

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 01-21-038-02W5

Date: July 4, 2019

SAP Equipment ID: 66005116

Report#: 43357-2019-VE-01

VESSEL STATIC DATA											
Plant			Husky East Central South			Op Unit		Sylvan Lake Gas Plant		System	
Prov. Insp. #			NB#			CRN		Equip Tag #		V-300	
Equipment Description			Knock-Out, Flare			Serial #		43357			
Manufacturer						Vessel Class					
Internal Access			NO			Description			Year Built		
MAWP		103		kPa		@		93		°C	
CODE U				RT				PWHT			
Diameter		mm		Length		(T/T) mm		OAL			
Shell		Mat'l		Thickness		mm		Corr Allowance		mm	
Head		Mat'l		Thickness		mm		Corr Allowance		mm	
Nozzle		Mat'l		Thickness				Corr Allowance			
Internal Coating:				Internal Clad				Capacity			
Manway				NO				Inspection Port			
Nozzle Rating				lb ANSI		Painted		YES		Insulated	
										NO	
PROCESS DATA											
Product Description								Sweet			
Operating Pressure						Operating Temperature					
PROTECTED BY PRD or OPPSD											
PRD STATIC DATA											
Serial No.		Location		Set Pressure		Capacity		Manufacturer		Model / Type	
										Last Service Date & Company	
PRD DETAILS											
		Type				ANSI Rating				Size	
PRD Inlet		Threaded								mm	
PRD Outlet		Threaded								mm	

INSPECTION SUMMARY

Visual external inspection was performed.
Vessel and piping acceptable.
Vessel is acceptable and FFS.
External paint is in acceptable condition.
Original dataplate not located, only repair plate present. Current serial number is from the barcode tag number and not the original serial number.
Short bolting noted on the outlet nozzle.
UT inspection performed by Streamline Inspection
Well supported.

RECOMMENDATIONS

Short bolting on three fasteners on the outlet nozzle, recommended to tighten the fasteners.

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	<u>Kevin Nguyen</u>		Date	<u>2019-07-04</u>
Company	<u>Streamline Inspection Ltd.</u>	PESL #	<u>A-93965</u>	API # <u>66452</u>
Reviewed and Approved by	_____	_____	Date	_____
	_____	PESL #	_____	API #
Criticality Assessment Rerun	_____	Inspection Planning Rerun	_____	
Optional Rule Group Confirmed		Assessed Next Inspection Date		

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DETAILED INSPECTION VISUAL EXTERNAL

ID	Description	Condition	Location	NCR	Comments
V1	General Other (Please Explain)	Acceptable			No concerns noted.
V2	General Corrosion	Acceptable			No concerns noted.
V3	General Leaks	Acceptable			No concerns noted.
V4	Vibration	Acceptable			No concerns noted.
V5	Dissimilar Flange Rating	Acceptable			No concerns noted.
V6	Ladder/Stairway	N/A			
V7	Heads	Acceptable			No concerns noted.
V8	Guy Wires	N/A			
V9	Electrical Ground	Acceptable			No concerns noted.
V10	Painted Inactive Corrosion	Acceptable			No concerns noted.
V11	Coating/Painting	Acceptable			Paint coating in a good condition, no concerns noted.
V12	Expansion Joint or Bellows	N/A			
V13	Gauge/Site Glass	Acceptable			
V14	Shell	Acceptable			No concerns noted.
V15	Jacket	N/A			
	Support Other (Please explain)	N/A			
V22	Foundation	Acceptable			No concerns noted.
V23	Anchor Bolts	N/A			
V24	Saddle/Skirt	Acceptable			No concerns noted.
V25	Davit	N/A			
V26	Fireproofing	N/A			
V31	Connections Other (Please explain)	N/A			
V32	Small Branches	Acceptable			Properly supported, no concerns noted.
V33	Nozzles	Acceptable			No concerns noted.
V34	Manways	N/A			
V35	Reinforcing Pads	Acceptable			No concerns noted.
V36	Inadequate Thread Engagement	Not Acceptable			Short bolting on three fasteners noted.
V37	Bolting	Acceptable			No concerns noted.
V38	Flanges	Acceptable			No concerns noted.
V39	Leak Clamps	N/A			
V41	Insulation Other (Please explain)	N/A			
V42	Damage	N/A			
V43	Penetrations	N/A			
V44	Insulation Jacket	N/A			
V45	Banding	N/A			
V46	Seals/Joints	Acceptable			No concerns noted.
V51	Relief Devices Other (Please explain)	N/A			
V52	Corrosion	N/A			
V53	Leaks	N/A			
V54	Restricted Inlet/Outlet	N/A			
V55	Manual Operation Lever	N/A			

