Husky Energy

Location Name:	RAVEN CREEK		**LSD:**	2-20-50-18 W5M	
A#:	643886		**Equipment/Tag No.**		
Equipment Description:	LOW TEMP SEPARATOR				
Manufacturer:	SPECTRUM PROCESS SYSTEMS				
Serial Number:	14-05110-32		**CRN:**	W6435.2	
Shell MAWP:	265	PSI	**Shell Design Temp:**	150	°F
Tube MAWP:		PSI	**Tube Design Temp:**		°F
Shell Material:	SA-333-6		**Head Material:**	SA-516-70N	
Shell Thickness:	9.53	mm	**Head Thickness:**	7.94	mm
Corrosion Allowance:	1.5875	mm	**Date Built:**	2014	
Size:	406	mm	**Pipe / Rolled Plate:**	PIPE	
RT:	2				

NOTES:

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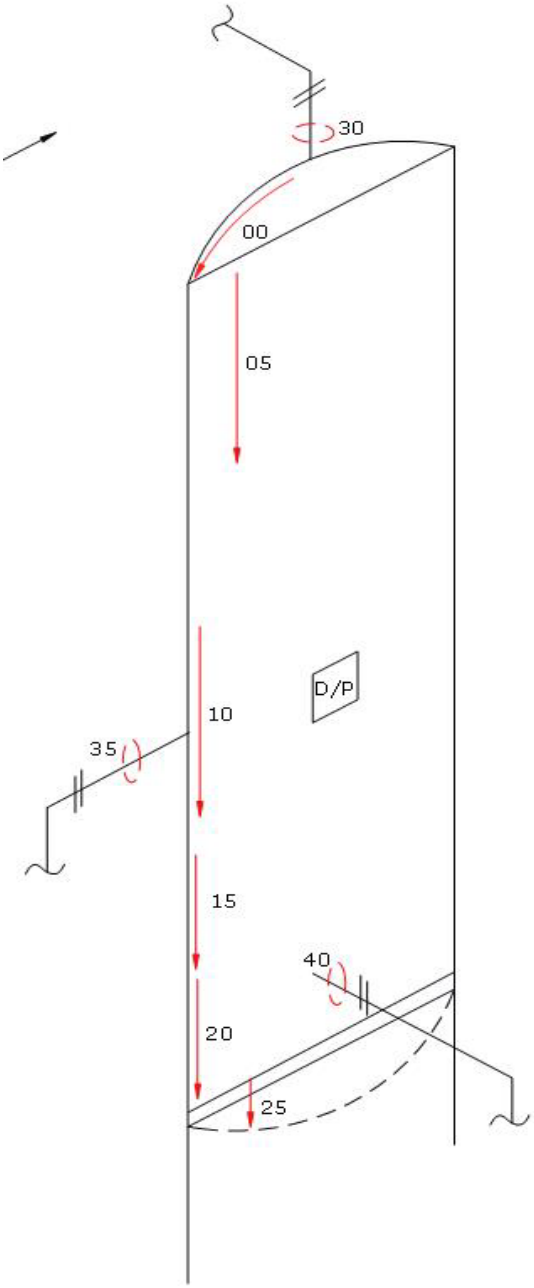

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Ultrasonic Corrosion Survey

*All values are in millimeters unless otherwise stated.

Survey Name: Husky Energy **Date:** Feb 10, 2015

Inspector: D. Skeard

LSD:	2-20-50-18 W5M	**Area:**	RAVEN CREEK		**Location:**	COMPRESSOR STATION			
A #:	643886	**Tag Number:**			**Vessel Name:**	LOW TEMP SEPARATOR			
CRN:	W6435.2	**Year Built:**	2014		**Serial Number:**	14-05110-32			
RT:	2	**Vessel CA:**	1.588	mm	**Manufacturer:**	SPECTRUM PROCESS SYSTEMS			
		Shell MAWP:	265	**MAWTF:** 150	**Tube MAWP:**		**MAWTF:**		**Pipe/Plate**
			PSI	°F		PSI		°F	PIPE

TML Description			Baseline					**Material:**	SA-516-70N	
00	HEAD		**2015**	**Flag**	**CA**	**Nominal**	**T Min**	**STCR mm/yr**	**LTCR mm/yr**
Shape:	Ellipsoidal	**Min**	9.65	6.350	1.588	7.938		0.000	0.000
OD:	406.4	**Avg**	9.88					**Remaining Life:**	
Spec:	ASME VIII Div.1	**Comments:**						**Retirement Date:**	

TML Description			Baseline					**Material:**	SA-333-6	
05	SHELL		**2015**	**Flag**	**CA**	**Nominal**	**T Min**	**STCR mm/yr**	**LTCR mm/yr**
Shape:	Cylindrical	**Min**	10.31	7.938	1.588	9.525		0.000	0.000
OD:	406.4	**Avg**	10.49					**Remaining Life:**	
Spec:	ASME VIII Div.1	**Comments:**						**Retirement Date:**	

TML Description			Baseline					**Material:**	SA-333-6	
10	SHELL		**2015**	**Flag**	**CA**	**Nominal**	**T Min**	**STCR mm/yr**	**LTCR mm/yr**
Shape:	Cylindrical	**Min**	9.63	7.938	1.588	9.525		0.000	0.000
OD:	406.4	**Avg**	9.78					**Remaining Life:**	
Spec:	ASME VIII Div.1	**Comments:**						**Retirement Date:**	

TML Description			Baseline					**Material:**	SA-333-6	
15	SHELL		**2015**	**Flag**	**CA**	**Nominal**	**T Min**	**STCR mm/yr**	**LTCR mm/yr**
Shape:	Cylindrical	**Min**	9.73	7.938	1.588	9.525		0.000	0.000
OD:	406.4	**Avg**	9.86					**Remaining Life:**	
Spec:	ASME VIII Div.1	**Comments:**						**Retirement Date:**	

STREAMLINE INSPECTION LTD.

Ultrasonic Corrosion Survey

*All values are in millimeters unless otherwise stated.

Survey Name: Husky Energy **Date:** Feb 10, 2015

Inspector: D. Skeard

LSD:	2-20-50-18 W5M	**Area:**	RAVEN CREEK		**Location:**	COMPRESSOR STATION			
A #:	643886	**Tag Number:**			**Vessel Name:**	LOW TEMP SEPARATOR			
CRN:	W6435.2	**Year Built:**	2014		**Serial Number:**	14-05110-32			
RT:	2	**Vessel CA:**	1.588	mm	**Manufacturer:**	SPECTRUM PROCESS SYSTEMS			
		Shell MAWP:	265	**MAWTF:** 150	**Tube MAWP:**		**MAWTF:**		**Pipe/Plate**
			PSI	°F		PSI		°F	PIPE

TML Description			Baseline					**Material:**	SA-333-6	
20	SHELL		**2015**	**Flag**	**CA**	**Nominal**	**T Min**	**STCR mm/yr**	**LTCR mm/yr**
Shape:	Cylindrical	**Min**	9.45	7.938	1.588	9.525		0.000	0.076
OD:	406.4	**Avg**	9.58					**Remaining Life:**	
Spec:	ASME VIII Div.1	**Comments:**						**Retirement Date:**	

TML Description			Baseline					**Material:**	SA-516-70N	
25	HEAD		**2015**	**Flag**	**CA**	**Nominal**	**T Min**	**STCR mm/yr**	**LTCR mm/yr**
Shape:	Ellipsoidal	**Min**	9.12	6.350	1.588	7.938		0.000	0.000
OD:	406.4	**Avg**	9.40					**Remaining Life:**	
Spec:	ASME VIII Div.1	**Comments:**						**Retirement Date:**	

TML Description			Baseline					**Material:**	SA-106-B	
30	NOZZLE		**2015**	**Flag**	**CA**	**Nominal**	**T Min**	**STCR mm/yr**	**LTCR mm/yr**
Shape:	360° Circ	**Min**	7.98	6.668	0.953	7.620		0.000	0.000
OD:	88.9	**Avg**	8.13					**Remaining Life:**	
Spec:	ASME VIII Div.1	**Comments:**	ASSUMED					**Retirement Date:**	

TML Description			Baseline					**Material:**	SA-106-B	
35	NOZZLE		**2015**	**Flag**	**CA**	**Nominal**	**T Min**	**STCR mm/yr**	**LTCR mm/yr**
Shape:	360° Circ	**Min**	7.90	6.668	0.953	7.620		0.000	0.000
OD:	88.9	**Avg**	8.31					**Remaining Life:**	
Spec:	ASME VIII Div.1	**Comments:**	ASSUMED					**Retirement Date:**	

Ultrasonic Corrosion Survey

*All values are in millimeters unless otherwise stated.

Survey Name: Husky Energy **Date:** Feb 10, 2015

Inspector: D. Skeard

LSD:	2-20-50-18 W5M	**Area:**	RAVEN CREEK			**Location:**	COMPRESSOR STATION		
A #:	643886	**Tag Number:**				**Vessel Name:**	LOW TEMP SEPARATOR		
CRN:	W6435.2	**Year Built:**	2014			**Serial Number:**	14-05110-32		
RT:	2	**Vessel CA:**	1.588	mm		**Manufacturer:**	SPECTRUM PROCESS SYSTEMS		
		Shell MAWP:	265	**MAWTF:**	150	**Tube MAWP:**		**MAWTF:**	**Pipe/Plate**
			PSI		°F		PSI	°F	PIPE

TML Description			Baseline					**Material:**	SA-106-B	
40	NOZZLE		**2015**	**Flag**	**CA**	**Nominal**	**T Min**	**STCR mm/yr**	**LTCR mm/yr**
Shape:	360° Circ	**Min**	8.15	7.623	1.089	8.712		0.000	0.559
OD:	60.325	**Avg**	8.92					**Remaining Life:**	
Spec:	ASME VIII Div.1	**Comments:**	ASSUMED / LOW READING					**Retirement Date:**	

FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS Ⓐ 643886

(Alternative Form for Single Chamber, Completely Shop or Field Fabricated Vessels Only)
As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section VIII, Division 1

