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Ultrasonic Inspection Report

**UT_A 0516949 Line Heater_SN 11994A Fuel Gas
 Scrubber_apr2024**

Client: Rare Oilfield Services	Facility: Q2 Yard	Date: Apr. 8, 2024
LSD: n/a	Item(s) Inspected: Various Vessels & Piping	Job #: 11385
Material: Carbon Steel / Stainless Steel	Thickness Range: 0 to 75mm	WO #: n/a
Procedure: UT-01 Rev. 9	Ref. Code: ASME VIII & ASME B31.3	Surf. Temp: -20° to 20° C
Surf. Prep: Painted		
UT Equipment: Asset# FD-11 Olympus Epoch XT	Serial Number: 081208611	Cal. Due: May 6, 2024
Transducer 1: Asset# T-241 Technisonic Research 0° Dual 5MHz	Diam. 6.35mm	Serial #: 25962
Transducer 2: Asset# T-240 Olympus D790-SM Hot Probe 0° 5MHz	Diam. 6.35mm	Serial #: 10052465
Transducer 3: Asset# T-127 Olympus pulse echo 0° 5MHz	Diameter 12.7mm	Serial Number: 1097767
Cal. Block 1: Asset# CB-86 (1018) Carbon Steel 6-step wedge	Serial Number: 64299	
Cal. Block 2: Asset# CB-59 Stainless Steel Step Wedge	2.5mm to 12.5mm	Serial Number: 18-1717
Couplant: Magnaflux UTX	Cable 1: 2m Dual BNC to Microdot	Cable 2: 2m Single BNC to Microdot

Job Scope: To perform a baseline ultrasonic thickness survey on line heater A# 0516949 and fuel gas scrubber serial# 11994A at the Q2 yard in Grande Prairie.

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

Client Representative: Tom Kaluzny	
Technician(s): Kaedyn Schmidt (CGSB UT-1, MT-2, PT-2 #27732) (SNT-TC-1A UT-I, MT-II, PT-II)	
Assistant(s): Dylan Schwabe	
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, the neck of tees, the back of tees, or any other areas of concern.

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. 9). All ultrasonic machine calibrations, field calibrations, and performance of ultrasonic thickness surveys are completed in accordance with Lance Inspections Inc. procedure UT-01 (Rev. 9)

Flag Values

Client Review

Lance Inspections does not deem CMLs acceptable or rejectable. The flag values in the attached report are provided for ease of client review only.

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 known 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 known nominal thickness. Vessel and Nozzle points without known nominals, will be given a 1.5mm (0.059”) corrosion allowance from the initial minimum thickness reading.

Piping

Flag thicknesses for piping are 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 known nominals will have a 1.5mm corrosion allowance from the initial minimum thickness reading.

Sincerely,

Lance Smith,
Lance Inspections Inc.



Customer: RARE OILFIELD SERVICES

Description: LINE HEATER

Facility: Q2 YARD

Location: N/A

Reg A#: 0516949

Serial #: CB-12481

Drawing#: 1

CRN #: D4268.213

Manufacturer: LARSON & D'AMICO

Unit #: N/S

Year Built: 2004

Shell MAWP: _____

Shell MAWT: _____

Shell Material: N/S

Nominal: N/S

CA: N/S

Tube "A" MAWP: 21623 kPa

Tube "A" MAWT: 93°C

Head Material: N/S

Nominal: N/S

CA: N/S

Tube "B" MAWP: 21623 kPa

Tube "B" MAWT: 93°C

Tube Material: N/S

Nominal: N/S

CA: 3.2mm

Size: 3" COILS

Manway: NO

MDMT: -29°C

Boot Shell Mat: _____

Nominal: _____

CA: _____

Insulated: NO

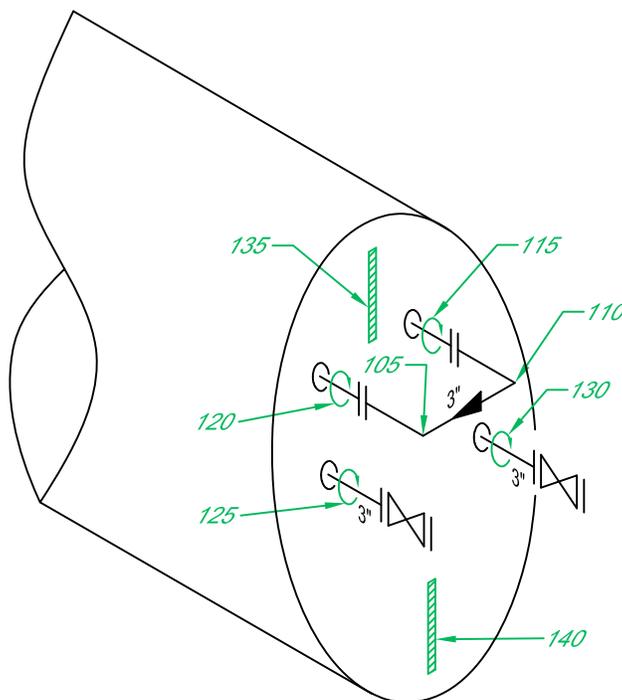
C Stamp: NO

RT: 100% PWHT: YES

Boot Head Mat: _____

Nominal: _____

CA: _____





Client: **Rare Oilfield Services**
 Unit #: **n/s**
 Equip Description: **Line Heater**
 Reg A#: **0516949**
 Drawing #: **1**

Vessel Overview



Data Plate





UTS Data Sheet

Client: **Rare Oilfield Services**
 Facility: **Q2 Yard**
 LSD: **n/a**
 Equip Description: **Line Heater**
 Reg A#: **0516949**
 Drawing #: **1**

	Nominal Thickness (mm)	Corrosion Allowance (mm)	Flag Thickness (mm)
105 Description: 3" 90° Elbow Date: Apr. 8, 24 Minimum: 11.0 Average: 11.4 Comments:	11.1	1.4	9.7
110 Description: 3" 90° Elbow Date: Apr. 8, 24 Minimum: 11.2 Average: 11.7 Comments:	11.1	1.4	9.7
115 Description: Circ on 3" Nozzle Date: Apr. 8, 24 Minimum: 11.0 Average: 11.6 Comments:	11.1	3.2	7.9
120 Description: Circ on 3" Nozzle Date: Apr. 8, 24 Minimum: 10.9 Average: 11.4 Comments:	11.1	3.2	7.9
125 Description: Circ on 3" Nozzle Date: Apr. 8, 24 Minimum: 10.6 Average: 11.1 Comments:	11.1	3.2	7.9
130 Description: Circ on 3" Nozzle Date: Apr. 8, 24 Minimum: 11.0 Average: 11.5 Comments:	11.1	3.2	7.9
135 Description: Upper Head Plate Date: Apr. 8, 24 Minimum: 6.6 Average: 6.9 Comments:			5.1
140 Description: Lower Head Plate Date: Apr. 8, 24 Minimum: 6.6 Average: 6.7 Comments:			5.1



Customer: RARE OILFIELD SERVICES Description: LINE HEATER FIRETUBE

Facility: Q2 YARD Location: N/A

Reg A#: 0516949 Serial #: CB-12481 Drawing#: 1A

CRN #: D4268.213 Manufacturer: LARSON & D'AMICO Unit #: N/S Year Built: 2004

Shell MAWP: _____ Shell MAWT: _____ Shell Material: N/S Nominal: N/S CA: N/S

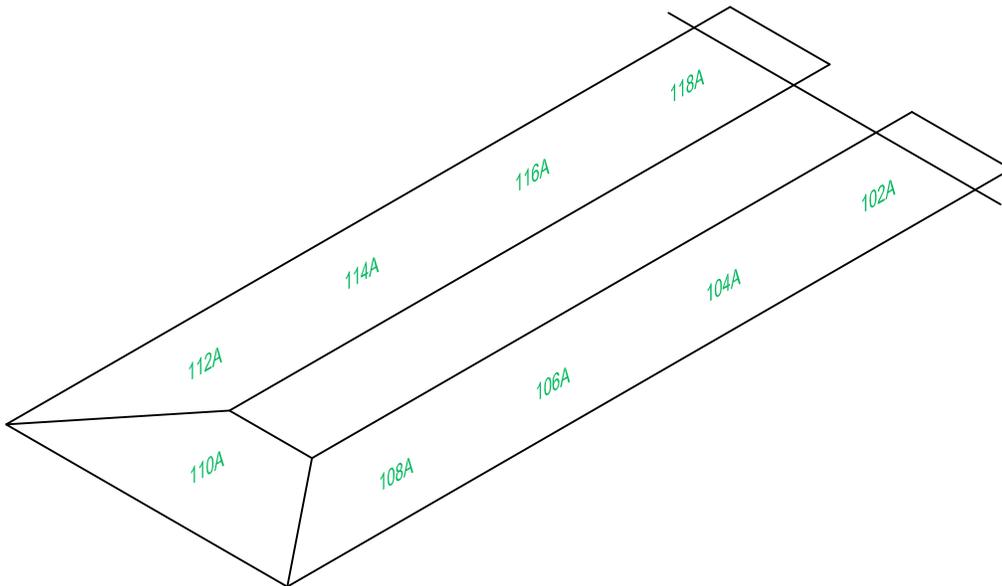
Tube "A" MAWP: 21623 kPa Tube "A" MAWT: 93°C Head Material: N/S Nominal: N/S CA: N/S

Tube "B" MAWP: 21623 kPa Tube "B" MAWT: 93°C Tube Material: N/S Nominal: N/S CA: 3.2mm

Size: 3" COILS Manway: NO MDMT: -29°C Boot Shell Mat: _____ Nominal: _____ CA: _____

Insulated: NO C Stamp: NO RT: 100% PWHT: YES Boot Head Mat: _____ Nominal: _____ CA: _____

FIRE TUBE SERIAL#: H-12477





Client: **Rare Oilfield Services**
Unit #: **n/s**
Equip Description: **Firetube**
Reg A#: **H-12477**
Drawing #: **1A**

Vessel Overview



Data Plate



LARSEN & D'AMICO
MFG. LTD.
EDMONTON, ALBERTA

UNIT NAME

48 X 16 - 4 INDIRECT LINE HEATER

S/N H-12477

W.O. #

4634

H-4



UTS Data Sheet

Client: **Rare Oilfield Services**
Facility: **Q2 Yard**
Equip Description: **Line Heater Firetube**
Serial #: **H-12477**
Drawing #: **1A**
Inspection Date: **Apr. 8, 24**

Point#	12:00 Position (mm)	3:00 Position (mm)	6:00 Position (mm)	9:00 Position (mm)
102A	6.1	6.2	6.1	6.0
104A	6.1	6.1	6.2	6.1
106A	6.1	6.2	6.2	6.1
108A	6.1	6.2	6.1	6.1
110A	6.0	6.1	6.1	6.0
112A	6.1	6.2	6.1	6.0
114A	6.1	6.3	6.1	6.1
116A	6.0	6.1	6.3	6.2
118A	6.0	6.2	6.2	6.1



Customer: RARE OILFIELD SERVICES

Description: LINE HEATER 3" COILS

Facility: Q2 YARD

Location: N/A

Reg A#: 0516949

Serial #: CB-12481

Drawing#: 1B

CRN #: D4268.213

Manufacturer: LARSON & D'AMICO

Unit #: N/S

Year Built: 2004

Shell MAWP: _____

Shell MAWT: _____

Shell Material: N/S

Nominal: N/S

CA: N/S

Tube "A" MAWP: 21623 kPa

Tube "A" MAWT: 93°C

Head Material: N/S

Nominal: N/S

CA: N/S

Tube "B" MAWP: 21623 kPa

Tube "B" MAWT: 93°C

Tube Material: N/S

Nominal: N/S

CA: 3.2mm

Size: 3" COILS

Manway: NO

MDMT: -29°C

Boot Shell Mat: _____

Nominal: _____

CA: _____

Insulated: NO

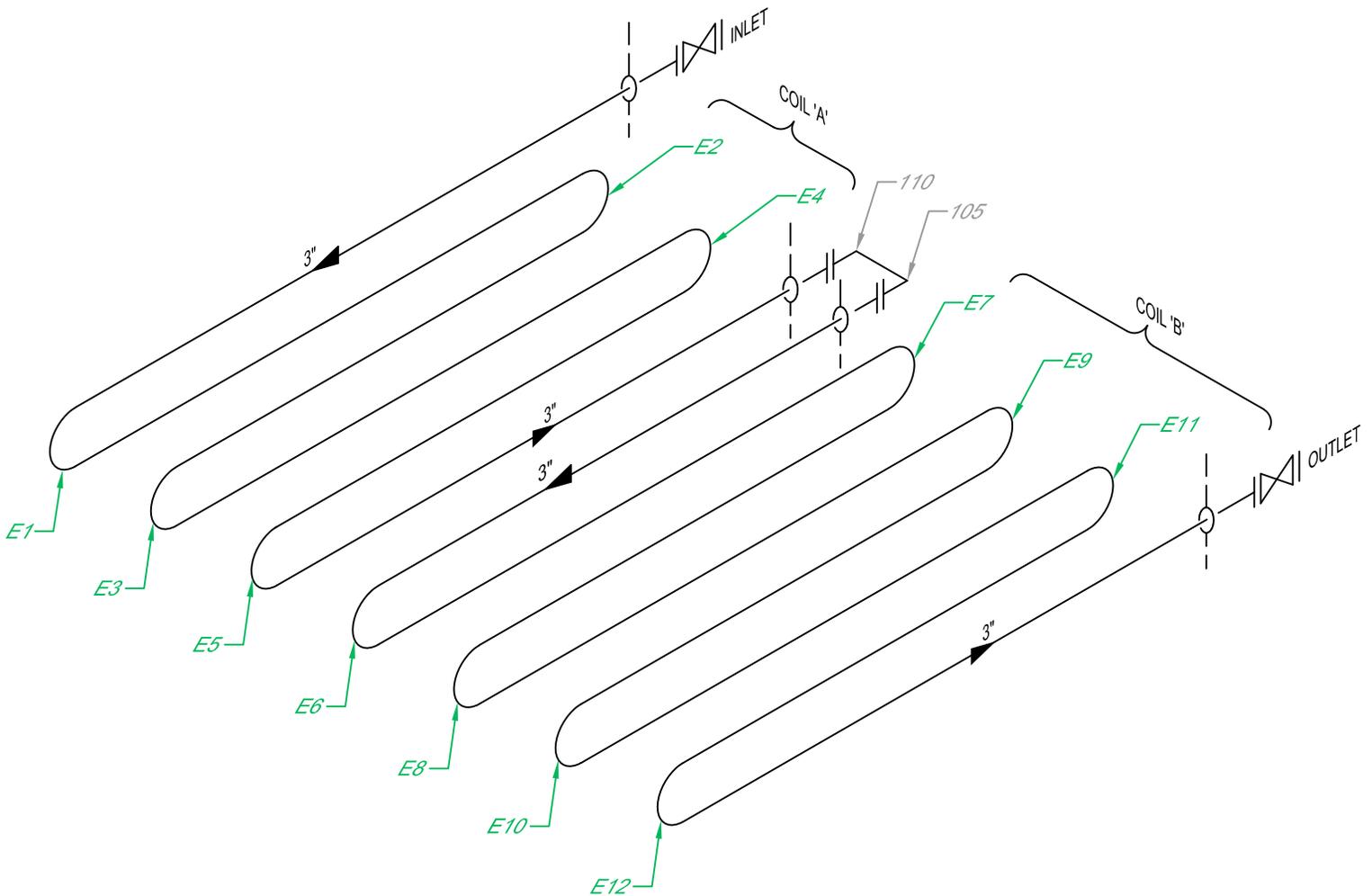
C Stamp: NO

RT: 100% PWHT: YES

Boot Head Mat: _____

Nominal: _____

CA: _____





UTS Data Sheet

Client: **Rare Oilfield Services**
 Facility: **Q2 Yard**
 Equip Description: **Line Heater 3" Coils**
 Reg A #: **0516949**
 Drawing #: **1B**
 Nominal: **11.1mm**
 Corrosion Allowance: **3.2mm**
 Flag Thickness: **7.9mm**
 Inspection Date: **Apr. 8, 2024**

Point Location	Description	Minimum Thickness (mm)	Average Thickness (mm)	Comments
E1	3" 180° Bend	10.7	11.3	
E2	3" 180° Bend	11.0	11.5	
E3	3" 180° Bend	11.1	11.6	
E4	3" 180° Bend	11.0	11.6	
E5	3" 180° Bend	10.7	11.2	
E6	3" 180° Bend	11.2	11.6	
E7	3" 180° Bend	11.3	11.7	
E8	3" 180° Bend	10.8	11.5	
E9	3" 180° Bend	11.0	11.5	
E10	3" 180° Bend	10.5	11.1	
E11	3" 180° Bend	11.4	11.9	
E12	3" 180° Bend	11.7	12.1	



Customer: RARE OILFIELD SERVICES

Description: FUEL GAS SCRUBBER

Facility: Q2 YARD

Location: N/A

Reg A#: N/A

Serial #: 11994A

Drawing#: 2

CRN #: L9476.213

Manufacturer: LARSON & D'AMICO

Unit #: N/S

Year Built: 2004

Shell MAWP: 1034 kPa

Shell MAWT: 93°C

Shell Material: N/S

Nominal: N/S

CA: 1.6mm

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 34in

Manway: NO

MDMT: -29°C

Boot Shell Mat: _____

Nominal: _____

CA: _____

Insulated: NO

C Stamp: W

RT: NO

PWHT: YES

Boot Head Mat: _____

Nominal: _____

CA: _____

PSV DATA

Manufacturer: TAYLOR

Serviced By: MUSKWA

Model: 82E4351311

Service Date: 11/02/15

Serial: 17388-1

Code Stamp: UV

Set Pressure: 1034 kPa

CRN: OG1516.2C

Capacity: 582 scfm

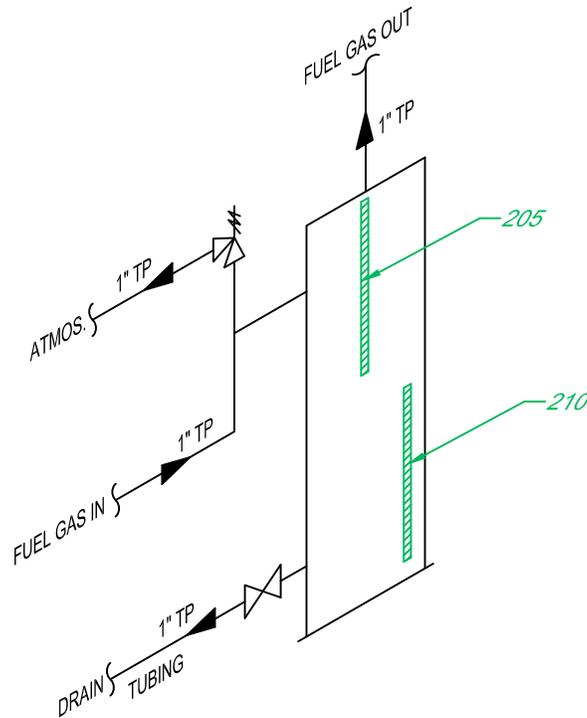
Location: INLET PIPING

Tag: N/S

Inlet Size: 1" MT

Flows To: ATMOS.

Outlet Size: 1" FT



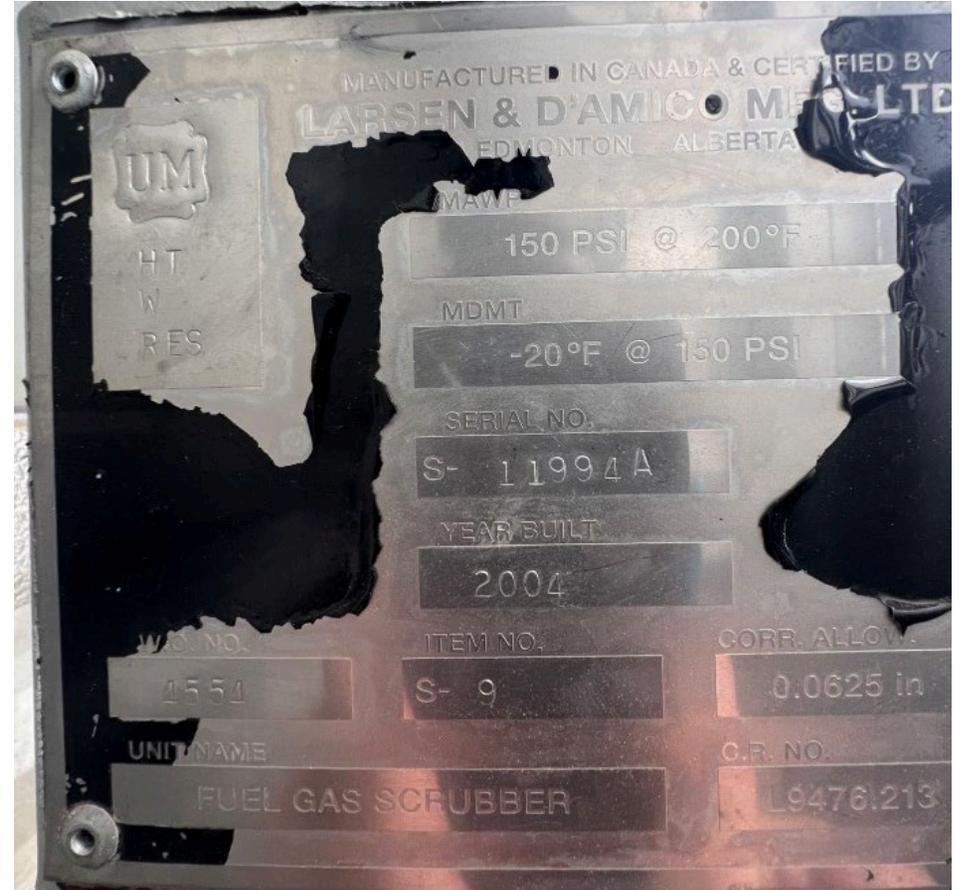


Client: **Rare Oilfield Services**
Unit #: **n/s**
Equip Description: **Fuel Gas Scrubber**
Serial #: **11994A**
Drawing #: **2**

Vessel Overview



Data Plate





UTS Data Sheet

Client: **Rare Oilfield Services**

Facility: **Q2 Yard**

LSD: **n/a**

Equip Description: **Fuel Gas Scrubber**

Serial #: **11994A**

Drawing #: **2**

Nominal Thickness (mm)	Corrosion Allowance (mm)	Flag Thickness (mm)
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205

Description: **Upper Shell**

4.5

Date: Apr. 8, 24

Minimum: 6.0

Average: 6.1

Comments:

210

Description: **Lower Shell**

4.4

Date: Apr. 8, 24

Minimum: 5.9

Average: 6.1

Comments:
