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LANCE INSPECTIONS INC.

Ultrasonic Inspection Report

UT_A 0433195 Separator_SN 2394-1
Fuel Gas Scrub_jun2023

Client: **Rare Oilfield**			Facility: **GP Fleet**			Date: **Jun 15, 2023**
LSD: **n/a**			Item(s) Inspected: **Separator / Fuel Gas Scrubber**			Job #: **4249**
Material: Carbon Steel / Stainless Steel			Thickness Range: 0 to 75mm			WO #: **n/a**
Procedure: UT-01 Rev.8	Ref. Code: ASME VIII & ASME B31.3		Surf. Temp: -20° to 20° C			Surf. Prep: Painted
UT Equipment:	Asset# FD-19	Olympus Epoch XT		Serial Number: 081081401		Cal. Due: Aug. 15, 2023
Transducer 1:	Asset# T-230	Technisonic Research	0°	Dual	5MHz	Diam. 6.35mm Serial #: 21711
Transducer 2:	Asset# T-91	Panametrics D-790-SM Hot Probe	0°	5MHz	Diam. 6.35mm	Serial # 944346
Transducer 3:	Asset# T-233	Technisonic Research	0°	Dual	5MHz	Diam. 6.35mm Serial #: 21714
Cal. Block 1:	Asset# CB-63	Carbon Steel 4 Step Wedge	5-20mm	Serial Number: 16-3782		
Cal. Block 2:	Asset# CB-50	Stainless Steel Step Wedge	2.5mm to 12.5mm	Serial Number: 17-2181		
Couplant: Echo Mix	Cable 1: 2m Dual BNC to Microdot		Cable 2: 2m Single BNC to Microdot			Gain Level: 60 dB

Job Scope: To perform a baseline ultrasonic thickness survey on separator A# 0433195 and fuel gas scrubber serial# 2394-1 at the Drydan Transport yard in Grande Prairie.

Results: See attached UTS drawing and data sheets for all point locations and recorded thickness measurements.

Client Representative: Tyler Hebblewaite
Technician(s): Kelsey Lush (CGSB UT-1, MT-2, PT-2, #22115) (SNT-TC-1A UT-I, MT-II, PT-II)
Assistant(s): Ethan St. Germain
Reviewed and Approved By: Lance Smith (CGSB MT-2, UT-2, PT-2, RT-1 #8052) (SNT-TC-1A MT-II, UT-II, PT-II)

ULTRASONIC THICKNESS SURVEY

"UTS"

Report Summary

The accompanying UTS report provides representation and data of equipment requested for inspection as accessible. The UTS drawing(s) show condition monitoring locations (CMLs) with identification numbers that correlate with the ultrasonic thickness readings recorded on the following pages. All CML locations identified on the UTS drawing(s) are inspected to locate the minimum thickness and determine an average thickness. CMLs that have thickness readings less than the calculated flagged thickness are coloured BLUE on the UTS drawings and data pages for quick reference purposes. CMLs with unusual wall thicknesses are given descriptive comments to aid future trending.

UTS Procedure

All CML locations identified on the UTS drawing are scanned completely by continuously coupling an ultrasonic transducer to the item being tested. The average scan location on vessel heads and shells includes a 2" wide by 16" long test band. The average scan location on piping and fittings is a 2" wide band at critical areas, such as the outside radius of elbows, neck of tees, the back of tees, or any other areas of concern.

Vessels

Flag thicknesses are determined by subtracting the corrosion allowances from the nominal thickness as stated on a vessel data plate or a client provided MDR or U1A form for the vessel.
Regarding vessel and nozzle points that have a given Nominal Thickness but no stated corrosion allowance, Lance Inspections has adopted a "TRF" Thickness Reduction Flag value. This value is 1.5mm (0.059") less than the given nominal thickness. Vessel and Nozzle points without given nominals will assume a 1.5mm (0.059") corrosion allowance from initial minimum thickness reading.

Piping

Flag thicknesses for piping is determined by subtracting 12.5% (mill tolerance) from the nominal thickness. The 12.5% is input as the corrosion allowance on the UTS report. Piping and fitting points without given nominals will assume a 1.5mm corrosion allowance from initial minimum thickness reading.

Equipment

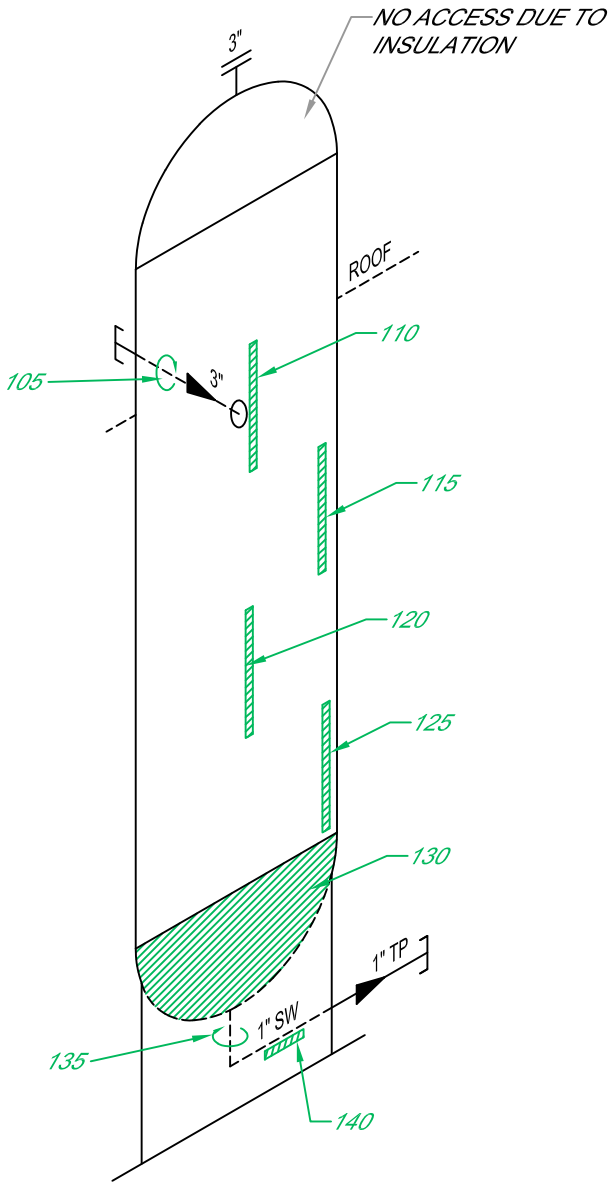
All equipment used for each UTS is listed on the ultrasonic report and is in accordance with Lance Inspections Inc. procedure UT-01 (Rev. 8). All ultrasonic machine calibrations, field calibrations, and performance of ultrasonic thickness surveys are completed in accordance with Lance Inspections Inc. procedure UT-01 (Rev. 8)

Sincerely,

Lance Smith,
Lance Inspections Inc.

LANCE INSPECTIONS INC.

Customer:	RARE OILFIELD	Description:	VERTICAL SEPARATOR				
Facility:	GP FLEET	Location:	PORTABLE				
Reg A#:	0433195	Serial #:	2394-1	Drawing#:	1		
CRN #:	N0655.231	Manufacturer:	MOSS FABRICATION	Unit #:	N/A	Year Built:	1998
Shell MAWP:	9928 kPa	Shell MAWT:	54°C	Shell Material:	N/S	Nominal:	N/S	CA:	N/S
Tube "A" MAWP:		Tube "A" MAWT:		Head Material:	N/S	Nominal:	N/S	CA:	N/S
Tube "B" MAWP:		Tube "B" MAWT:		Tube Material:		Nominal:		CA:	
Size:	24in x 96in	Manway:	NO	MDMT:	-29°C	Boot Shell Mat:		Nominal:		CA:	
Insulated:	NO	C Stamp:	U	RT:	1	PWHT:	YES	Boot Head Mat:		Nominal:		CA:	



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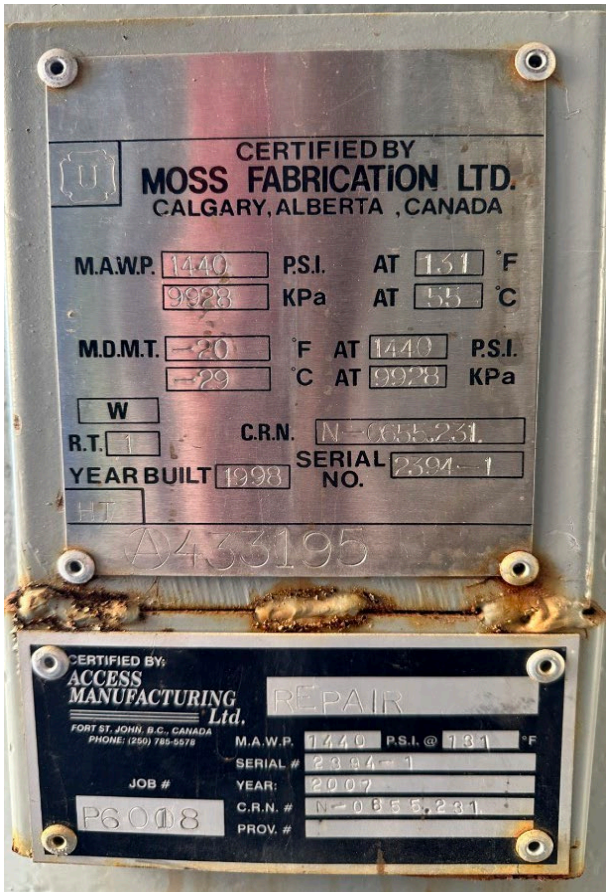
Client: **Rare Oilfield**
Unit #: **n/a**
Equip Description: **Vertical Separator**
Reg A#: **0433195**
Drawing #: **1**

Vessel Overview

Data Plate



LANCE INSPECTIONS INC.

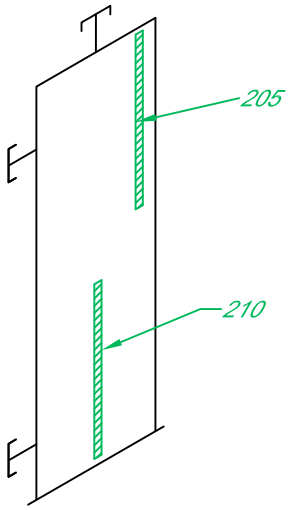
Client: **Rare Oilfield**
Unit #: **n/a**
Equip Description: **Vertical Separator**
Reg A#: **0433195**
Drawing #: **1**

UTS Data Sheet

		Nominal Thickness (mm)	Corrosion Allowance (mm)	Flag Thickness (mm)
105				
Description:	**Circ on 3" Nozzle**	15.2		13.7
Date:	Jun. 15, 23			
Minimum:	9.0			
Average:	14.0			
Comments:				
110				
Description:	**Upper Shell**			27.0
Date:	Jun. 15, 23			
Minimum:	28.5			
Average:	28.7			
Comments:				
115				
Description:	**Mid Shell**			27.0
Date:	Jun. 15, 23			
Minimum:	28.5			
Average:	28.7			
Comments:				
120				
Description:	**Mid Shell**			27.1
Date:	Jun. 15, 23			
Minimum:	28.6			
Average:	28.7			
Comments:				
125				
Description:	**Lower Shell**			26.7
Date:	Jun. 15, 23			
Minimum:	28.2			
Average:	28.5			
Comments:				
130				
Description:	**Bottom Head**			25.7
Date:	Jun. 15, 23			
Minimum:	27.2			
Average:	28.5			
Comments:	*Jun 2023_75% of head scanned, limited scanability due to external corrosion.*			
135				
Description:	**Circ on 1" Socket Welded Pipe**	9.1	1.1	6.9
Date:	Jun. 15, 23			
Minimum:	8.4			
Average:	8.7			
Comments:	*Jun 2023_Limited scanability due to external corrosion.*			
140				
Description:	**Bottom Band on 1" Socket Welded Pipe**	9.1	1.1	6.7
Date:	Jun. 15, 23			
Minimum:	8.2			
Average:	8.5			
Comments:	*Jun 2023_Limited scanability due to external corrosion.*			

LANCE INSPECTIONS INC.

Customer: RARE OILFIELD			Description: FUEL GAS SCRUBBER		
Facility: GP FLEET			Location: PORTABLE		
Reg A#: N/A			Serial #: 2394-1		Drawing#: 2
CRN #: OH0437.213	Manufacturer: MOSS FABRICATION		Unit #: N/A		Year Built: 1998
Shell MAWP: 1965 kPa	Shell MAWT: 38°C	Shell Material: N/S	Nominal: N/S	CA: N/S	
Tube "A" MAWP:	Tube "A" MAWT:	Head Material: N/S	Nominal: N/S	CA: N/S	
Tube "B" MAWP:	Tube "B" MAWT:	Tube Material:	Nominal:	CA:	
Size: 8in x 24in	Manway: NO	MDMT: N/S	Boot Shell Mat:	Nominal:	CA:
Insulated: NO	C Stamp: N/S	RT: N/S	PWHT: N/S	Boot Head Mat:	Nominal: CA:



LANCE INSPECTIONS INC.

Client: **Rare Oilfield**
Unit #: **n/a**
Equip Description: **Fuel Gas Scrubber**
Serial #: **2394-1**
Drawing #: **2**

Vessel Overview

Data Plate

LANCE INSPECTIONS INC.

Client: **Rare Oilfield**
Unit #: **n/a**
Equip Description: **Fuel Gas Scrubber**
Serial #: **2394-1**
Drawing #: **2**

UTS Data Sheet

		Nominal Thickness (mm)	Corrosion Allowance (mm)	Flag Thickness (mm)
205				
Description:	**Upper Shell**			7.0
Date:	Jun. 15, 23			
Minimum:	8.5			
Average:	8.7			
Comments:				
210				
Description:	**Lower Shell**			6.5
Date:	Jun. 15, 23			
Minimum:	8.0			
Average:	8.4			
Comments:				