1. Manufactured and certified by Spectrum Process Systems Inc. 285175 Kleysen Way, Rocky View , Alberta. T1X 0K1 Canada
(Name and address of manufacturer)

2. Manufactured for Husky Energy. 707-8th Avenue SW. Box 6525, Station "D" Calgary, Alberta T2P 3G7
(Name and address of manufacturer)

3. Location of installation LSD: 02-20-050-18 W5M
(Name and address)

4. Type Vertical Separator (Horizontal or virtical, tank) 14-05110-32 (Manufacturer's serial number) W6435.2 (CRN) V-14-05110-32 R.1 (Drawing numbers) - (National Board number) 2014 (Year built)

5. ASME Code, Section VIII, Division 1 2013 Ed. [Edition and Addenda, it applicable (date)] N/A (Code Case numbers) N/A (Special service per UG 120(d))

6. Shell SA-333-6 (Material spec. number, grade) 3/8" (Nominal thickness) .0625" (Corr. allow) 1'-3 1/4" (Inner diameter) 6'-0" [Length overall])

Body Flange on Shell

No.	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Location	Bolting: Num & Size	Bolting: Bolting Material	Bolting: Washer (OD, ID, thik)	Bolting: Washer Material
-	-	-	-	-	-	-	-	-	-	-	-	-

7. Seams Seamless [Long .(welded dbl,sngl.,lap,butt)] N/A (R.T.(spot or full)) 100% (Eff.,%) N/A (H.T. temp.) N/A (Time, hr) Type1 (Girth (welded, dbl, sngl, lap, butt)) Spot R.T. (spot or full)) 70% (Eff.,%) 1 (No. of courses)

8. Heads: (a) Material SA-516-70N (Spec. no., grade) (b) Material SA-516-70N (Spec. no., grade)

	Location (Top, Bottom, End)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side Pressure (Convex or Concave)
(a)	Top Head	.3125"	.0625"	-	-	2:1	-	-	-	Concave
(b)	Bot Head	.3125"	.0625"	-	-	2:1	-	-	-	Concave

Body Flange on Head

No.	Location	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Bolting: Num & Size	Bolting: Bolting Material	Bolting: Washer (OD, ID, thik)	Bolting: Washer Material
(a)	-	-	-	-	-	-	-	-	-	-	-	-
(b)												

9. MAWP 265 PSIG (Internal) 15 PSIG External at max. temp. 150 F (Internal) 150 F External

Min. design metal temp. -49 F at 265 PSIG Hydro., ~~pneu., or comb~~. test pressure 398 PSIG

Proof test N/A

10. Nozzles, inspection, and safety valve opening:

Purpose (Inlet, Outlet, Drain etc.)	No.	Diameter or Size	Type	Material: Nozzle	Material: Flange	Nozzle thickness: Nom.	Nozzle thickness: Corr.	Reinforcement Material	Attachment Details: Nozzle	Attachment Details: Flange	Location (Insp. Open.)
LSHH/LC	2	4"	RFWN/CL150	SA-333-6	*	.337"	.0625"	Integral	UW16.1(c)	Type1	Shell
Gas inlet/outlet/Insp.	2	3"	RFWN/CL150	SA-333-6	*	.300"	.0625"	Integral	UW16.1(c)	Type1	Shell/Head
PSV/PI/TIT/LG	5	2"	RFWN/CL150	SA-333-6	*	.344"	.0625"	Integral	UW16.1(c)	Type1	Shell
Liq out/Drain/Insp.	3	2"	RFWN/CL150	SA-333-6	*	.344"	.0625"	Integral	UW16.1(c)	Type1	Shell

11. Supports: Skirt Yes (Yes or No) Lugs N/A (Number) Legs N/A (Number) Other N/A (Describe) Attached Welded to Bot. Head (where and how)

12. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: N/A
(Name of part, item number Manufacturer's name and identifying stamp)

Production impact testing exempt per UCS-66(a), material impact test required on heads per UG-84. All low tem. material exempt per UCS-66(g). Volume: 8.56 Cu.ft (.24 Cu.M) PSV Installed by other as per UG-125 Construction DWG. NO: V-14-05110-32 R.2 Tag # V-326 * SA-350 LF2 CL1

FORM U-1A (Back)

CERTIFICATE OF SHOP/FIELD COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, construction, and workmanship of this vessel conform to the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. 'U" Certificate of Authorization Number 21,356 expires July 21,2016

Date November 6, 2014 Co. name Spectrum Process Systems Inc. (Manufacturer) Signed (Representative)

CERTIFICATE OF SHOP/FIELD INSPECTION

Vessel constructed by Spectrum Process Systems Inc. 285175 Kleysen Way, Rocky View , Alberta. T1X 0K1 Canada

I, the undersigned holding valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by ABSA, Calgary, Alberta, Canada

have inspected the component described in this Manufacturer's Data Report on NOV 0 6 2014 , and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. By signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed or implied concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her employer shall liable in any manner for any personal injury property damage or a loss of any kind arising from or connected with this inspection,

Date NOV 0 6 2014 Signed (Authorized Inspector) Commissions AB 249 NB 12900 A (National Board (incl. endorsements))

(04/14)