															
						Year:									#DIV/0!
						Min:				#DIV/0!	0.000	#DIV/0!	#DIV/0!	#DIV/0!	
						Avg:									
Comments:															
						Year:									#DIV/0!
						Min:				#DIV/0!	0.000	#DIV/0!	#DIV/0!	#DIV/0!	
						Avg:									
Comments:															

Vessel Overview

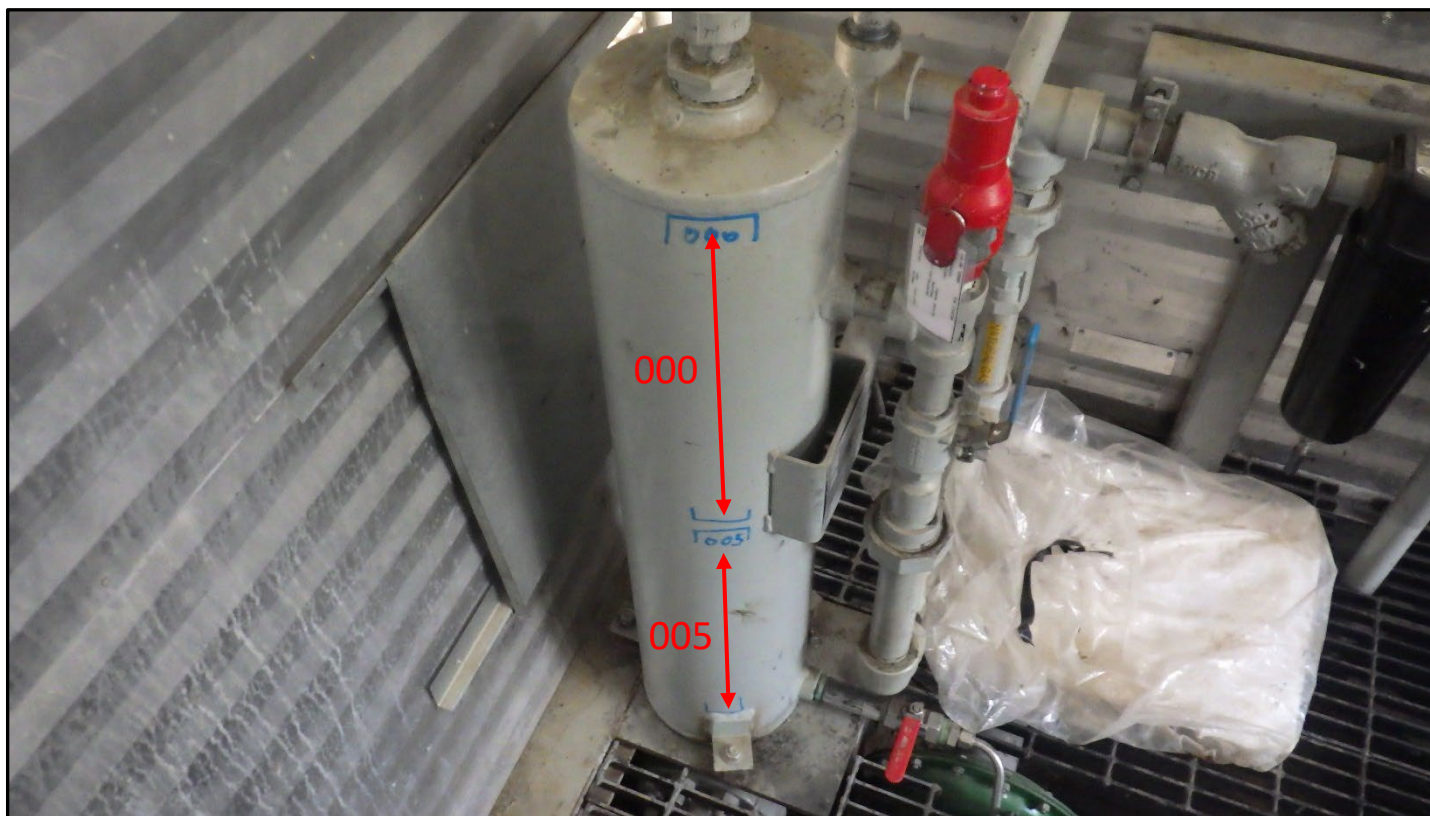




Nameplate



TML Locations





PRV INSPECTION AND TEST REPORT

BRANCH: Fort St John

UVL ID#: 32520F

Work Order: W16001404

Customer PO#:

Customer: YOHO RESOURCES INC

Date: 09/03/2020

Facility: INGA

LSD:

PSV Location:

A#:

Vessel SN:

Cust Id: 11 YOHO

Cust. Ref.:

Valve PO:

PO LINE#:

Cust. WO#:

Cust AFE#:

Cost Centre#:

VALVE DATA

Man.: MERCER Model: 85-17151V09N11 Serial: C044094 Seat: SOFT
 Conn. Threaded Inlet: 1" MNPT Orifice: E Outlet: 1" FNPT Vacuum:
 Set Press. 150 PSI Back Press.: N/A PSI CDT: N/A PSI Temp: 70 F Cap: 606 SCFM
 Lift Lever ☐ Cap Assembly: Closed RFID: Code Symbol: UV CRN#: 0G8841.5CR1

CUSTOMER INSTRUCTIONS

Instructions: Full Service Pretest Required? ☒ Reset Required? ☐

CONDITION AS RECEIVED

Visual Condition: Fair Data Plate Condition: OK Date of last service: 10/2017
 Seal Condition: Top: Intact Bottom: N/A Insignia: UVL Fittings Attached: Inlet: ☐ Outlet: ☐
 Inlet: Carbon Inlet Plugged: ☐ Outlet: Good Outlet Plugged: ☐ Initial Insp. Signoff: K-anna Jobson

PRETEST 1

Simmer: 153 PSI Set Press: 154 PSI Reseat: 123 PSI Leakage: 0 BPM Test Gauge: FSJ9/10
 Tested By: Sean Moore Pretest Comments:

PRETEST 2

Simmer: Set Press: Reseat: Leakage: Test Gauge: FSJ9/10
 Tested By: Pretest Comments:

COMPONENTS INSPECTION

(0 Like New / 1 Minor / 2 Medium / 3 Major)

ITEM	CLEAN	OLY	RUSTY	CARBON	PITTED	CORRODED	SCALE	VIBRATION	GROOVED	DENTED	GALLING	GOUNDED	OTHER	Machined	Lapped	Polished	Replaced	Replace Next Service	COMMENTS
DISC	1													<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
NOZZLE	1													<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
CAP-LEVER ASSY	1													<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
COMP SCREW and LOCKWASHER	1													<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
AS FOUND: AS LEFT:																			
SPRING and BUTTONG	1													<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SPINDLE / STEM	1													<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
STEM RETAINER	1													<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
DISC HOLDER														<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
GUIDE / UPPER RING	1													<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
LOWER RING														<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
RING PIN(S)														<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
BELLOWS														<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
GASKET / SEALS	1													<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	81-095001
CONNECTION ENDS	1													<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
OTHER														<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

DISC: Min: ACT - NOZZLE: MIN / MAX ACT - SPRING NUMBER:
 Disassembly: Randy Rowsell Inspection: Sean Moore Reassembly: Randy Rowsell

FINAL TEST

Test Medium Air Simmer: 148 PSI Set Pressure: 150 PSI
 Reseat: 121 PSI Leakage Acceptable: ☒ B.P. Test: 60 PSI Vacuum: N/A
 ADJ. RING SETTING (NOTCHES): Upper: N/A Lower: N/A Test Gauge: FSJ9/10 Set Press Def POP
 Tested by: Dale Welsh Date Final Tested: 09/16/2020

FINAL INSPECTION:

SEAL: Top: ☒ Bottom: ☐ End Protectors Installed: ☒ Painted: ☒ Palletized: ☐ Ship Container: ☒ Flex Gaskets Supplied: ☐

Final Inspection: Randy Rowsell

Customer Inspection:

Comments: