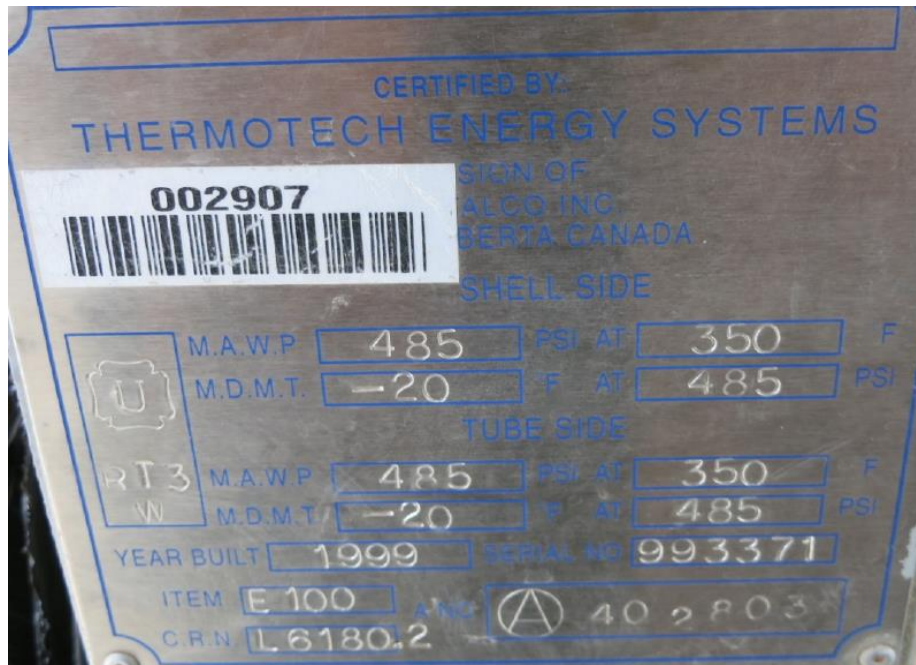
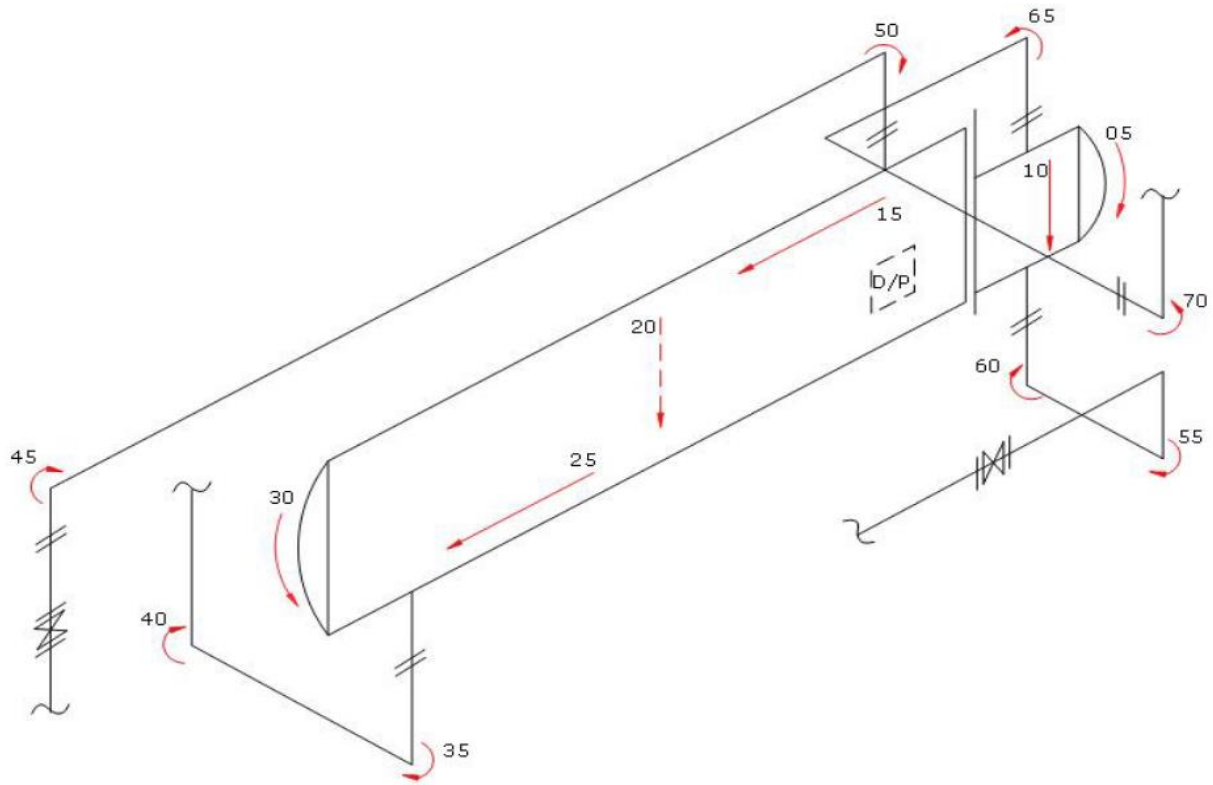




<b>Location Name:</b>	Edson	<b>LSD:</b>	07-27-051-19W5
<b>Jur #:</b>	A0402803	<b>Equipment/Tag No.</b>	E-110
<b>Equipment Description:</b>	EXCHANGER		
<b>Manufacturer:</b>	THERMOTECH ENERGY		
<b>Serial Number:</b>	993371	<b>CRN:</b>	L6180.2
<b>Shell MAWP:</b>	3343	<b>KPA Shell Design Temp:</b>	177 °C
<b>Tube MAWP:</b>		<b>KPA Tube Design Temp:</b>	°C
<b>Shell Material:</b>	SA-106-B	<b>Head Material:</b>	SA-234-WPB
<b>Shell Thickness:</b>	8.18	<b>mm Head Thickness:</b>	6.50 mm
<b>Corrosion Allowance:</b>	1.5875	<b>mm Date Built:</b>	1999
<b>Size:</b>	219	<b>mm Pipe / Rolled Plate:</b>	PIPE
<b>RT:</b>	1	<b>Streamline Report #:</b>	STL-190246-DMS 118

**NOTES:** SAP 66038580









# Ultrasonic Corrosion Survey

\*All values are in millimeters unless otherwise stated.

Survey Name: Husky Energy

Date: Jul 17, 2019

Streamline Report #: STL-190246-DMS 118

Inspector: Jae Lee

<b>LSD:</b> 07-27-051-19W5	<b>Area:</b> Edson	<b>Location:</b> Ansell Plant
<b>Jur #:</b> A0402803	<b>Tag Number:</b> E-110	<b>Vessel Name:</b> EXCHANGER
<b>CRN:</b> L6180.2	<b>Year Built:</b> 1999	<b>Serial Number:</b> 993371
<b>RT:</b> 1	<b>Vessel CA:</b> 1.588 mm	<b>Manufacturer:</b> THERMOTECH ENERGY
	<b>Shell MAWP:</b> 3343 KPA	<b>Tube MAWP:</b> KPA
	<b>MAWT:</b> 177 °C	<b>MAWT:</b> °C
		<b>Pipe/Plate PIPE</b>

<b>CML Description</b>		Previous	Current		<b>Flange ANSI:</b>		<b>Material:</b> SA-234-WPB		
<b>05 HEAD</b>		<b>2014</b>	<b>2019</b>	<b>Flag</b>	<b>CA</b>	<b>Nominal</b>	<b>T Min</b>	<b>STCR mm/yr</b>	<b>LTCR mm/yr</b>
<b>Shape:</b> Ellipsoidal	<b>Min</b>	7.24	7.39	4.915	1.588	6.502		0.000	0.000
<b>OD:</b> 219.075	<b>Avg</b>	8.46	7.85						
<b>Spec:</b> ASME VIII Div.1	<b>Comments:</b>							<b>Remaining Life:</b>	<b>Retirement Date:</b>

<b>CML Description</b>		Previous	Current		<b>Flange ANSI:</b>		<b>Material:</b> SA-234-WPB		
<b>10 HEAD</b>		<b>2014</b>	<b>2019</b>	<b>Flag</b>	<b>CA</b>	<b>Nominal</b>	<b>T Min</b>	<b>STCR mm/yr</b>	<b>LTCR mm/yr</b>
<b>Shape:</b> Ellipsoidal	<b>Min</b>	8.46	8.31	4.915	1.588	6.502		0.031	0.000
<b>OD:</b> 219.075	<b>Avg</b>	8.81	8.84						
<b>Spec:</b> ASME VIII Div.1	<b>Comments:</b>							<b>Remaining Life:</b>	<b>Retirement Date:</b>

<b>CML Description</b>		Previous	Current		<b>Flange ANSI:</b>		<b>Material:</b> SA-106-B		
<b>15 SHELL</b>		<b>2014</b>	<b>2019</b>	<b>Flag</b>	<b>CA</b>	<b>Nominal</b>	<b>T Min</b>	<b>STCR mm/yr</b>	<b>LTCR mm/yr</b>
<b>Shape:</b> Cylindrical	<b>Min</b>	8.89	9.25	6.593	1.588	8.180		0.000	0.000
<b>OD:</b> 219.075	<b>Avg</b>	9.27	9.68						
<b>Spec:</b> ASME VIII Div.1	<b>Comments:</b>							<b>Remaining Life:</b>	<b>Retirement Date:</b>

<b>CML Description</b>		Previous	Current		<b>Flange ANSI:</b>		<b>Material:</b> SA-106-B		
<b>20 SHELL</b>		<b>2014</b>	<b>2019</b>	<b>Flag</b>	<b>CA</b>	<b>Nominal</b>	<b>T Min</b>	<b>STCR mm/yr</b>	<b>LTCR mm/yr</b>
<b>Shape:</b> Cylindrical	<b>Min</b>	8.64	8.92	6.593	1.588	8.180		0.000	0.000
<b>OD:</b> 219.075	<b>Avg</b>	8.92	9.30						
<b>Spec:</b> ASME VIII Div.1	<b>Comments:</b>							<b>Remaining Life:</b>	<b>Retirement Date:</b>



# Ultrasonic Corrosion Survey

\*All values are in millimeters unless otherwise stated.

Survey Name: Husky Energy

Date: Jul 17, 2019

Streamline Report #: STL-190246-DMS 118

Inspector: Jae Lee

<b>LSD:</b> 07-27-051-19W5	<b>Area:</b> Edson	<b>Location:</b> Ansell Plant
<b>Jur #:</b> A0402803	<b>Tag Number:</b> E-110	<b>Vessel Name:</b> EXCHANGER
<b>CRN:</b> L6180.2	<b>Year Built:</b> 1999	<b>Serial Number:</b> 993371
<b>RT:</b> 1	<b>Vessel CA:</b> 1.588 mm	<b>Manufacturer:</b> THERMOTECH ENERGY
	<b>Shell MAWP:</b> 3343 KPA	<b>Tube MAWP:</b> KPA
	<b>MAWT:</b> 177 °C	<b>MAWT:</b> °C
		<b>Pipe/Plate PIPE</b>

<b>CML Description</b>	Previous	Current		<b>Flange ANSI:</b>	<b>Material:</b> SA-106-B
<b>25 SHELL</b>	<b>2014</b>	<b>2019</b>	<b>Flag</b>	<b>CA</b>	<b>Nominal</b> T Min
<b>Shape:</b> Cylindrical	<b>Min</b> 8.23	<b>Min</b> 8.86	6.593	1.588	8.180
<b>OD:</b> 219.075	<b>Avg</b> 8.66	<b>Avg</b> 9.12			
<b>Spec:</b> ASME VIII Div.1	<b>Comments:</b>				<b>STCR mm/yr</b> 0.000
					<b>LTCR mm/yr</b> 0.000
					<b>Remaining Life:</b>
					<b>Retirement Date:</b>

<b>CML Description</b>	Previous	Current		<b>Flange ANSI:</b>	<b>Material:</b> SA-234-WPB
<b>30 HEAD</b>	<b>2014</b>	<b>2019</b>	<b>Flag</b>	<b>CA</b>	<b>Nominal</b> T Min
<b>Shape:</b> Ellipsoidal	<b>Min</b> 7.16	<b>Min</b> 7.49	4.915	1.588	6.502
<b>OD:</b> 219.075	<b>Avg</b> 8.66	<b>Avg</b> 7.92			
<b>Spec:</b> ASME VIII Div.1	<b>Comments:</b>				<b>STCR mm/yr</b> 0.000
					<b>LTCR mm/yr</b> 0.000
					<b>Remaining Life:</b>
					<b>Retirement Date:</b>

<b>CML Description</b>	Previous	Current		<b>Flange ANSI:</b>	<b>Material:</b> SA-234-WPB
<b>35 PIPING</b>	<b>2014</b>	<b>2019</b>	<b>Flag</b>	<b>CA</b>	<b>Nominal</b> T Min
<b>Shape:</b> 90° Elbow	<b>Min</b> 3.23	<b>Min</b> 3.61	3.423	0.489	3.912
<b>OD:</b> 60.325	<b>Avg</b> 3.71	<b>Avg</b> 3.99			
<b>Spec:</b> ASME B31.3	<b>Comments:</b> ASSUMED NOMINAL				<b>STCR mm/yr</b> 0.000
					<b>LTCR mm/yr</b> 0.015
					<b>Remaining Life:</b>
					<b>Retirement Date:</b>

<b>CML Description</b>	Previous	Current		<b>Flange ANSI:</b>	<b>Material:</b> SA-234-WPB
<b>40 PIPING</b>	<b>2014</b>	<b>2019</b>	<b>Flag</b>	<b>CA</b>	<b>Nominal</b> T Min
<b>Shape:</b> 90° Elbow	<b>Min</b> 3.51	<b>Min</b> 3.86	3.423	0.489	3.912
<b>OD:</b> 60.325	<b>Avg</b> 3.76	<b>Avg</b> 4.14			
<b>Spec:</b> ASME B31.3	<b>Comments:</b> ASSUMED NOMINAL				<b>STCR mm/yr</b> 0.000
					<b>LTCR mm/yr</b> 0.003
					<b>Remaining Life:</b>
					<b>Retirement Date:</b>



# Ultrasonic Corrosion Survey

\*All values are in millimeters unless otherwise stated.

Survey Name: Husky Energy

Date: Jul 17, 2019

Streamline Report #: STL-190246-DMS 118

Inspector: Jae Lee

<b>LSD:</b> 07-27-051-19W5	<b>Area:</b> Edson	<b>Location:</b> Ansell Plant
<b>Jur #:</b> A0402803	<b>Tag Number:</b> E-110	<b>Vessel Name:</b> EXCHANGER
<b>CRN:</b> L6180.2	<b>Year Built:</b> 1999	<b>Serial Number:</b> 993371
<b>RT:</b> 1	<b>Vessel CA:</b> 1.588 mm	<b>Manufacturer:</b> THERMOTECH ENERGY
	<b>Shell MAWP:</b> 3343 KPA	<b>Tube MAWP:</b> KPA
	<b>MAWT:</b> 177 °C	<b>MAWT:</b> °C
		<b>Pipe/Plate PIPE</b>

<b>CML Description</b>	Previous	Current		<b>Flange ANSI:</b>	<b>Material:</b> SA-234-WPB
<b>45 PIPING</b>	<b>2014</b>	<b>2019</b>	<b>Flag</b>	<b>CA</b>	<b>Nominal</b>
<b>Shape:</b> 90° Elbow	<b>Min</b>	3.86	3.423	0.489	3.912
<b>OD:</b> 60.325	<b>Avg</b>	3.68			
<b>Spec:</b> ASME B31.3	<b>Comments:</b>	4.14			
		ASSUMED NOMINAL			
					<b>Remaining Life:</b>
					<b>Retirement Date:</b>

<b>CML Description</b>	Previous	Current		<b>Flange ANSI:</b>	<b>Material:</b> SA-234-WPB
<b>50 PIPING</b>	<b>2014</b>	<b>2019</b>	<b>Flag</b>	<b>CA</b>	<b>Nominal</b>
<b>Shape:</b> 90° Elbow	<b>Min</b>	4.27	3.423	0.489	3.912
<b>OD:</b> 60.325	<b>Avg</b>	3.86			
<b>Spec:</b> ASME B31.3	<b>Comments:</b>	4.60			
		ASSUMED NOMINAL			
					<b>Remaining Life:</b>
					<b>Retirement Date:</b>

<b>CML Description</b>	Previous	Current		<b>Flange ANSI:</b>	<b>Material:</b> SA-234-WPB
<b>55 PIPING</b>	<b>2014</b>	<b>2019</b>	<b>Flag</b>	<b>CA</b>	<b>Nominal</b>
<b>Shape:</b> 90° Elbow	<b>Min</b>	5.13	4.845	0.692	5.537
<b>OD:</b> 60.325	<b>Avg</b>	4.85			
<b>Spec:</b> ASME B31.3	<b>Comments:</b>	5.36			
		ASSUMED NOMINAL			
					<b>Remaining Life:</b>
					<b>Retirement Date:</b>

<b>CML Description</b>	Previous	Current		<b>Flange ANSI:</b>	<b>Material:</b> SA-234-WPB
<b>60 PIPING</b>	<b>2014</b>	<b>2019</b>	<b>Flag</b>	<b>CA</b>	<b>Nominal</b>
<b>Shape:</b> 90° Elbow	<b>Min</b>	5.61	4.845	0.692	5.537
<b>OD:</b> 60.325	<b>Avg</b>	5.41			
<b>Spec:</b> ASME B31.3	<b>Comments:</b>	5.79			
		ASSUMED NOMINAL			
					<b>Remaining Life:</b>
					<b>Retirement Date:</b>



# Ultrasonic Corrosion Survey

\*All values are in millimeters unless otherwise stated.

Survey Name: **Husky Energy**

Date: **Jul 17, 2019**

Streamline Report #: **STL-190246-DMS 118**

Inspector: **Jae Lee**

<b>LSD:</b> 07-27-051-19W5	<b>Area:</b> Edson	<b>Location:</b> Ansell Plant
<b>Jur #:</b> A0402803	<b>Tag Number:</b> E-110	<b>Vessel Name:</b> EXCHANGER
<b>CRN:</b> L6180.2	<b>Year Built:</b> 1999	<b>Serial Number:</b> 993371
<b>RT:</b> 1	<b>Vessel CA:</b> 1.588 mm	<b>Manufacturer:</b> THERMOTECH ENERGY
	<b>Shell MAWP:</b> 3343 KPA	<b>Tube MAWP:</b> KPA
	<b>MAWT:</b> 177 °C	<b>MAWT:</b> °C
		<b>Pipe/Plate</b> PIPE

<b>CML Description</b>	Previous	Current	<b>Flange ANSI:</b>	<b>Material:</b> SA-234-WPB
<b>65 PIPING</b>	<b>2014</b>	<b>2019</b>	<b>CA</b>	<b>T Min</b>
<b>Shape:</b> 90° Elbow	<b>Min</b>	<b>4.09</b>	<b>Flag</b> 4.845	<b>Nominal</b> 5.537
<b>OD:</b> 60.325	<b>Avg</b>	<b>4.52</b>	<b>CA</b> 0.692	<b>T Min</b> 1.778
<b>Spec:</b> ASME B31.3	<b>Comments:</b>	ASSUMED NOMINAL, nominal values and readings from 2014 were incorrect. Nominal used for prev. in end of life calc.		<b>STCR mm/yr</b> 0.000
				<b>LTCR mm/yr</b> 0.072
				<b>Remaining Life:</b> 31 yrs
				<b>Retirement Date:</b> 2050

<b>CML Description</b>	Previous	Current	<b>Flange ANSI:</b>	<b>Material:</b> SA-234-WPB
<b>70 PIPING</b>	<b>2014</b>	<b>2019</b>	<b>CA</b>	<b>T Min</b>
<b>Shape:</b> 90° Elbow	<b>Min</b>	<b>5.03</b>	<b>Flag</b> 4.845	<b>Nominal</b> 5.537
<b>OD:</b> 60.325	<b>Avg</b>	<b>5.51</b>	<b>CA</b> 0.692	<b>T Min</b>
<b>Spec:</b> ASME B31.3	<b>Comments:</b>	ASSUMED NOMINAL, nominal values and readings from 2014 were incorrect.		<b>STCR mm/yr</b> 0.000
				<b>LTCR mm/yr</b> 0.025
				<b>Remaining Life:</b>
				<b>Retirement Date:</b>