

# Existing Equipment Integrity Assessment Report

BPV-066733

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 #	P004
Equipment #: BPV-066733	Description: 3rd Stage Aerial Cooler	Jur# A0552590	CRN: T1804.213
MFR: Air-X-Changers	Mfr S/N: 055572.5	Mfr Date: 2005	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

2023-08 VE UT completed by RJC Integrity  
 VE | The caulking at the piping to building interfaces have failed.  
 UT | No concerns noted  
 PSV | No concerns noted

Assessment completed by Aaron Bischoff | UT readings above Nom-C.A and MIL tolerance Tmin (12.5%),. No issues on concerns noted. 5 year / 60 month acceptable. VE reviewed; no major concerns noted. AJB.  
 VE reviewed; no major concerns noted. AJB.

## Past PSV Servicing Results

SN 493492-4-A10 serviced 2020-09 by Unified Valve. PSV Service report reviewed using PSV assessment calculator. PSV serviced by Unified Valve Fort St John. PSV failed Pre-pop Test suggested Interval 3 years / 36 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 2028	<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 5-year DUE July 2028  
 Preparation for next inspection: None  
 PSV: Last service September 2020, report reviewed. Next PSV service due September 2023

Qualified Inspector: Aaron Bischoff Qual: IBPV#644      Signature:       Report date: 17-Nov-2023      Report status: Final



# Vessel External Inspection

Report No.:


Client	Yoho Resources			Inspector	Ryan Cadieux			Date	July 27, 2023							
District	Inga, BC		Surface LSD	10-19-087-23W6			Downhole LSD									
<b>Vessel Data</b>																
Vessel Description	BPV-066733 – 3rd Stage Aerial Cooler			RT	No		PWHT	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Partial <input type="checkbox"/>								
A# / NB#	A0552590		Serial #	055572.5			CRN #	T1804.213								
Manufacturer	Air-X-Changers			Manway	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Size:									
Owner Tag	N/S		Skid	Comp Skid #050903			OD	Length								
MAWP 1	<input checked="" type="checkbox"/> Shell <input type="checkbox"/> Tube	1650	psi		kPa	MAWT		C	350	F	MDMT		C	-20	F	
MAWP 2	<input type="checkbox"/> Shell <input type="checkbox"/> Tube		psi		kPa	MAWT		C		F	MDMT		C		F	
Operating Pressure			psi		kPa	Operating Temp		C		F	Flange Rating #	900				
Process Conditions:	<input checked="" type="checkbox"/> Sweet <input type="checkbox"/> Sour						Internal Coating:	N/S								
Product:	<input checked="" type="checkbox"/> Gas <input type="checkbox"/> Water <input type="checkbox"/> Air <input type="checkbox"/> Effluent <input type="checkbox"/> Other:															
<b>PSV #1 Data</b>																
Owner ID/Tag	16 Yoho					PSV Location	Piping									
Manufacturer	Farris					Model #	26DA14-120									
Serial #	493492-4-A10					Mfg Date	2006									
CRN #	0G8442.5C					Code	UV/NB									
Set Pressure	1650		<input checked="" type="checkbox"/> psi <input type="checkbox"/> kPa		Service Company Unified											
Capacity	4316	scfm		gpm		Other	Service Date		09/2020		Service Tag #		37347C			
Inlet Size	1.5"	NPS	Type	<input type="checkbox"/> THD <input checked="" type="checkbox"/> FLG #		900	Outlet Size		2.0"	NPS	Type	<input type="checkbox"/> THD <input checked="" type="checkbox"/> FLG #		300		
Inlet Block Valve	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Locked/Sealed			<input type="checkbox"/> Yes <input type="checkbox"/> No		Outlet Block Valve		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Locked/Sealed			<input type="checkbox"/> Yes <input type="checkbox"/> No	
Seal Intact:				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			Properly Supported				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					
Drainage (i.e. pocketed, missing tailpipe):	Satisfactory															
Discharge Piped to (i.e. flare line, pop tank, FKO, atmosphere):	Flare															
PSV General Condition/Comments:	No issues noted.															
<b>PSV #2 Data</b>																
Owner ID/Tag						PSV Location										
Manufacturer						Model #										
Serial #						Mfg Date										
CRN #						Code										
Set Pressure			<input type="checkbox"/> psi <input type="checkbox"/> kPa		Service Company											
Capacity		scfm		gpm		Other	Service Date				Service Tag #					
Inlet Size		NPS	Type	<input type="checkbox"/> THD <input type="checkbox"/> FLG #			Outlet Size			NPS	Type	<input type="checkbox"/> THD <input type="checkbox"/> FLG #				
Inlet Block Valve	<input type="checkbox"/> Yes <input type="checkbox"/> No		Locked/Sealed			<input type="checkbox"/> Yes <input type="checkbox"/> No		Outlet Block Valve		<input type="checkbox"/> Yes <input type="checkbox"/> No		Locked/Sealed			<input type="checkbox"/> Yes <input type="checkbox"/> No	
Seal Intact:				<input type="checkbox"/> Yes <input type="checkbox"/> No			Properly Supported				<input type="checkbox"/> Yes <input type="checkbox"/> No					
Drainage (i.e. pocketed, missing tailpipe):																
Discharge Piped to (i.e. flare line, pop tank, FKO, atmosphere):																
PSV General Condition/Comments:																

