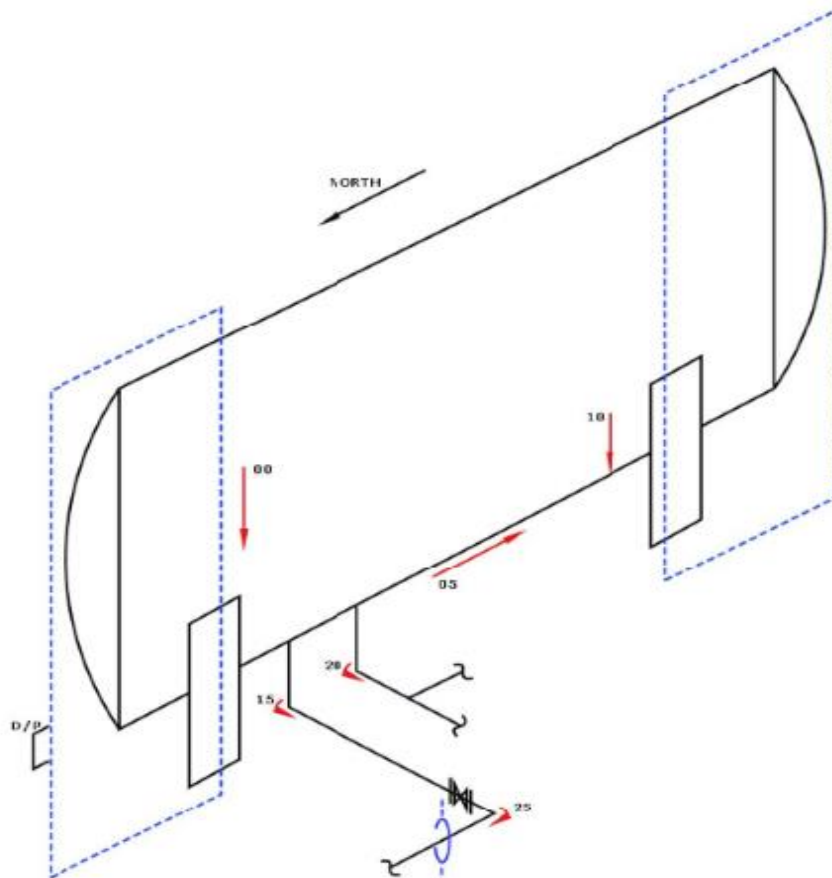




<b>Location Name:</b>	RAVEN CREEK	<b>LSD:</b>	02-20-050-18 W5M
<b>Jur #:</b>	A0625864	<b>Equipment/Tag No.</b>	287287
<b>Equipment Description:</b>	HORIZONTAL KNOCKOUT		
<b>Manufacturer:</b>	BILTON WELDING AND MANUFACTURING LTD.		
<b>Serial Number:</b>	16443	<b>CRN:</b>	T6580.2
<b>Shell MAWP:</b>	345	<b>KPA</b>	<b>Shell Design Temp:</b> 38 °C
<b>Tube MAWP:</b>	0	<b>Tube Design Temp:</b>	0
<b>Shell Material:</b>	SA-516-70N	<b>Head Material:</b>	SA-516-70N
<b>Shell Thickness:</b>	9.53	<b>mm</b>	<b>Head Thickness:</b> 7.95 mm
<b>Corrosion Allowance:</b>	3.175	<b>mm</b>	<b>Date Built:</b> 2014
<b>Size:</b>	1828.8	<b>mm</b>	<b>Pipe / Rolled Plate:</b> PLATE
<b>RT:</b>	4	<b>Streamline Report #:</b>	STL-190060-DMS 49

**NOTES:** NO PREVIOUS REPORT. SAP UNKNOWN.







# Ultrasonic Corrosion Survey

\*All values are in millimeters unless otherwise stated.

Survey Name: Husky Energy

Date: Jan 31, 2019

Streamline Report #: STL-190060-DMS 49

Inspector: Colin Davies

<b>LSD:</b> 02-20-050-18 W5M	<b>Area:</b> RAVEN CREEK	<b>Location:</b> FIELD
<b>Jur #:</b> A0625864	<b>Tag Number:</b> 287287	<b>Vessel Name:</b> HORIZONTAL KNOCKOUT
<b>CRN:</b> T6580.2	<b>Year Built:</b> 2014	<b>Serial Number:</b> 16443
<b>RT:</b> 4	<b>Vessel CA:</b> 3.175 mm	<b>Manufacturer:</b> BILTON WELDING AND MANUFACTURING LTD.
	<b>Shell MAWP:</b> 345 KPA	<b>Tube MAWP:</b> 0
	<b>MAWT:</b> 38 °C	<b>MAWT:</b> 0
		<b>Pipe/Plate</b> PLATE

<b>CML Description</b>	Baseline	<b>Flange ANSI:</b>	<b>Material:</b> SA-516-70N
<b>00 SHELL</b>	<b>2019</b>	<b>CA</b>	<b>T Min</b>
<b>Shape:</b> Cylindrical	<b>Min</b> 10.01	<b>Flag</b> 6.350	<b>STCR mm/yr</b> 0.000
<b>OD:</b> 1828.8	<b>Avg</b> 10.24	<b>Nominal</b> 3.175	<b>LTCR mm/yr</b> 0.000
<b>Spec:</b> ASME VIII Div.1	<b>Comments:</b>		<b>Remaining Life:</b>
			<b>Retirement Date:</b>

<b>CML Description</b>	Baseline	<b>Flange ANSI:</b>	<b>Material:</b> SA-516-70N
<b>05 SHELL</b>	<b>2019</b>	<b>CA</b>	<b>T Min</b>
<b>Shape:</b> Cylindrical	<b>Min</b> 10.24	<b>Flag</b> 6.350	<b>STCR mm/yr</b> 0.000
<b>OD:</b> 1828.8	<b>Avg</b> 10.44	<b>Nominal</b> 3.175	<b>LTCR mm/yr</b> 0.000
<b>Spec:</b> ASME VIII Div.1	<b>Comments:</b>		<b>Remaining Life:</b>
			<b>Retirement Date:</b>

<b>CML Description</b>	Baseline	<b>Flange ANSI:</b>	<b>Material:</b> SA-516-70N
<b>10 SHELL</b>	<b>2019</b>	<b>CA</b>	<b>T Min</b>
<b>Shape:</b> Cylindrical	<b>Min</b> 10.16	<b>Flag</b> 6.350	<b>STCR mm/yr</b> 0.000
<b>OD:</b> 1828.8	<b>Avg</b> 10.24	<b>Nominal</b> 3.175	<b>LTCR mm/yr</b> 0.000
<b>Spec:</b> ASME VIII Div.1	<b>Comments:</b>		<b>Remaining Life:</b>
			<b>Retirement Date:</b>

<b>CML Description</b>	Baseline	<b>Flange ANSI:</b>	<b>Material:</b> SA-234-WPB
<b>15 PIPING</b>	<b>2019</b>	<b>CA</b>	<b>T Min</b>
<b>Shape:</b> 90° Elbow	<b>Min</b> 6.05	<b>Flag</b> 4.801	<b>STCR mm/yr</b> 0.000
<b>OD:</b> 88.9	<b>Avg</b> 6.12	<b>Nominal</b> 0.686	<b>LTCR mm/yr</b> 0.000
<b>Spec:</b> ASME B31.3	<b>Comments:</b> ASSUMED NOMINAL, THICK PAINT		<b>Remaining Life:</b>
			<b>Retirement Date:</b>



# Ultrasonic Corrosion Survey

\*All values are in millimeters unless otherwise stated.

Survey Name: Husky Energy

Date: Jan 31, 2019

Streamline Report #: STL-190060-DMS 49

Inspector: Colin Davies

<b>LSD:</b> 02-20-050-18 W5M	<b>Area:</b> RAVEN CREEK	<b>Location:</b> FIELD
<b>Jur #:</b> A0625864	<b>Tag Number:</b> 287287	<b>Vessel Name:</b> HORIZONTAL KNOCKOUT
<b>CRN:</b> T6580.2	<b>Year Built:</b> 2014	<b>Serial Number:</b> 16443
<b>RT:</b> 4	<b>Vessel CA:</b> 3.175 mm	<b>Manufacturer:</b> BILTON WELDING AND MANUFACTURING LTD.
	<b>Shell MAWP:</b> 345 KPA	<b>Tube MAWP:</b> 0
	<b>MAWT:</b> 38 °C	<b>MAWT:</b> 0
		<b>Pipe/Plate</b> PLATE

<b>CML Description</b>	Baseline	<b>Flange ANSI:</b>	<b>Material:</b> SA-234-WPB
<b>20</b> PIPING	<b>2019</b>	<b>CA</b>	<b>T Min</b>
<b>Shape:</b> 90° Elbow	<b>Min</b> 6.02	<b>Flag</b> 4.801	<b>STCR mm/yr</b> 0.000
<b>OD:</b> 88.9	<b>Avg</b> 6.17	<b>Nominal</b> 5.486	<b>LTCR mm/yr</b> 0.000
<b>Spec:</b> ASME B31.3	<b>Comments:</b> ASSUMED NOMINAL, THICK PAINT		<b>Remaining Life:</b>
			<b>Retirement Date:</b>

<b>CML Description</b>	Baseline	<b>Flange ANSI:</b>	<b>Material:</b> SA-234-WPB
<b>25</b> PIPING	<b>2019</b>	<b>CA</b>	<b>T Min</b>
<b>Shape:</b> 90° Elbow	<b>Min</b> 5.99	<b>Flag</b> 4.801	<b>STCR mm/yr</b> 0.000
<b>OD:</b> 88.9	<b>Avg</b> 6.27	<b>Nominal</b> 5.486	<b>LTCR mm/yr</b> 0.000
<b>Spec:</b> ASME B31.3	<b>Comments:</b> ASSUMED NOMINAL, THICK PAINT		<b>Remaining Life:</b>
			<b>Retirement Date:</b>

**FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS**  
**(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 Bilton Welding and Manufacturing Ltd., 5815 - 37th Street, Innisfail, Alberta T4G 1S8, Canada  
(Name and address of Manufacturer)
2. Manufactured for Husky Oil Operations PO Box 4490, Station D Calgary, AB Canada T2P 3G7  
(Name and address of Purchaser)
3. Location of installation Husky Oil Operations 707 - 8th Avenue SW Calgary, AB Canada T2P 3G7 LSD: 02-20-050-18 W5M  
(Name and address)
4. Type: Horizontal Knockout 16443 T6580.2 BWM-169-06 N/A 2014  
(Horizontal or vertical, tank) (Manufacturer's serial number) (CRN) (Drawing number) (National Board number) (Year built)
5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design, construction, and workmanship conform to ASME Rules, Section VIII, Division 1 2010  
Year  
to 2011 N/A N/A  
[Addenda, if applicable (Date)] (Code Case numbers) [Special Service per UG-120(d)]
6. Shell SA-516-70N 3/8 inch 0.0625" 72 inch 8 feet  
(Material spec. number, grade) (Nominal thickness) (Corr. Allow.) (Inner diameter) (Length (overall))
7. Seams: Type 1 Spot 70 Nil Nil Type 1 Spot 70 1  
[Long. (welded, dbl, enlg., lapp, butt)] [R.T. (Spot or Full)] (Eff., %) (H.T. temp.) (°F) (Time, hr) [Girth (welded, dbl, enlg., lapp, butt)] [R.T. (Spot or Full)] (Eff., %) (No. of Courses)
8. Heads: (a) Material SA-516-70N (b) Material SA-516-70N  
(Spec. no., grade) (Spec. no., grade)

	Location (Top, Bottom, Ends)	Minimum Thickness (inch)	Corrosion Allowance (inch)	Crown Radius (inch)	Knuckle Radius (inch)	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius (inch)	Flat Diameter (inch)	Side to Pressure (Convex or Concave)
(a)	End	0.313"	.0625"			2:1				Concave
(b)	End	0.313"	.0625"			2:1				Concave

If removable, bolts used (describe other fastenings)

(Material spec. number, grade, size, number)

9. MAWP 50 NIL psi at max temp. 100 NIL °F  
(Internal) (External) (Internal) (External)
- Min. design metal temp. -49 °F at 50 psi. Hydro., pneu., or comb. test press. 75 psi.
- Proof test N/A

10. Nozzles, inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain etc.)	No.	Diameter or Size (inch)	Type	Material		Nozzle Thickness (inch)		Reinforcement Material	Attachment Details		Location (Insp. Open.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
N1, N2 - Inlet Outlet	2	NPS 10	RFWN CL150	SA-333-6	SA-350-LF2 CL1	0.365"	0.125"	N/A	UW-16.1(c)	Butt Weld	Heads
N4, N5 - Pump out, Truckout	2	NPS 3	RFWN CL150	SA-333-6	SA-350-LF2 CL1	0.300"	0.125"	N/A	UW-16.1(c)	Butt Weld	Shell
N3, N8, N9 - Purge gas, PIT, T/O Purge	3	NPS 2	RFWN CL150	SA-333-6	SA-350-LF2 CL1	0.344"	0.125"	N/A	UW-16.1(c)	Butt Weld	Shell
N6A/B, N7 - LSHH/LSLL, LG/LT	2	NPS 4	RFWN CL150	SA-333-6	SA-350-LF2 CL1	0.337"	0.125"	N/A	UW-16.1(c)	Butt Weld	Shell
M1 - Manway	1	NPS 24	RFWN CL150	SA-333-6	SA-350-LF2 CL1	0.375"	0.125"	N/A	UW-16.1(c)	Butt Weld	Shell

11. Supports: Skirt No Lugs 0 Legs 0 Other Saddles Attached Fillet weld to shell  
(Yes or no) (Number) (Number) (Describe) (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:

Name of part, item number, Manufacturer's name and identifying stamp

Const. Dwg: D2418-201 R0, D2418-202 R0, D2418-203-R0. PSV on piping and approved by Owner per UG-125. Volume: 226 FT<sup>3</sup> / 6.39 M<sup>3</sup>

Head & shell material impacts exempt per Fig. UCS-66. Flange & pipe material impacts exempt per Fig. UCS-66(g). Bolting material impacts exempt per Fig. UCS-66(c). Production impacts required per UG-84(i) to exceed 15/10 ft-lbs @ temp not warmer than -49F.

RT-4 1 spot on Circ seam and 1 spot on long seam, No RT required per UW-11(a)

M1: 24" RFWN CL150 SA-350-LF2 CL1, (20) 1-1/4"x 6 3/4" studs SA-193-B7M N.C threads, (40) 1-1/4" hex nuts SA-194-2HM

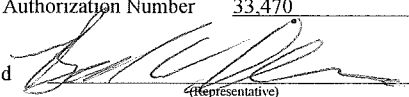
**CERTIFICATE OF SHOP/FIELD COMPLIANCE**

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. "U" Certificate of Authorization Number 33,470 expires August 16, 2014.

Date 02/12/14

Co. Name Bilton Welding and Manufacturing Ltd.  
(Manufacturer)

Signed

  
(Representative)

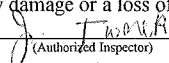
**CERTIFICATE OF SHOP/FIELD INSPECTION**

Vessel constructed by Bilton Welding and Manufacturing Ltd. at 5815 - 37th Street, Innisfail, AB T4G 1S8

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of Alberta and employed by ABSA

have inspected the component described in this Manufacturer's Data Report on 12 Feb 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 be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 12 Feb 2014 Signed

  
(Authorized Inspector)

Commissions NB 12995 A.B AB 261  
[National Board (incl endorsements), State, Province and number]