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PHOTOS



LSD Sign



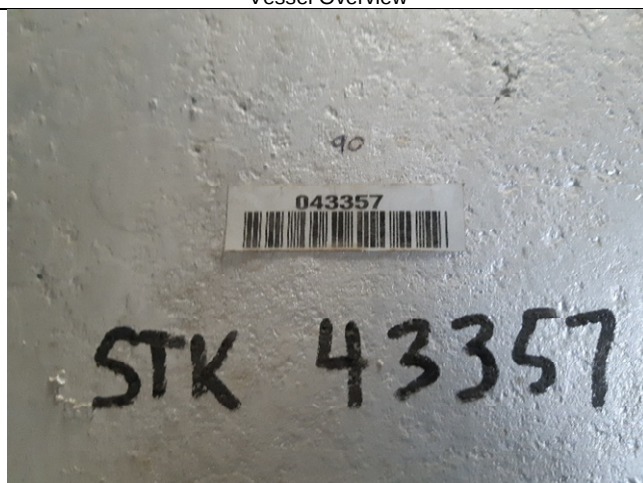
Skid



Vessel Overview



Dataplate



Barcode Tag



East Head

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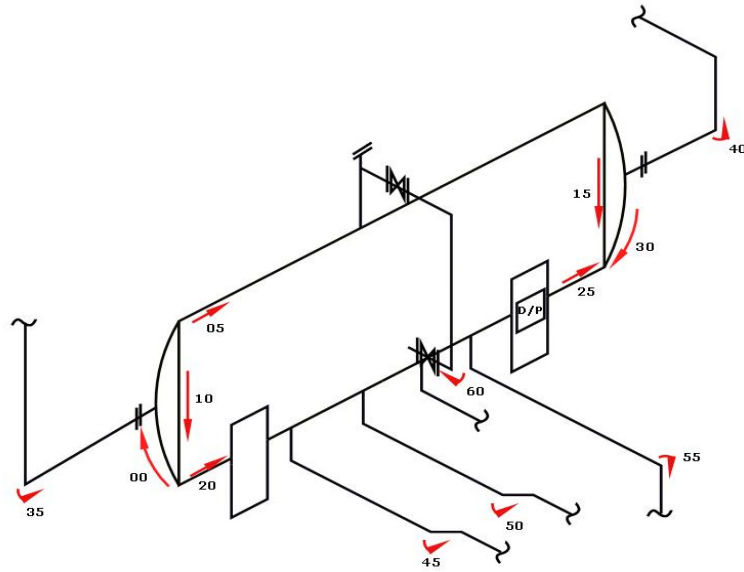
Short Bolting on Outlet Nozzle



Location Name:	SYLVAN LAKE	LSD:	01-21-38-02W5
Jur #:		Equipment/Tag No.	V-300
Equipment Description:	FLARE KNOCK OUT		
Manufacturer:	Barber Machinery Ltd.		
Serial Number:	43357	CRN:	
Shell MAWP:	103	KPA Shell Design Temp:	93 °C
Tube MAWP:		KPA Tube Design Temp:	°C
Shell Material:	SA-285-C	Head Material:	SA-285-B
Shell Thickness:	19.05	mm Head Thickness:	15.88 mm
Corrosion Allowance:	0	mm Date Built:	1953
Size:	2133.6	mm Pipe / Rolled Plate:	Plate
RT:	4		

NOTES: SAP#66005116.Replacement plate. Prior vessel info SN1012-D-2







Ultrasonic Corrosion Survey

*All values are in millimeters unless otherwise stated.

Survey Name: Husky Energy

Date: Jul 4, 2019

Inspector: Dylan Sundquist

LSD: 01-21-38-02W5	Area: SYLVAN LAKE	Location: FIELD
Jur #:	Tag Number: V-300	Vessel Name: FLARE KNOCK OUT
CRN:	Year Built: 1953	Serial Number: 43357
RT: 4	Vessel CA: 0.000 mm	Manufacturer: Barber Machinery Ltd.
	Shell MAWP: 103 KPA	Tube MAWP: KPA
	MAWT: 93 °C	MAWT: 0
		Pipe/Plate Plate
CML Description	Baseline	Flange ANSI:
00 HEAD	2019	Material: SA-285-B
Shape: Ellipsoidal	Min 17.48	CA 0.000
OD: 2133.6	Avg 17.60	Nominal 15.875
Spec: ASME VIII Div.1	Comments:	T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.000
		Remaining Life:
		Retirement Date:
CML Description	Baseline	Flange ANSI:
05 SHELL	2019	Material: SA-285-C
Shape: Cylindrical	Min 19.35	CA 0.000
OD: 2133.6	Avg 19.56	Nominal 19.050
Spec: ASME VIII Div.1	Comments:	T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.000
		Remaining Life:
		Retirement Date:
CML Description	Baseline	Flange ANSI:
10 SHELL	2019	Material: SA-285-C
Shape: Cylindrical	Min 19.28	CA 0.000
OD: 2133.6	Avg 19.30	Nominal 19.050
Spec: ASME VIII Div.1	Comments:	T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.000
		Remaining Life:
		Retirement Date:
CML Description	Baseline	Flange ANSI:
15 SHELL	2019	Material: SA-285-C
Shape: Cylindrical	Min 19.58	CA 0.000
OD: 2133.6	Avg 20.24	Nominal 19.050
Spec: ASME VIII Div.1	Comments:	T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.000
		Remaining Life:
		Retirement Date:



Ultrasonic Corrosion Survey

*All values are in millimeters unless otherwise stated.

Survey Name: Husky Energy

Date: Jul 4, 2019

Inspector: Dylan Sundquist

LSD: 01-21-38-02W5	Area: SYLVAN LAKE	Location: FIELD
Jur #:	Tag Number: V-300	Vessel Name: FLARE KNOCK OUT
CRN:	Year Built: 1953	Serial Number: 43357
RT: 4	Vessel CA: 0.000 mm	Manufacturer: Barber Machinery Ltd.
	Shell MAWP: 103 KPA	Tube MAWP: KPA
	MAWT: 93 °C	MAWT: 0
		Pipe/Plate Plate
CML Description	Baseline	Flange ANSI:
20 SHELL	2019	Material: SA-285-C
Shape: Cylindrical	Min 19.35	CA 0.000
OD: 2133.6	Avg 19.53	Nominal 19.050
Spec: ASME VIII Div.1	Comments:	T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.000
		Remaining Life:
		Retirement Date:
CML Description	Baseline	Flange ANSI:
25 SHELL	2019	Material: SA-285-C
Shape: Cylindrical	Min 19.58	CA 0.000
OD: 2133.6	Avg 19.79	Nominal 19.050
Spec: ASME VIII Div.1	Comments:	T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.000
		Remaining Life:
		Retirement Date:
CML Description	Baseline	Flange ANSI:
30 HEAD	2019	Material: SA-285-B
Shape: Ellipsoidal	Min 16.92	CA 0.000
OD: 2133.6	Avg 16.99	Nominal 15.875
Spec: ASME VIII Div.1	Comments:	T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.000
		Remaining Life:
		Retirement Date:
CML Description	Baseline	Flange ANSI:
35 PIPING	2019	Material: SA-234-WPB
Shape: 90° Elbow	Min 9.88	CA 1.159
OD: 273.05	Avg 9.91	Nominal 9.271
Spec: ASME B31.3	Comments:	T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.000
		Remaining Life:
		Retirement Date:



Ultrasonic Corrosion Survey

*All values are in millimeters unless otherwise stated.

Survey Name: Husky Energy

Date: Jul 4, 2019

Inspector: Dylan Sundquist

LSD: 01-21-38-02W5	Area: SYLVAN LAKE	Location: FIELD
Jur #:	Tag Number: V-300	Vessel Name: FLARE KNOCK OUT
CRN:	Year Built: 1953	Serial Number: 43357
RT: 4	Vessel CA: 0.000 mm	Manufacturer: Barber Machinery Ltd.
	Shell MAWP: 103 KPA	Tube MAWP: KPA
	MAWT: 93 °C	MAWT: 0
		Pipe/Plate Plate
CML Description	Baseline	Flange ANSI:
40 PIPING	2019	Material: SA-234-WPB
Shape: 90° Elbow	Min 8.38	CA 0.975
OD: 273.05	Avg 8.97	Nominal 7.798
Spec: ASME B31.3	Comments:	T Min 0.000
		STCR mm/yr 0.000
		LTCR mm/yr 0.000
		Remaining Life:
		Retirement Date:
CML Description	Baseline	Flange ANSI:
45 PIPING	2019	Material: SA-234-WPB
Shape: 90° Elbow	Min 3.07	CA 0.489
OD: 60.325	Avg 3.20	Nominal 3.912
Spec: ASME B31.3	Comments:	T Min 2.794
		STCR mm/yr 0.000
		LTCR mm/yr 0.013
		Remaining Life: 188 YRS
		Retirement Date: 2207
CML Description	Baseline	Flange ANSI:
50 PIPING	2019	Material: SA-234-WPB
Shape: 90° Elbow	Min 3.18	CA 0.489
OD: 60.325	Avg 3.30	Nominal 3.912
Spec: ASME B31.3	Comments:	T Min 2.794
		STCR mm/yr 0.000
		LTCR mm/yr 0.011
		Remaining Life: 223 YRS
		Retirement Date: 2242
CML Description	Baseline	Flange ANSI:
55 PIPING	2019	Material: SA-234-WPB
Shape: 90° Elbow	Min 3.10	CA 0.489
OD: 60.325	Avg 3.20	Nominal 3.912
Spec: ASME B31.3	Comments:	T Min 2.794
		STCR mm/yr 0.000
		LTCR mm/yr 0.012
		Remaining Life: 180 YRS
		Retirement Date: 2199

Ultrasonic Corrosion Survey

*All values are in millimeters unless otherwise stated.

Survey Name: Husky Energy

Date: Jul 4, 2019

Inspector: Dylan Sundquist

LSD:	01-21-38-02W5	Area:	SYLVAN LAKE	Location:	FIELD
Jur #:		Tag Number:	V-300	Vessel Name:	FLARE KNOCK OUT
CRN:		Year Built:	1953	Serial Number:	43357
RT:	4	Vessel CA:	0.000 mm	Manufacturer:	Barber Machinery Ltd.
		Shell MAWP:	103 KPA	MAWT:	93 °C
				Tube MAWP:	KPA
				MAWT:	0
					Pipe/Plate Plate
CML Description		Baseline		Flange ANSI:	Material: SA-234-WPB
60 PIPING		2019		CA	Nominal T Min STCR mm/yr LTCR mm/yr
Shape: 90° Elbow	Min	4.90	3.423	0.489	3.912 0.000 0.000
OD: 60.325	Avg	4.93			
Spec: ASME B31.3	Comments:				Remaining Life: Retirement Date: