

### PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 12-05-054-20W5M

Date: Jun 14, 2018

SAP Equipment ID: 66036248

VESSEL STATIC DATA					
Plant Galloway		Op Unit Gas Plant		System Glycol	
Prov. Insp. # A0183411		CRN E-2577.2		Equip Tag #	
Equipment Description Glycol Line Heater				Serial # C81-9	
Manufacturer hycon				Vessel Class	
Internal Access: Description: Tube sheet end				Year Built 1981	
MAWP 720 (Coil)		PSI @ 100		°F	
MDMT				°F	
CODE :		RT : 2		PWHT : No	
Diameter 34"		Length (T/T) in		OAL mm	
				Horizontal	
Shell Mat'l		Thickness		in	
Corr Allowance				in	
Head Mat'l		Thickness		in	
Corr Allowance				in	
Nozzle Mat'l		Thickness		mm / in	
Corr Allowance				mm	
Internal Coating: NO		Internal Clad : NO		Capacity m <sup>3</sup>	
Manway : NO		Inspection Port : NO			
Nozzle Rating		lb ANSI		Painted : YES	
				Insulated NO	

PROCESS DATA			
Product Description Glycol		Sweet	
Operating Pressure 30		PSI	
Operating Temperature 130		°F	

PSV STATIC DATA						
Serial No.	Location	Set Pressure	Capacity SCFM	Manufacturer	Model / Type	Service Date / Company

PSV DETAILS			
	Type (Thread/Flange)	ANSI Rating	Size (inches)
PRD Inlet			
PRD Outlet			

NDE Equipment Records					
Procedure#	Description	Manufacturer	Model#	Serial#	Due Date

#### INSPECTION SUMMARY

Vessel and piping are secured. Nozzles and piping are flanged. No short bolting located. Vessel and piping are insulated/cladded. Cladding is in good condition. Data plate is secured and legible. There is an alteration plate attached to vessel. Ground wire located and secured. No PSV was located to coils. Vessel is secured to saddle and bolted to i-beams. Burner and exhaust attachments are secured and in good condition. UT was done by Streamline Inspection in June 2018.

#### RECOMMENDATIONS

Perform engineering assessment of over pressure protection of coil tubing.

#### NONCONFORMANCES / INSPECTION DEFICIENCIES

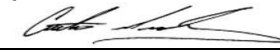
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#### INSPECTION PLANNING

Inspection Strategy	Availability	Inspection Interval	
Inspection Date	Date of Last Inspect	Date of Next Inspect	

#### REPORT CERTIFICATION

The signatures below certify that inspections/tests have been completed in accordance with the identified inspection strategy and that the specified equipment is considered fit for service until the date of next inspection.

Inspected by	Curtis Graham 	Date	Jun 14, 2018
Company	Streamline Inspection Ltd	PESL #	000785
Reviewed and Approved by		API #	51479
		Date	
		PESL #	
		API #	
Criticality Assessment Rerun	Inspection Planning Rerun		

**PRESSURE VESSEL & COLUMN INSPECTION REPORT**

LSD: 12-05-054-20W5M

Date: Jun 14, 2018

SAP Equipment ID: 66036248

Assessed Next Inspection Date

**PRESSURE VESSEL & COLUMN INSPECTION REPORT**

LSD: 12-05-054-20W5M

Date: Jun 14, 2018

SAP Equipment ID: 66036248

**DETAILED INSPECTION VISUAL EXTERNAL**

ID	Description	Condition	Location	NCR	Comments
V1	General Other (Please Explain)	N/A			
V2	General Corrosion	Acceptable			
V3	General Leaks	Acceptable	No evidence located		
V4	Vibration	Acceptable	No vibration		
V5	Dissimilar Flange Rating	Acceptable	None located		
V6	Ladder/Stairway	N/A			
V7	Heads	Acceptable	Flanged		
V8	Guy Wires	N/A			
V9	Electrical Ground	Acceptable	Secured/indirect		
V10	Painted Inactive Corrosion	Acceptable			
V11	Coating/Painting	Acceptable			
V12	Expansion Joint or Bellows	N/A			
V13	Gauge/Site Glass	Acceptable	Clear & legible		
V14	Shell	Acceptable			
V15	Jacket	N/A			
V21	Support Other (Please explain)	Acceptable	Bolted to i-beams		
V22	Foundation	Acceptable	Secured		
V23	Anchor Bolts	N/A			
V24	Saddle/Skirt	Acceptable	Secured		
V25	Davit	N/A			
V26	Fireproofing	N/A			
V31	Connections Other (Please explain)	Acceptable	Instrumentation		
V32	Small Branches	Acceptable	Secured		
V33	Nozzles	Acceptable			
V34	Manways	N/A			
V35	Reinforcing Pads	N/A			
V36	Inadequate Thread Engagement	Acceptable	Good condition		
V37	Bolting	Acceptable	No short bolting		
V38	Flanges	Acceptable	Secured		
V39	Leak Clamps	N/A			
V41	Insulation Other (Please explain)	Acceptable	Good condition		
V42	Damage	N/A			
V43	Penetrations	N/A			
V44	Insulation Jacket	N/A			
V45	Banding	N/A			
V46	Seals/Joints	Acceptable			
V51	Relief Devices Other (Please explain)				
V52	Corrosion	N/A			
V53	Leaks	Acceptable	None located		
V54	Restricted Inlet/Outlet	Acceptable	No restrictions located		
V55	Manual Operation Lever	Acceptable	Good condition		

**PRESSURE VESSEL & COLUMN INSPECTION REPORT**

LSD: 12-05-054-20W5M

Date: Jun 14, 2018

SAP Equipment ID: 66036248

**PHOTOS**



LSD



VESSEL DATA PLATE



VESSEL ALTERATION PLATE



VESSEL OVERVIEW



VESSEL OVERVIEW



VESSEL/BURNER/EXHAUST OVERVIEW

**PRESSURE VESSEL & COLUMN INSPECTION REPORT**

LSD: 12-05-054-20W5M

Date: Jun 14, 2018

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FOUNDATION OVERVIEW



PRESSURE GAUGE

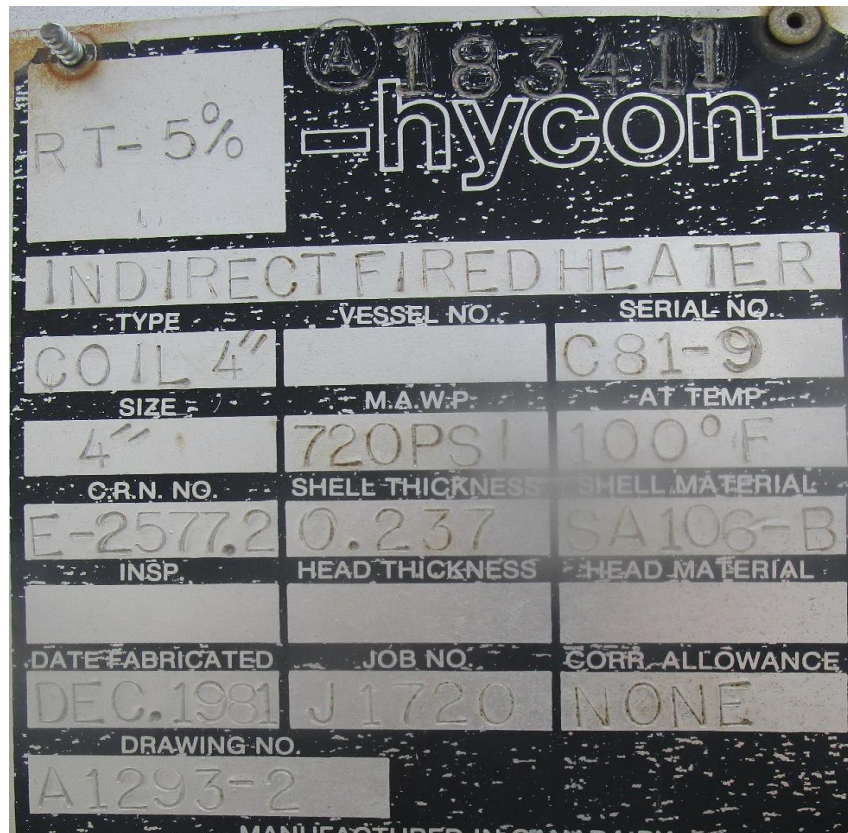


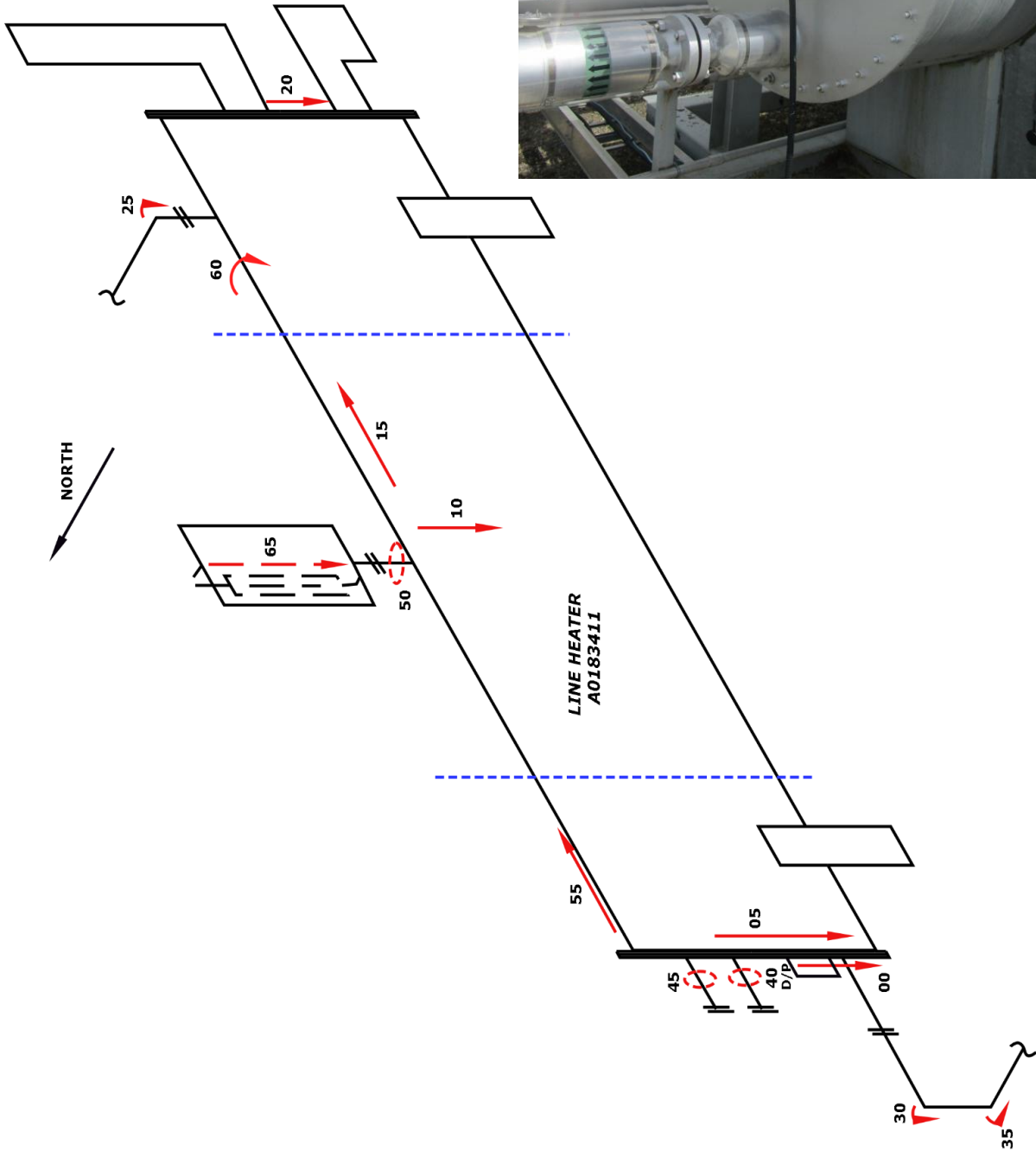
TEMPERATURE GAUGE



<b>Location Name:</b>	GALLOWAY	<b>LSD:</b>	12-05-54-20W5
<b>Jur #:</b>	A0183411	<b>Equipment/Tag No.</b>	
<b>Equipment Description:</b>	LINE HEATER		
<b>Manufacturer:</b>	HYCON/WESTFAB		
<b>Serial Number:</b>	C81-9	<b>CRN:</b>	E2577.2
<b>Shell MAWP:</b>	4964	<b>KPA Shell Design Temp:</b>	38 °C
<b>Tube MAWP:</b>		<b>0 Tube Design Temp:</b>	0
<b>Shell Material:</b>	SA-106-B	<b>Head Material:</b>	
<b>Shell Thickness:</b>	6.02	<b>mm Head Thickness:</b>	mm
<b>Corrosion Allowance:</b>		<b>mm Date Built:</b>	1981/2000
<b>Size:</b>	914	<b>mm Pipe / Rolled Plate:</b>	PLATE
<b>RT:</b>		<b>Streamline Report #:</b>	STL-18-396-DMS 8

**NOTES:** COIL 4.5" 0.237" NOMINAL MAT'L: SA-106-B. SAP# 66036248. Cannot complete end of life or tmin calculations with missing information.











# Ultrasonic Corrosion Survey

\*All values are in millimeters unless otherwise stated.

Survey Name: Husky Energy

Date: Jun 14, 2018

Streamline Report #: STL-18-396-DMS 8

Inspector: E. Legare

<b>LSD:</b> 12-05-54-20W5	<b>Area:</b> GALLOWAY	<b>Location:</b> BATTERY
<b>Jur #:</b> A0183411	<b>Tag Number:</b>	<b>Vessel Name:</b> LINE HEATER
<b>CRN:</b> E2577.2	<b>Year Built:</b> 1981/2000	<b>Serial Number:</b> C81-9
<b>RT:</b>	<b>Vessel CA:</b> 0.000 mm	<b>Manufacturer:</b> HYCON/WESTFAB
	<b>Shell MAWP:</b> 4964 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> 0
<b>00 HEAD</b>	<b>2018</b>	<b>CA</b>	<b>T Min</b>
<b>Shape:</b> Flat	<b>Min</b> 8.15	0.000	<b>STCR mm/yr</b> 0.000
<b>OD:</b> 914.4	<b>Avg</b> 8.23		<b>LTCR mm/yr</b>
<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-106-B
<b>05 SHELL</b>	<b>2018</b>	<b>CA</b>	<b>T Min</b>
<b>Shape:</b> Cylindrical	<b>Min</b> 8.71	0.000	<b>STCR mm/yr</b> 0.000
<b>OD:</b> 914.4	<b>Avg</b> 8.89	6.020	<b>LTCR mm/yr</b>
<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-106-B
<b>10 SHELL</b>	<b>2018</b>	<b>CA</b>	<b>T Min</b>
<b>Shape:</b> Cylindrical	<b>Min</b> 8.86	0.000	<b>STCR mm/yr</b> 0.000
<b>OD:</b> 914.4	<b>Avg</b> 9.04	6.020	<b>LTCR mm/yr</b>
<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-106-B
<b>15 SHELL</b>	<b>2018</b>	<b>CA</b>	<b>T Min</b>
<b>Shape:</b> Cylindrical	<b>Min</b> 8.81	0.000	<b>STCR mm/yr</b> 0.000
<b>OD:</b> 914.4	<b>Avg</b> 8.97	6.020	<b>LTCR mm/yr</b>
<b>Spec:</b> ASME VIII Div.1	<b>Comments:</b>		<b>Remaining Life:</b>
			<b>Retirement Date:</b>



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Survey Name: Husky Energy

Date: Jun 14, 2018

Streamline Report #: STL-18-396-DMS 8

Inspector: E. Legare

<b>LSD:</b> 12-05-54-20W5	<b>Area:</b> GALLOWAY	<b>Location:</b> BATTERY
<b>Jur #:</b> A0183411	<b>Tag Number:</b>	<b>Vessel Name:</b> LINE HEATER
<b>CRN:</b> E2577.2	<b>Year Built:</b> 1981/2000	<b>Serial Number:</b> C81-9
<b>RT:</b>	<b>Vessel CA:</b> 0.000 mm	<b>Manufacturer:</b> HYCON/WESTFAB
	<b>Shell MAWP:</b> 4964 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> 0
<b>20 HEAD</b>	<b>2018</b>	<b>CA</b>	<b>T Min</b>
<b>Shape:</b> Flat	<b>Min</b> 8.20	0.000	<b>STCR mm/yr</b> 0.000
<b>OD:</b> 914.4	<b>Avg</b> 8.56		<b>LTCR mm/yr</b>
<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> Unknown	<b>Material:</b> SA-234-WPB
<b>25 PIPING</b>	<b>2018</b>	<b>CA</b>	<b>T Min</b>
<b>Shape:</b> 90° Elbow	<b>Min</b> 5.36	0.686	5.486
<b>OD:</b> 88.9	<b>Avg</b> 5.56		<b>STCR mm/yr</b> 0.000
<b>Spec:</b> ASME B31.3	<b>Comments:</b> ASSUMED NOMINAL		<b>LTCR mm/yr</b>
			<b>Remaining Life:</b>
			<b>Retirement Date:</b>

<b>CML Description</b>	Baseline	<b>Flange ANSI:</b> Unknown	<b>Material:</b> SA-234-WPB
<b>30 PIPING</b>	<b>2018</b>	<b>CA</b>	<b>T Min</b>
<b>Shape:</b> 90° Elbow	<b>Min</b> 5.44	0.686	5.486
<b>OD:</b> 88.9	<b>Avg</b> 5.56		<b>STCR mm/yr</b> 0.000
<b>Spec:</b> ASME B31.3	<b>Comments:</b> ASSUMED NOMINAL		<b>LTCR mm/yr</b>
			<b>Remaining Life:</b>
			<b>Retirement Date:</b>

<b>CML Description</b>	Baseline	<b>Flange ANSI:</b> Unknown	<b>Material:</b> SA-234-WPB
<b>35 PIPING</b>	<b>2018</b>	<b>CA</b>	<b>T Min</b>
<b>Shape:</b> 90° Elbow	<b>Min</b> 5.41	0.686	5.486
<b>OD:</b> 88.9	<b>Avg</b> 5.59		<b>STCR mm/yr</b> 0.000
<b>Spec:</b> ASME B31.3	<b>Comments:</b> ASSUMED NOMINAL		<b>LTCR mm/yr</b>
			<b>Remaining Life:</b>
			<b>Retirement Date:</b>



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Date: **Jun 14, 2018**

Streamline Report #: **STL-18-396-DMS 8**

Inspector: **E. Legare**

<b>LSD:</b> 12-05-54-20W5	<b>Area:</b> GALLOWAY	<b>Location:</b> BATTERY
<b>Jur #:</b> A0183411	<b>Tag Number:</b>	<b>Vessel Name:</b> LINE HEATER
<b>CRN:</b> E2577.2	<b>Year Built:</b> 1981/2000	<b>Serial Number:</b> C81-9
<b>RT:</b>	<b>Vessel CA:</b> 0.000 mm	<b>Manufacturer:</b> HYCON/WESTFAB
	<b>Shell MAWP:</b> 4964 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> Unknown	<b>Material:</b> SA-106-B
<b>40 NOZZLE</b>	<b>2018</b>	<b>CA</b>	<b>T Min</b>
<b>Shape:</b> 360° Circ	<b>Min</b> 5.92	<b>Nominal</b> 6.020	<b>STCR mm/yr</b> 0.000
<b>OD:</b> 114.3	<b>Avg</b> 6.07		<b>LTCR mm/yr</b>
<b>Spec:</b> ASME VIII Div.1	<b>Comments:</b> ASSUMED NOMINAL		<b>Remaining Life:</b>
			<b>Retirement Date:</b>

<b>CML Description</b>	Baseline	<b>Flange ANSI:</b> Unknown	<b>Material:</b> SA-106-B
<b>45 NOZZLE</b>	<b>2018</b>	<b>CA</b>	<b>T Min</b>
<b>Shape:</b> 360° Circ	<b>Min</b> 5.82	<b>Nominal</b> 6.020	<b>STCR mm/yr</b> 0.000
<b>OD:</b> 114.3	<b>Avg</b> 6.12		<b>LTCR mm/yr</b>
<b>Spec:</b> ASME VIII Div.1	<b>Comments:</b> ASSUMED NOMINAL		<b>Remaining Life:</b>
			<b>Retirement Date:</b>

<b>CML Description</b>	Baseline	<b>Flange ANSI:</b> Unknown	<b>Material:</b> SA-106-B
<b>50 NOZZLE</b>	<b>2018</b>	<b>CA</b>	<b>T Min</b>
<b>Shape:</b> 360° Circ	<b>Min</b> 5.33	<b>Nominal</b> 6.020	<b>STCR mm/yr</b> 0.000
<b>OD:</b> 114.3	<b>Avg</b> 5.46		<b>LTCR mm/yr</b>
<b>Spec:</b> ASME VIII Div.1	<b>Comments:</b> ASSUMED NOMINAL		<b>Remaining Life:</b>
			<b>Retirement Date:</b>

<b>CML Description</b>	Baseline	<b>Flange ANSI:</b>	<b>Material:</b> SA-106-B
<b>55 SHELL</b>	<b>2018</b>	<b>CA</b>	<b>T Min</b>
<b>Shape:</b> Cylindrical	<b>Min</b> 7.77	<b>Nominal</b> 6.020	<b>STCR mm/yr</b> 0.000
<b>OD:</b> 914.4	<b>Avg</b> 8.46		<b>LTCR mm/yr</b>
<b>Spec:</b> ASME VIII Div.1	<b>Comments:</b> PITTING NOTED		<b>Remaining Life:</b>
			<b>Retirement Date:</b>



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Inspector: **E. Legare**

<b>LSD:</b> 12-05-54-20W5	<b>Area:</b> GALLOWAY	<b>Location:</b> BATTERY
<b>Jur #:</b> A0183411	<b>Tag Number:</b>	<b>Vessel Name:</b> LINE HEATER
<b>CRN:</b> E2577.2	<b>Year Built:</b> 1981/2000	<b>Serial Number:</b> C81-9
<b>RT:</b>	<b>Vessel CA:</b> 0.000 mm	<b>Manufacturer:</b> HYCON/WESTFAB
	<b>Shell MAWP:</b> 4964 KPA	<b>Tube MAWP:</b> 0
	<b>MAWT:</b> 38 °C	<b>MAWT:</b> 0
		<b>Pipe/Plate PLATE</b>

<b>CML Description</b>	Baseline	<b>Flange ANSI:</b>	<b>Material:</b> SA-106-B
<b>60 SHELL</b>	<b>2018</b>	<b>CA</b>	<b>T Min</b>
<b>Shape:</b> Cylindrical	<b>Min</b> 7.92	<b>Flag</b> 6.020	<b>Nominal</b> 6.020
<b>OD:</b> 914.4	<b>Avg</b> 8.59		<b>STCR mm/yr</b> 0.000
<b>Spec:</b> ASME VIII Div.1	<b>Comments:</b> ISOLATED PITS.		<b>LTCR mm/yr</b>
			<b>Remaining Life:</b>
			<b>Retirement Date:</b>

<b>CML Description</b>	Baseline	<b>Flange ANSI:</b>	<b>Material:</b> SA-106-B
<b>65 SHELL</b>	<b>2018</b>	<b>CA</b>	<b>T Min</b>
<b>Shape:</b> Cylindrical	<b>Min</b> 5.18	<b>Flag</b> 6.020	<b>Nominal</b> 6.020
<b>OD:</b> 323.85	<b>Avg</b> 5.28		<b>STCR mm/yr</b> 0.000
<b>Spec:</b> ASME VIII Div.1	<b>Comments:</b> EXPANSION TANK.		<b>LTCR mm/yr</b>
			<b>Remaining Life:</b>
			<b>Retirement Date:</b>