# Vessel External Inspection

Report No.:

External Inspection	Good	Fair*	Poor*	N/A	External Inspection	Good	Fair*	Poor*	N/A
Skid Foundation/Supports	X				Ladder(s)/Platforms				X
Insulation/Cladding		X			Gauges				X
Vessel Nameplate	X				Valves				X
Vessel Saddle/Skirt/Supports/Bolts	X				Piping	X			
Vessel Paint/Coating	X				Flanges/Bolting (per Code)	X			
Vessel Shell				X	Piping Support	X			
Vessel Head	X				Catadyne Heaters (zip ties)				X
Nozzles	X				Surface Staining of Ground	X			
Pig Traps (ie evidence of hammering)				X	Signage (i.e. stand alone)				X
Regulators Vented	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				Vessel/Skid Grounded	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			

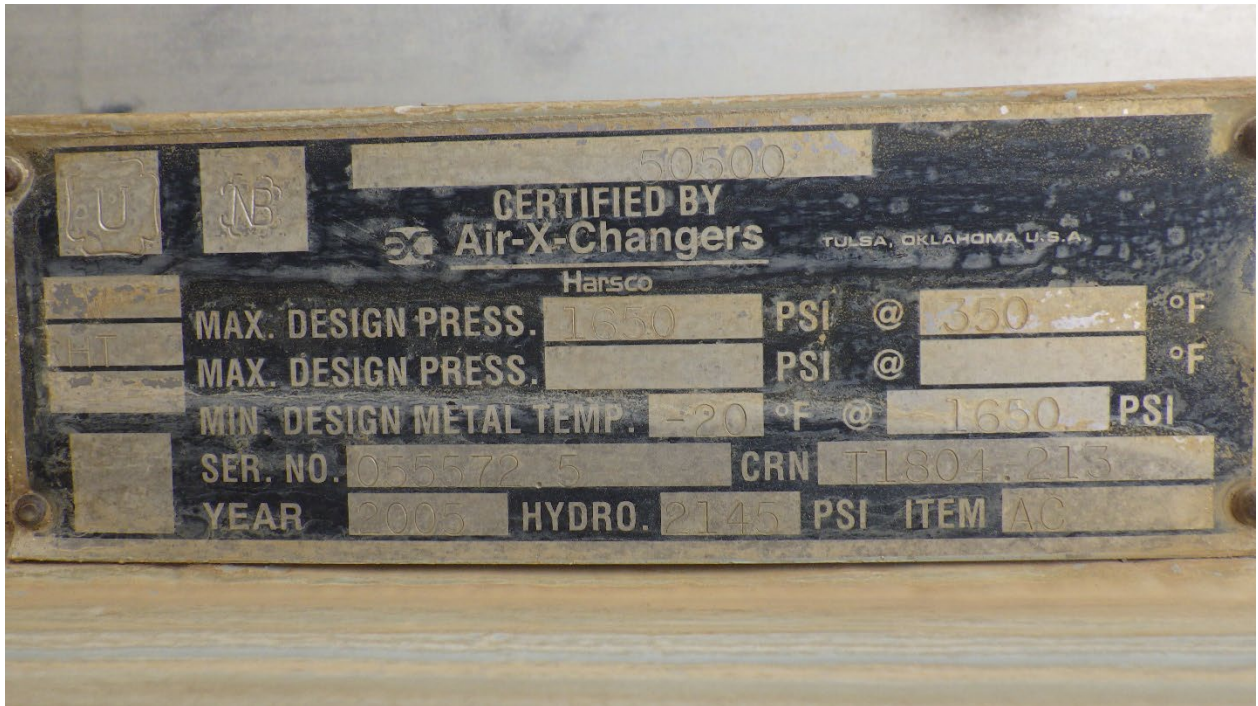
\* Fair and Poor selections require comments

<b>Comments:</b>				
1. The caulking at the piping to building interfaces have failed.				
<input checked="" type="checkbox"/> In Service <input type="checkbox"/> Idle <input type="checkbox"/> Blinded/Disconnected	Signature		Date	July 27, 2023

# Vessel External Inspection

## PHOTOS

Report No.:









## Vessel External Inspection

Report No.:





## Vessel External Inspection

Report No.:





# Vessel External Inspection

Report No.:





## Vessel External Inspection

Report No.:





## Corrosion Survey Report

<b>Client: Yoho Resources</b>  <b>Date: Thursday, July 27, 2023</b>	<b>A0552590 - UT - 001 - RC</b>
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<b>Work Location:</b> Inga, BC <b>Examination Standard:</b> ASME V Article 4 - 2021 <b>Acceptance Standard:</b> Client's Spec. <b>RJC Procedure:</b> RJC-UT-001 Rev.0	<b>Scanning Surface:</b> O.D. <b>Material:</b> Carbon Steel <b>Surface Condition:</b> Painted <b>Temperature:</b> Ambient	<b>Job No.:</b> 2023-0033 <b>P.O. No.:</b> <b>W.O. No.:</b> <b>Other:</b>
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<b>Instrument:</b> Olympus <b>Model:</b> Epoch 600 <b>Serial No.:</b> 140708306 <b>Cal Due Date:</b> Monday, January 15, 2024	<b>Couplant:</b> UTX <b>Calibration Block:</b> C.S. Step Wedge Serial No. 3886-20 <b>Calibration Block:</b> <b>Scanning Limitation:</b> See comments below
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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"

<b>Purpose:</b> To perform an ultrasonic thickness survey.  <b>Results:</b> Refer to attached pages for recorded data.  <b>Notes:</b> 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> <td colspan="6" style="text-align: center;"><b>Vessel Description: 3rd Stage Aerial Cooler</b></td></tr> <tr> <td><b>A No.:</b></td><td>0552590</td><td><b>Vessel ID:</b></td><td>N/S</td><td><b>Manufacturer:</b></td><td>Air-X-Changers</td></tr> <tr> <td><b>CRN No.:</b></td><td>T1804.213</td><td><b>Year Built:</b></td><td>2005</td><td><b>District:</b></td><td>Inga, BC</td></tr> <tr> <td><b>Serial No.:</b></td><td>055572.5</td><td><b>C.A.:</b></td><td>N/S</td><td><b>LSD:</b></td><td>10-19-087-23W6</td></tr> </table>	VESSEL DATA						<b>Vessel Description: 3rd Stage Aerial Cooler</b>						<b>A No.:</b>	0552590	<b>Vessel ID:</b>	N/S	<b>Manufacturer:</b>	Air-X-Changers	<b>CRN No.:</b>	T1804.213	<b>Year Built:</b>	2005	<b>District:</b>	Inga, BC	<b>Serial No.:</b>	055572.5	<b>C.A.:</b>	N/S	<b>LSD:</b>	10-19-087-23W6
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<b>Serial No.:</b>	055572.5	<b>C.A.:</b>	N/S	<b>LSD:</b>	10-19-087-23W6																										

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



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*	EHB - North Face	T - B	SA516 - 70N	1.000	0.063	Year: Min: Avg:	2005 1.000		2023 1.010 1.012	0.00%	0.937	0.00	0.00	20	Acceptable
	Comments: 0.063" used for C.A.														
005*	EHB - South Face	T - B	SA516 - 70N	1.000	0.063	Year: Min: Avg:	2005 1.000		2023 1.017 1.019	0.00%	0.937	0.00	0.00	20	Acceptable
	Comments: 0.063" used for C.A.														
010*	WHB - South Face	T - B	SA516 - 70N	1.000	0.063	Year: Min: Avg:	2005 1.000		2023 1.012 1.016	0.00%	0.937	0.00	0.00	20	Acceptable
	Comments: 0.063" used for C.A.														
015*	WHB - North Face	T - B	SA516 - 70N	1.000	0.063	Year: Min: Avg:	2005 1.000		2023 1.012 1.016	0.00%	0.937	0.00	0.00	20	Acceptable
	Comments: 0.063" used for C.A.														
						Year: Min: Avg:				#DIV/0!	0.000	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Comments:														
						Year: Min: Avg:				#DIV/0!	0.000	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Comments:														

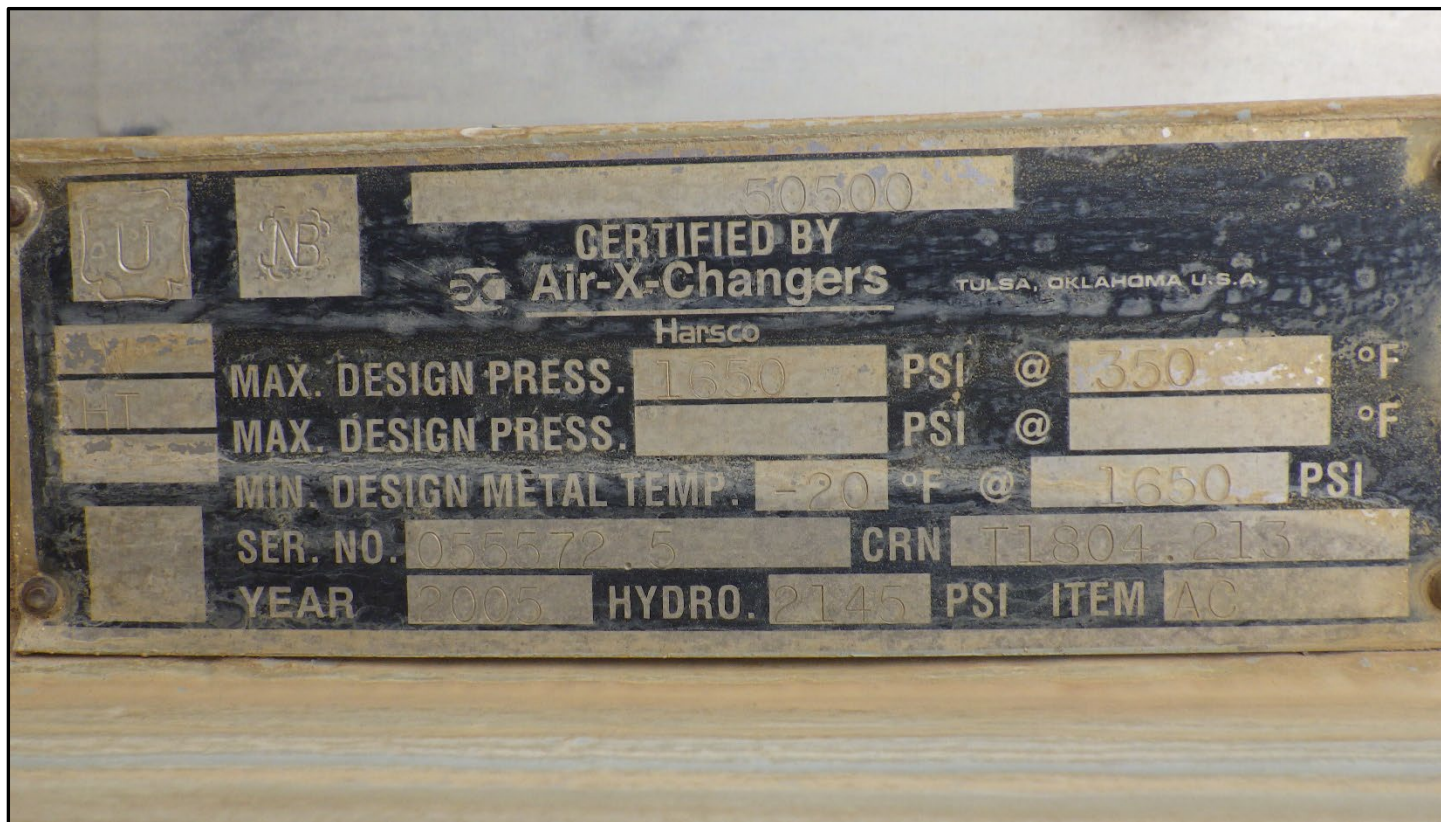
Band ID	Location	Direction	Material	Nominal (in)	CA (in)		Baseline (in)	Previous (in)	Current (in)	% Wall Loss	Tmin (in)	STCR (mpy)	LTCR (mpy)	
020	3" 160 Inlet Pipe	360° Circ	Carbon Steel	0.438	0.055	Year:	2005		2023					
						Min:	0.438		0.433	1.14%	0.383	0.00	0.28	
						Avg:			0.432					
Comments: 12.5% used for C.A														Acceptable
025	2" 160 Outlet Pipe	360° Circ	Carbon Steel	0.344	0.043	Year:	2005		2023					
						Min:	0.344		0.328	4.65%	0.301	0.00	0.89	
						Avg:			0.333					
Comments: 12.5% used for C.A.														Acceptable
						Year:								
						Min:				#DIV/0!	0.000	#DIV/0!	#DIV/0!	
						Avg:								
Comments:														#DIV/0!
						Year:								
						Min:				#DIV/0!	0.000	#DIV/0!	#DIV/0!	
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## Vessel Overview

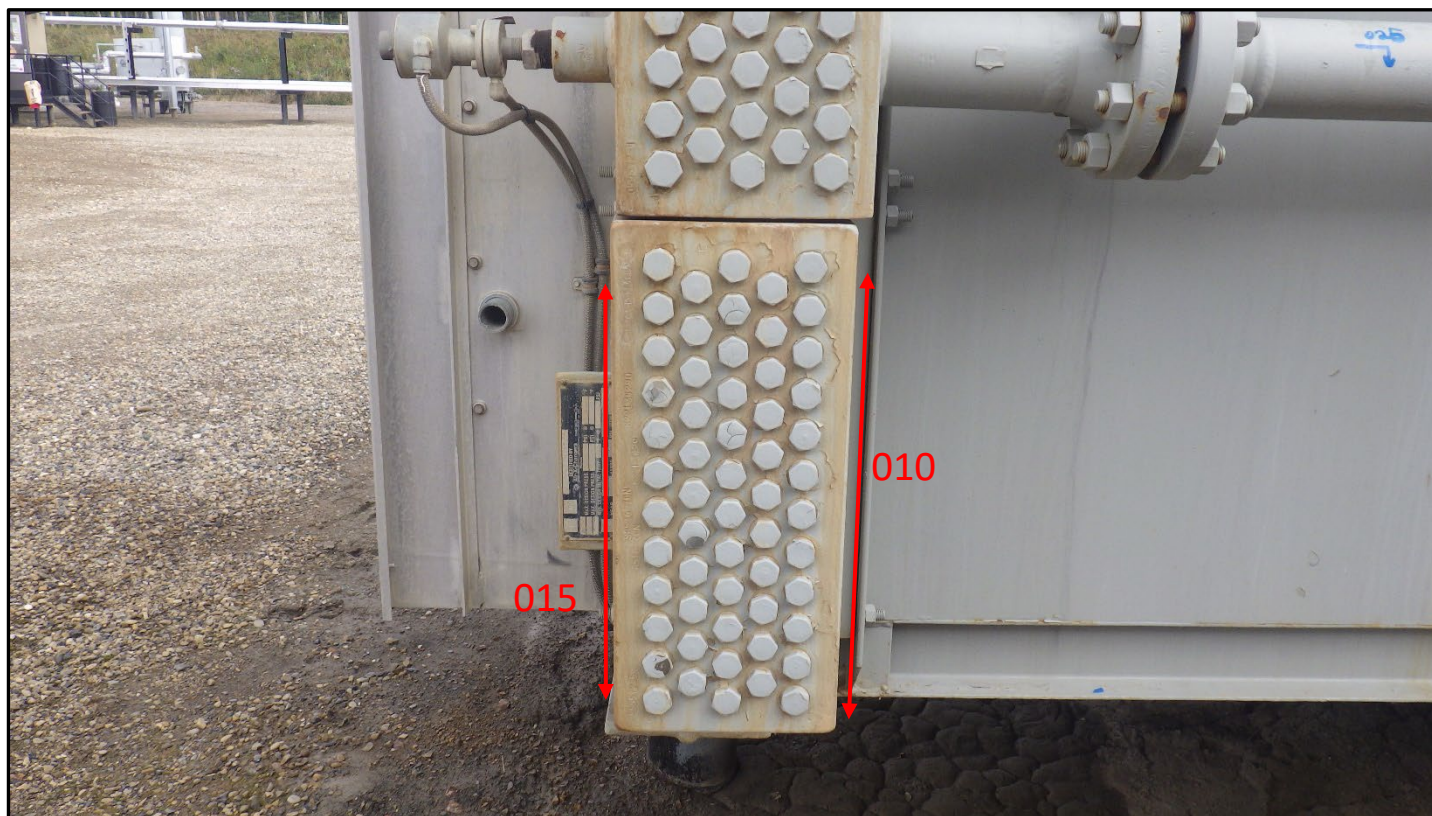


## Nameplate

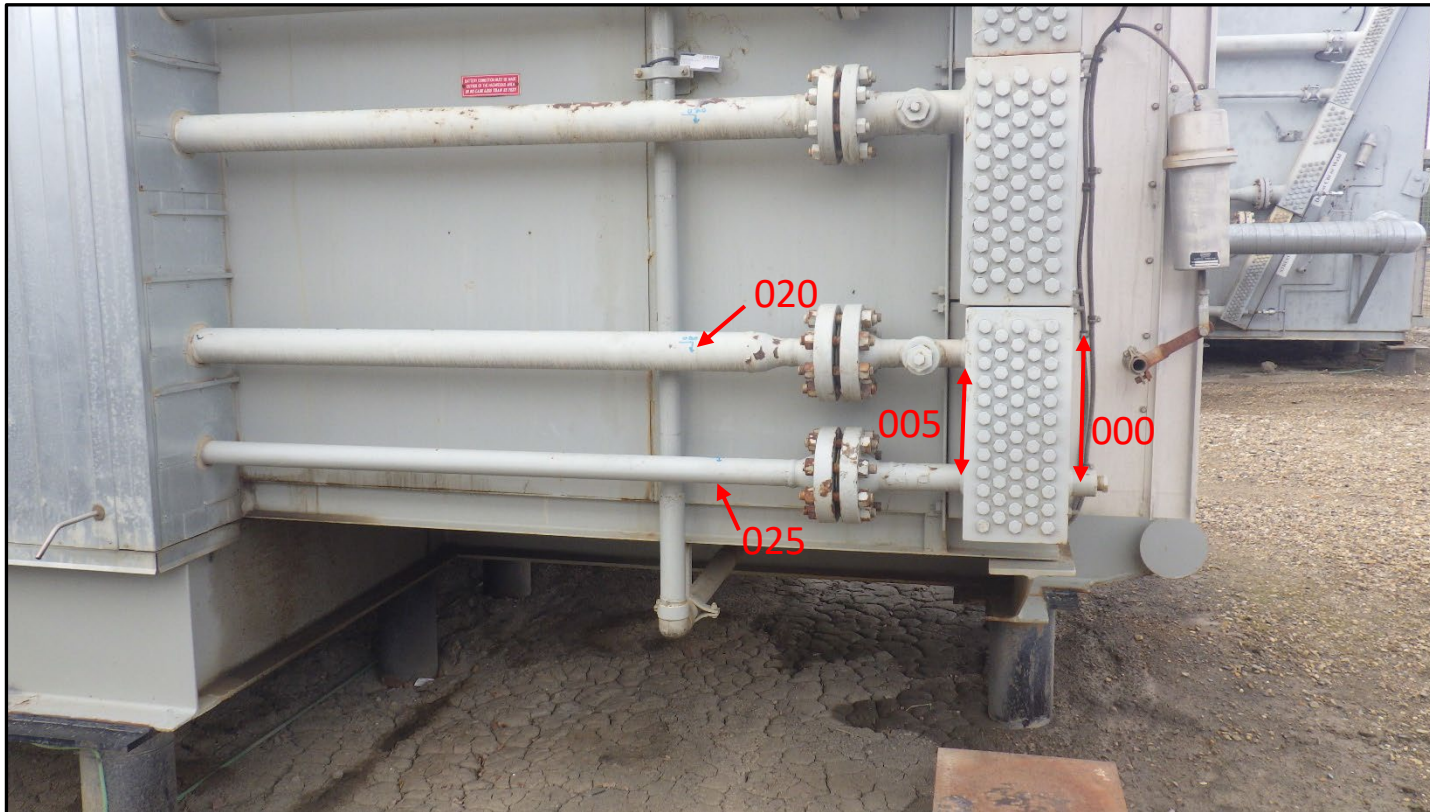




## TML Locations



## TML Locations





PSV Service report reviewed using PSV assessment calculator. PSV serviced by Unified Valve Fort St John. PSV failed Pre-pop Test suggested Interval 3 years / 36 months. AJB



PRV INSPECTION AND TEST REPORT

BRANCH: Fort St John  
Work Order: W16001404  
UVL ID#: 37347C  
Customer PO#:

Customer: YOHO RESOURCES INC  
Facility: INGA  
A#:   
Cust. Ref.:   
Cust. WO#:   
LSD: 10-19-87-24W6 BATTERY  
Vessel SN:   
Valve PO:   
Cust AFE#:   
Date: 09/03/2020  
PSV Location: MAIN COMP 3RD STG DISCH  
Cust Id: 16 YOHO  
PO LINE#:   
Cost Centre#:

VALVE DATA

Man.: FARRIS  
Conn. Flanged  
Set Press. 1,650 PSI  
Lift Lever ☐  
Model: 26DA14-120  
Inlet: 1.5" 900 RF  
Back Press.: N/A PSI  
Cap Assembly: Closed  
Orifice: D  
CDTP: N/A PSI  
RFID:   
Serial: 493492-4-A10  
Outlet: 2" 300 RF  
Temp: N/A  
Code Symbol: UV  
Seat: HARD  
Vacuum:   
Cap: 4,316 SCFM  
CRN#: 0G8442.5C

CUSTOMER INSTRUCTIONS

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

