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**Ultrasonic
 Inspection Report**

UT_13-09-85-17_Cadotte_feb2022

Client: Baytex Energy	Facility: Cadotte Field	Date: Feb. 1, 2022
LSD: 13-09-85-17 w5m	Item(s) Inspected: Various Pressure Vessels & Piping	Job #: 2376
Material: Carbon Steel / Stainless Steel	Thickness Range: 0 to 75mm	WO #: n/a
Procedure: UT-01 Rev.7	Ref. Code: ASME VIII & ASME B31.3	Surf. Temp: -20° to 20° C
UT Equipment: Asset# FD-12	Olympus Epoch XT	Serial Number: 121454107
Transducer 1: Asset# T-200	Stresstell 0° Dual 5MHz	Diam. 6.35mm Serial Number: 20J022HZ
Transducer 2: Asset# T-176	Olympus pulse echo 0° 5MHz	Diameter 12.7mm Serial Number: 1233900
Transducer 3: Asset# T-92	Panametrics D-790-SM Hot Probe 0° 5MHz	Diam. 6.35mm Serial #944334
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 the requested pressure vessels and piping located at 13-09-85-17 w5m in the Cadotte Field

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

Client Representative: Jack Collins	
Technician(s): Devan Hardacker (CGSB MT-2, UT-2, PT-2 #17550) (SNT-TC-1A MT-II, UT-II, PT-II)	
Assistant(s): Bradley Bower	
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 ISO drawing(s) show condition monitoring locations (CMLs) with numbers that correlate with the ultrasonic thickness readings recorded on the following pages. All CML locations identified on the ISO 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 ISO 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 CAD 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. 7). All ultrasonic machines calibrations, field calibrations, and performance of ultrasonic thickness surveys are completed in accordance with Lance Inspections Inc. procedure UT-01 (Rev. 7)

Sincerely,

Lance Smith,
Lance Inspections Inc.



Baytex Energy
Cadotte Field
13-09-85-17 w5m

Dwg#	Item Description	Reg A#	Serial #	CRN #	Date of Last Inspection	U-1A or MFG Design Data Required	Flagged Items
1	Group Separator	0622285	12-061.VS1	V8556.231	Feb. 1, 22		
2	Test Separator	0622288	12-061.VS2	V8562.231	Feb. 1, 22		
3	Produced Gas Separator	0622291	12-061.VS3	V8560.231	Feb. 1, 22		305



Customer: BAYTEX ENERGY

Description: GROUP SEPARATOR

Facility: CADOTTE FIELD

Location: 13-09-85-17 W5M

Reg A#: 0622285

Serial #: 12-061.VS1

Drawing#: 1

CRN #: V8556.231

Manufacturer: KOOTENAY IND.

Unit #: V-4030

Year Built: 2012

Shell MAWP: 4199 kPa

Shell MAWT: 245°C

Shell Material: SA 516 70N

Nominal: 25.4mm

CA: 1.6mm

Tube "A" MAWP: _____

Tube "A" MAWT: _____

Head Material: SA 516 70N

Nominal: 25.4mm

CA: 1.6mm

Tube "B" MAWP: _____

Tube "B" MAWT: _____

Tube Material: _____

Nominal: _____

CA: _____

Size: 48in x 12ft

Manway: 20in

MDMT: -29°C

Boot Shell Mat: _____

Nominal: _____

CA: _____

Insulated: YES

C Stamp: U

RT: 1

PWHT: YES

Boot Head Mat: _____

Nominal: _____

CA: _____

PSV DATA

Manufacturer: FARRIS

Served By: APEX

Model: 26DA12-120

Service Date: 14-JAN-13

Serial: 612033-3-A10

Code Stamp: UV

Set Pressure: 4200 kPa

CRN: OG8442.5C

Capacity: 45.7 m3/min

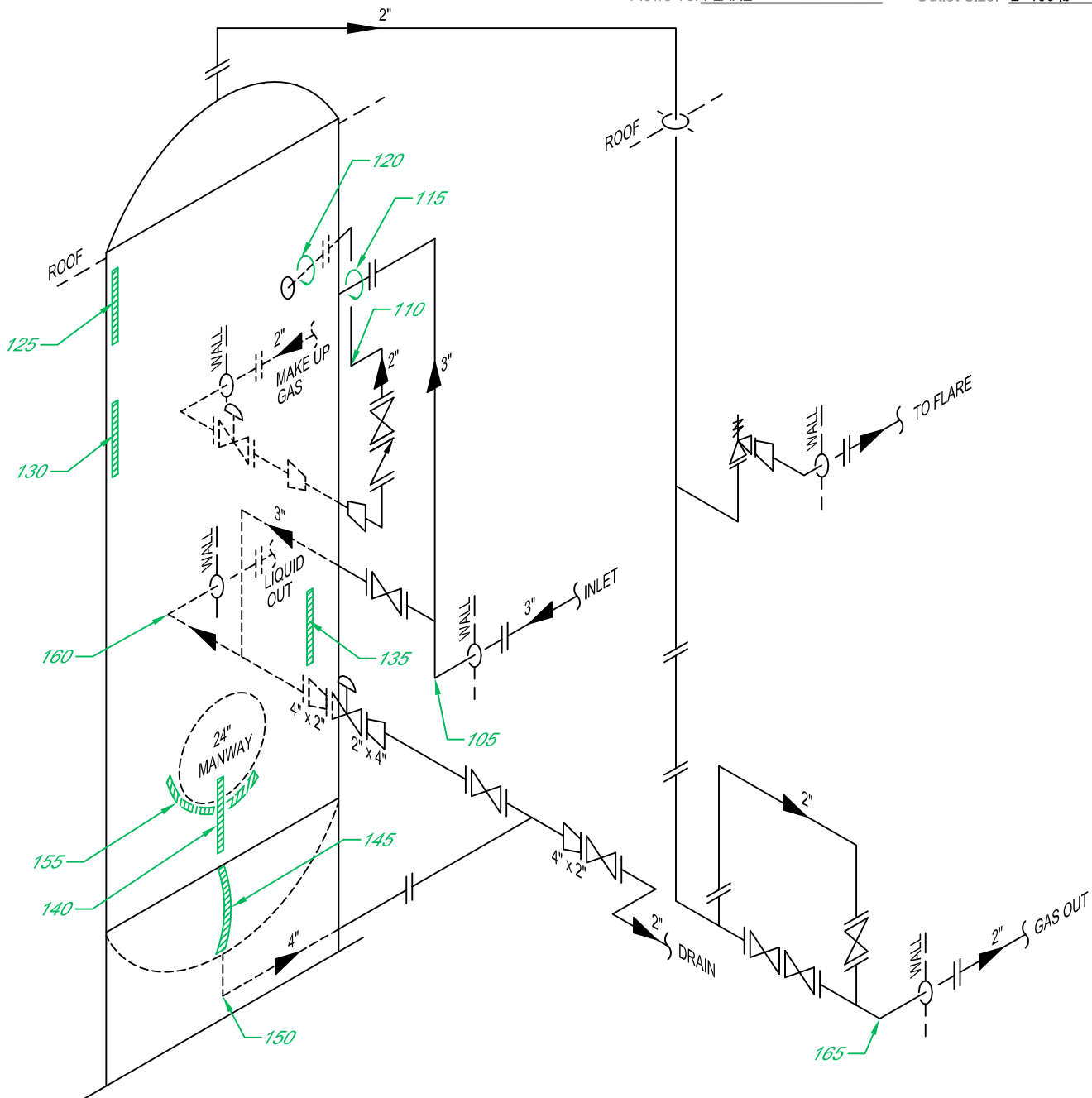
Location: OUTLET PIPING

Tag: N/S

Inlet Size: 1" 300 lb

Flows To: FLARE

Outlet Size: 2" 150 lb





UTS Data Sheet

Client: **Baytex Energy**
 Facility: **Cadotte Field**
 LSD: **13-09-85-17 w5m**
 Equip Description: **Group Separator**
 Reg A#: **0622285**
 Drawing #: **1**

	Nominal Thickness (mm)	Corrosion Allowance (mm)	Flag Thickness (mm)
105 Description: 3" 90° Elbow Date: Feb. 1, 22 Minimum: 5.2 Average: 5.5 Comments:	5.5	0.7	4.8
110 Description: 2" 90° Elbow Date: Feb. 1, 22 Minimum: 5.7 Average: 6.0 Comments:	5.5	0.7	4.8
115 Description: Circ on 3" Nozzle Date: Feb. 1, 22 Minimum: 14.8 Average: 15.4 Comments:	11.1	1.6	9.5
120 Description: Circ on 2" Long Neck Nozzle Date: Feb. 1, 22 Minimum: 17.0 Average: 17.6 Comments:			15.5
125 Description: Upper Shell Date: Feb. 1, 22 Minimum: 25.7 Average: 25.9 Comments:	25.4	1.6	23.8
130 Description: Upper Shell Date: Feb. 1, 22 Minimum: 25.8 Average: 25.9 Comments:	25.4	1.6	23.8
135 Description: Lower Shell Date: Feb. 1, 22 Minimum: 25.9 Average: 26.0 Comments:	25.4	1.6	23.8
140 Description: Lower Shell Date: Feb. 1, 22 Minimum: 25.8 Average: 25.9 Comments:	25.4	1.6	23.8



UTS Data Sheet

Client: **Baytex Energy**
 Facility: **Cadotte Field**
 LSD: **13-09-85-17 w5m**
 Equip Description: **Group Separator**
 Reg A#: **0622285**
 Drawing #: **1**

	Nominal Thickness (mm)	Corrosion Allowance (mm)	Flag Thickness (mm)
145 Description: Bottom Head Date: Feb. 1, 22 Minimum: 24.6 Average: 25.4 Comments: <i>Feb. 2022_Corrosion noted at nozzle.</i>	25.4	1.6	23.8
150 Description: 4" 90° Nozzle Date: Feb. 1, 22 Minimum: 14.7 Average: 15.1 Comments:	13.5	1.6	11.9
155 Description: Bottom Band on 24" Manway Date: Feb. 1, 22 Minimum: 101.3 Average: 101.6 Comments:			99.8
160 Description: 4" 90° Elbow Date: Feb. 1, 22 Minimum: 6.0 Average: 6.4 Comments:	6.0	0.8	5.2
165 Description: 2" 90° Elbow Date: Feb. 1, 22 Minimum: 5.0 Average: 5.3 Comments:	5.5	0.7	4.8



Customer: BAYTEX ENERGY

Description: TEST SEPARATOR

Facility: CADOTTE FIELD

Location: 13-09-85-17 W5M

Reg A#: 0622288

Serial #: 12-061.VS2

Drawing#: 2

CRN #: V8562.231

Manufacturer: KOOTENAY IND.

Unit #: V-4040

Year Built: 2012

Shell MAWP: 4199 kPa

Shell MAWT: 245°C

Shell Material: SA 516 70N

Nominal: 22.2mm

CA: 1.6mm

Tube "A" MAWP: _____

Tube "A" MAWT: _____

Head Material: SA 516 70N

Nominal: 22.2mm

CA: 1.6mm

Tube "B" MAWP: _____

Tube "B" MAWT: _____

Tube Material: _____

Nominal: _____

CA: _____

Size: 36in x 10ft

Manway: 16in

MDMT: -29°C

Boot Shell Mat: _____

Nominal: _____

CA: _____

Insulated: YES

C Stamp: U

RT: 1

PWHT: YES

Boot Head Mat: _____

Nominal: _____

CA: _____

PSV DATA

Manufacturer: FARRIS

Serviced By: APEX

Model: 26DA12-120

Service Date: 14-JAN-13

Serial: 594297-2-A10

Code Stamp: UV

Set Pressure: 4200 kPa

CRN: OG8442.5C

Capacity: 45.7 m3/min

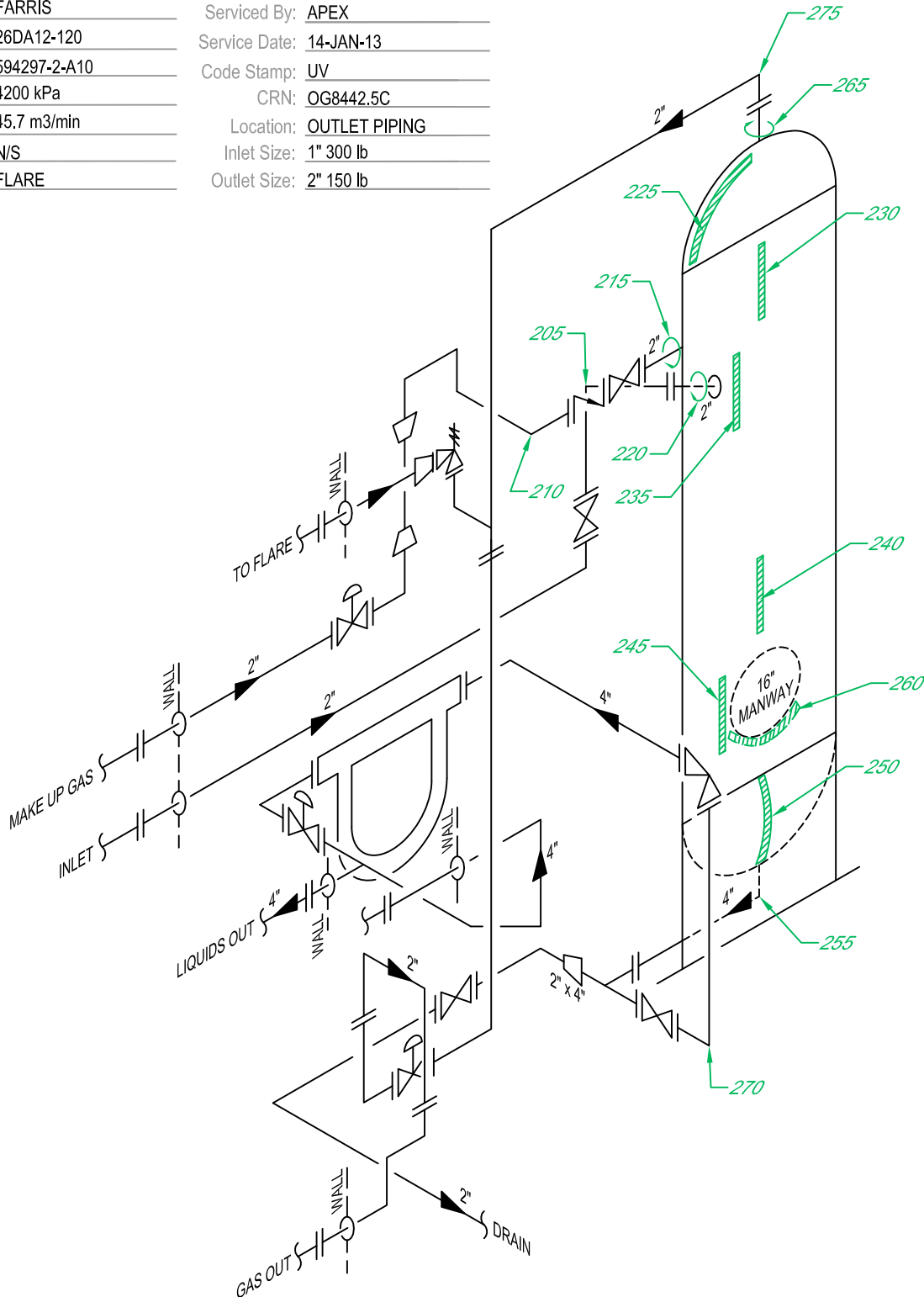
Location: OUTLET PIPING

Tag: N/S

Inlet Size: 1" 300 lb

Flows To: FLARE

Outlet Size: 2" 150 lb





UTS Data Sheet

Client: **Baytex Energy**
 Facility: **Cadotte Field**
 LSD: **13-09-85-17 w5m**
 Equip Description: **Test Separator**
 Reg A#: **0622288**
 Drawing #: **2**

	Nominal Thickness (mm)	Corrosion Allowance (mm)	Flag Thickness (mm)
205 Description: 2" 90° Elbow Date: Feb. 1, 22 Minimum: 5.0 Average: 5.5 Comments:	5.5	0.7	4.8
210 Description: 2" 90° Elbow Date: Feb. 1, 22 Minimum: 5.4 Average: 5.6 Comments:	5.5	0.7	4.8
215 Description: Circ on 2" Long Neck Nozzle Date: Feb. 1, 22 Minimum: 17.0 Average: 17.6 Comments:			15.5
220 Description: Circ on 2" Nozzle Date: Feb. 1, 22 Minimum: 8.4 Average: 8.9 Comments:	8.7	1.6	7.1
225 Description: Top Head Date: Feb. 1, 22 Minimum: 22.0 Average: 22.1 Comments:	22.2	1.6	20.6
230 Description: Upper Shell Date: Feb. 1, 22 Minimum: 22.2 Average: 22.3 Comments:	22.2	1.6	20.6
235 Description: Upper Shell Date: Feb. 1, 22 Minimum: 22.2 Average: 22.4 Comments:	22.2	1.6	20.6
240 Description: Lower Shell Date: Feb. 1, 22 Minimum: 22.3 Average: 22.5 Comments:	22.2	1.6	20.6



UTS Data Sheet

Client: **Baytex Energy**
 Facility: **Cadotte Field**
 LSD: **13-09-85-17 w5m**
 Equip Description: **Test Separator**
 Reg A#: **0622288**
 Drawing #: **2**

	Nominal Thickness (mm)	Corrosion Allowance (mm)	Flag Thickness (mm)
245 Description: Lower Shell Date: Feb. 1, 22 Minimum: 22.3 Average: 22.4 Comments:	22.2	1.6	20.6
250 Description: Bottom Head Date: Feb. 1, 22 Minimum: 21.6 Average: 22.1 Comments: <i>Feb. 2021_Shallow corrosion at nozzle.</i>	22.2	1.6	20.6
255 Description: 4" 90° Nozzle Date: Feb. 1, 22 Minimum: 15.0 Average: 15.6 Comments:	22.2	1.6	20.6
260 Description: Bottom Shell on 24" Manway Date: Feb. 1, 22 Minimum: 60.7 Average: 61.0 Comments:			59.2
265 Description: Circ on 2" Long Neck Nozzle Date: Feb. 1, 22 Minimum: 21.0 Average: 21.8 Comments:			19.5
270 Description: 4" 90° Elbow Date: Feb. 1, 22 Minimum: 6.0 Average: 6.3 Comments:	6.0	0.8	5.2
275 Description: 2" 90° Elbow Date: Feb. 1, 22 Minimum: 4.9 Average: 5.2 Comments:	5.5	0.7	4.8



Customer: BAYTEX ENERGY

Description: PRODUCED GAS SEPARATOR

Facility: CADOTTE FIELD

Location: 13-09-85-17 W5M

Reg A#: 0622291

Serial #: 12-061.VS3

Drawing#: 3

CRN #: V8560.231

Manufacturer: KOOTENAY IND.

Unit #: V-5020

Year Built: 2012

Shell MAWP: 1579 kPa

Shell MAWT: 150°C

Shell Material: SA 516 70N

Nominal: 12.7mm

CA: 1.6mm

Tube "A" MAWP: _____

Tube "A" MAWT: _____

Head Material: SA 516 70N

Nominal: 12.7mm

CA: 1.6mm

Tube "B" MAWP: _____

Tube "B" MAWT: _____

Tube Material: _____

Nominal: _____

CA: _____

Size: 36in x 10ft

Manway: 16in

MDMT: -29°C

Boot Shell Mat: _____

Nominal: _____

CA: _____

Insulated: YES

C Stamp: U

RT: 1

PWHT: YES

Boot Head Mat: _____

Nominal: _____

CA: _____

PSV DATA

Manufacturer: FARRIS

Serviced By: APEX

Model: 26DA10-120

Service Date: 14-JAN-13

Serial: 576060-2-A10

Code Stamp: UV

Set Pressure: 1227 kPa

CRN: OG8442.5C

Capacity: 14 m3/min

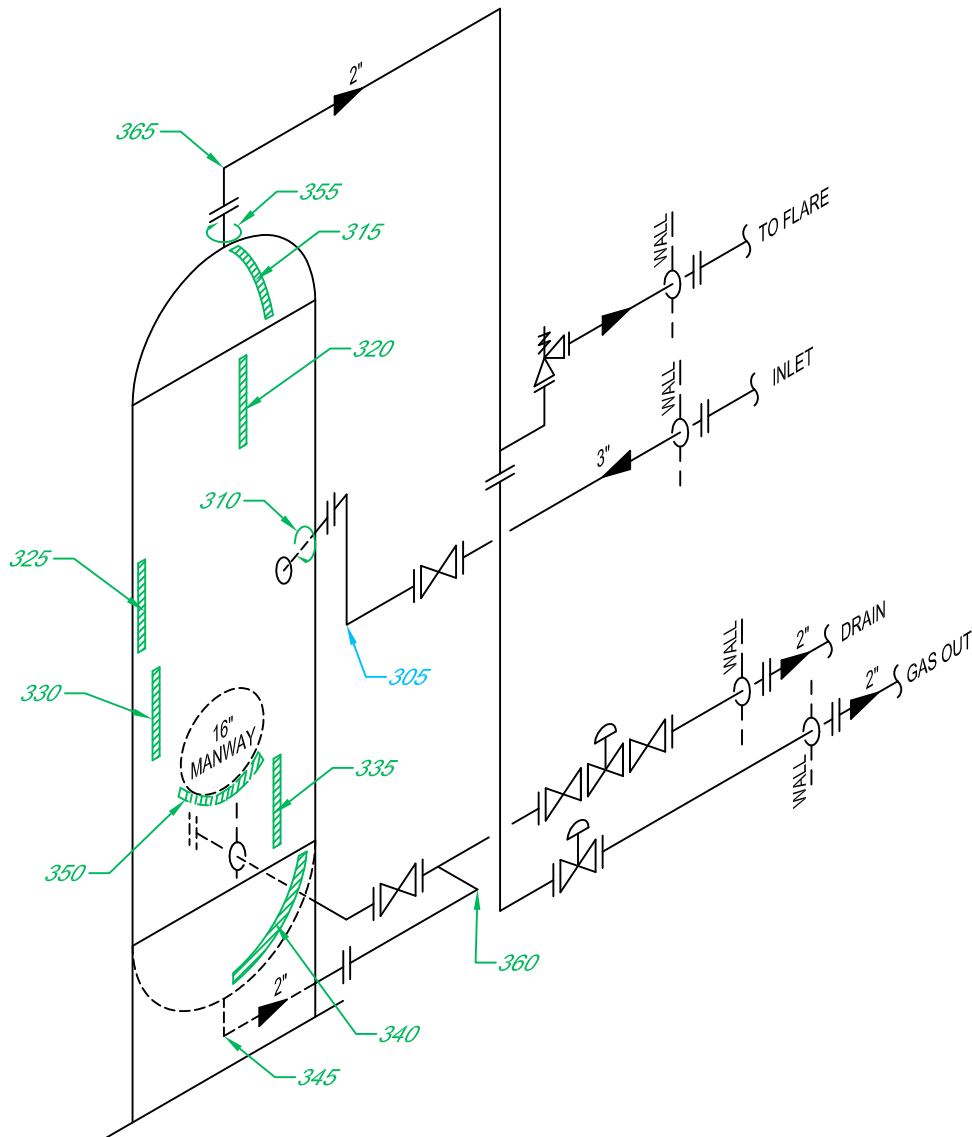
Location: OUTLET PIPING

Tag: N/S

Inlet Size: 1" 300 lb

Flows To: FLARE

Outlet Size: 2" 150 lb





UTS Data Sheet

Client: **Baytex Energy**
 Facility: **Cadotte Field**
 LSD: **13-09-85-17 w5m**
 Equip Description: **Produced Gas Separator**
 Reg A#: **0622291**
 Drawing #: **3**

	Nominal Thickness (mm)	Corrosion Allowance (mm)	Flag Thickness (mm)
305 Description: 3" 90° Elbow Date: Feb. 1, 22 Minimum: 4.7 Average: 5.1 Comments:	5.5	0.7	4.8
310 Description: Circ on 3" Nozzle Date: Feb. 1, 22 Minimum: 10.6 Average: 11.4 Comments: <i>Feb. 2022_Shallow corrosion at 6:00 position.</i>	11.1	1.6	9.5
315 Description: Top Head Date: Feb. 1, 22 Minimum: 12.1 Average: 12.8 Comments:	12.7	1.6	11.1
320 Description: Upper Shell Date: Feb. 1, 22 Minimum: 12.9 Average: 13.0 Comments:	12.7	1.6	11.1
325 Description: Mid Shell Date: Feb. 1, 22 Minimum: 12.8 Average: 13.0 Comments:	12.7	1.6	11.1
330 Description: Lower Shell Date: Feb. 1, 22 Minimum: 12.8 Average: 13.0 Comments:	12.7	1.6	11.1
335 Description: Lower Shell Date: Feb. 1, 22 Minimum: 12.9 Average: 13.1 Comments:	12.7	1.6	11.1
340 Description: Bottom Head Date: Feb. 1, 22 Minimum: 12.3 Average: 13.0 Comments: <i>Feb. 2022_Min scan at nozzle.</i>	12.7	1.6	11.1



UTS Data Sheet

Client: **Baytex Energy**

Facility: **Cadotte Field**

LSD: **13-09-85-17 w5m**

Equip Description: **Produced Gas Separator**

Reg A#: **0622291**

Drawing #: **3**

	Nominal Thickness (mm)	Corrosion Allowance (mm)	Flag Thickness (mm)
345 Description: 2" 90° Nozzle Date: Feb. 1, 22 Minimum: 7.9 Average: 8.3 Comments:	8.7	1.6	7.1
350 Description: Bottom Band on 24" Manway Date: Feb. 1, 22 Minimum: 26.2 Average: 26.6 Comments:			24.7
355 Description: Circ on 2" Long Neck Nozzle Date: Feb. 1, 22 Minimum: 15.8 Average: 16.4 Comments:			14.3
360 Description: 2" 90° Elbow Date: Feb. 1, 22 Minimum: 5.5 Average: 5.8 Comments:	5.5	0.7	4.8
365 Description: 2" 90° Elbow Date: Feb. 1, 22 Minimum: 5.0 Average: 5.3 Comments:	5.5	0.7	4.8