CONDITION AS RECEIVED

Visual Condition: Fair  
Seal Condition: Top: Intact  
Inlet:   
Data Plate Condition: OK  
Bottom: Intact  
Inlet Plugged: ☐  
Outlet:   
Insignia: UVL  
Fittings Attached:   
Initial Insp. Signoff: K-anna Jobson  
Date of last service: 11/2017  
Inlet: ☐  
Outlet: ☐

PRETEST 1

☒ Pretest Not Completed  
Pretest Not Completed Reason: Holds no pressure  
Simmer: 0 PSI  
Set Press: PSI  
Reseat: PSI  
Leakage: BPM  
Test Gauge:   
Tested By:   
Pretest Comments:

PRETEST 2

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

COMPONENTS INSPECTION

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

ITEM	CLEAN	ONLY	RUSTY	CARBON	PITTED	CORRODED	SCALE	VIBRATION	GROOVED	DENIED	GALLING	GOUNDED	OTHER	Machined	Lapped	Polished	Replaced	Replace Next Service	COMMENTS
DISC		1												<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
NOZZLE		1												<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" 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 LO		1												<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
AS FOUND: AS LEFT:																			
SPRING and BUTTONS		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		1												<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		1												<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
RING PIN(S)		1												<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"/>	4KG26A3S
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: .156 ACT - .171 NOZZLE: MIN / MAX 4.375 ACT - 4.430 SPRING NUMBER:   
Disassembly: Patrick Burton Inspection: Chance Pomeroy Reassembly: Patrick Burton

FINAL TEST

Test Medium Air  
Reseat: 1,247 PSI  
ADJ. RING SETTING (NOTCHES):  
Tested by: Dale Welsh  
Simmer: 1,646 PSI  
Leakage Acceptable: ☒  
Upper: N/A  
Lower: -11  
Set Pressure: 1,650 PSI  
B.P. Test: 60 PSI  
Test Gauge: FSJ9/10  
Date Final Tested: 09/16/2020  
Vacuum: N/A  
Set Press Def POP

FINAL INSPECTION:

SEAL: Top: ☒ Bottom: ☒  
Final Inspection: Randy Rowsell  
Comments:   
End Protectors Installed: ☒ Painted: ☒ Palletized: ☒ Ship Container: ☐ Flex Gaskets Supplied: ☒  
Customer Inspection: