

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD 07-27-51-19 W5M

Date June 14 2017

SAP Equipment ID

Report #

VESSEL STATIC DATA									
Plant Ansell Gas Plant					Op Unit		System Propane		
Prov. Insp. # 0157920 NB#					CRN F-1007.2		Equip Tag # V-701B		
Equipment Description Propane Storage Tank (B)					Serial #		1668-201B		
Manufacturer Vada Industries					Vessel Class				
Internal Access YES		Description Manway (Shell, NE)			Year Built		1984		
MAWP 280		PSI		@ 154		°F		MDMT °C / °F	
CODE U				RT 2		PWHT			
Diameter 11' 8.5"		Length 76' 0"		OAL		mm / in		Horizontal	
Shell	Mat'l	SA-516-70		Thickness	31.75	mm		Corr Allowance	1.6002 mm
Head	Mat'l	SA-516-70		Thickness	30.378	mm		Corr Allowance	1.6002 mm
Nozzle	Mat'l	SA-106-B		Thickness	mm / in		Corr Allowance	1.089 mm	
Internal Coating: N/A				Internal Clad N/A		Capacity m ³			
Manway YES				Inspection Port N/A		Saddle			
Nozzle Rating		lb ANSI		Painted YES		Insulated		NO	
PROCESS DATA									
Product Description Propane					Sweet				
Operating Pressure					kPa / psi		Operating Temperature °C / °F		
PROTECTED BY PRD or OPPSD									
PRD STATIC DATA									
Serial No.	Location		Set Pressure	Capacity SCFM / Lbs/Hr / GPM	Manufacturer	Model / Type		Last Service Date & Company	
PSV C-25277- A10 PRD 27018A-2	PSV/PRD Located on the top south shell		PSV-280PSI PRD-250PSI	7245 SCFM	PSV-Farris PRD-Fisher	Safety Relief 26JA11-120 Relief Device (Big Don)		PSV- May 30 2016 PRD-May 30 2016	
PRD DETAILS									
	Type (Thread/Flange)			ANSI Rating			Size (mm)		
PRD Inlet/Outlet	Flanged/Threaded								
PSV Inlet/Outlet	Flanged/Flanged						60.325 x 88.90		

INSPECTION SUMMARY

June 14 2017

An external inspection of the vessel was carried out by an API-510 / IPV certified inspector to identify any externally visible leaks, damage, or sources of potential degradation. All accessible surfaces of the vessel were examined, along with relevant structural supports and piping. No evidence of leakage, significant mechanical damage or any other "questionable conditions" were observed at the time of inspection. This equipment is deemed "Fit for Continued Service" until the next scheduled internal inspection.

External

- Un-insulated vessel. Visible paint was in acceptable condition with some minor failures. These areas were inspected and no corrosion and or pitting was noted at the time of inspection.
- No issues or damage noted to shell/heads.
- All welds were of acceptable quality
- Accessible appurtenances appeared free of damage and deterioration.
- Gauges were attached and secure and sight glasses free of damage.
- Instrumentation tubing was free of damage and in acceptable condition.
- Fasteners and attachments showed signs of minor oxidation.

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- PSV/PRD set pressures were set at or below the vessels MAWP.
- PSV/PRD discharge piping had end caps installed, were attached and secure.
- All nozzle repads have weep holes.
- Saddle repad to shell welds were stitch welded.
- Vessel was directly grounded.
- Nameplate was attached and Secure. The information was not legible.
- Davit arm and clevis in serviceable condition. Only single nutted.
- Fireproofing on structural supports are in acceptable condition.
- Catwalks and ladders were damage free
- Supporting structural components were intact.
- Small bore piping supports were missing U-Bolts also the 2" piping was being supported off the 1" piping with U-Bolts and Unistrut.
- Small bore piping located on the top south end was fabricated and installed containing hammer unions. Husky rep was onsite at the time of inspection and was informed. No further action was required at this time.

RECOMMENDATIONS

- Name plate was not legible. Recommended to replace in the future.
- Recommend double nutting Davit arm to clevis attachment at manway location.
- Recommend Replacing U-Bolts on small bore piping located on the top south end. (2")
- Recommend finding other means of supporting 2" Piping located on the top south end.
- Recommend replacing chain for manual operation of valve located on the bottom of south end.


NONCONFORMANCES / INSPECTION DEFICIENCIES

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	Jamie Anderson			Date	June 14 2017
Company	Streamline Inspections LTD	PESL #	0000798	API #	45618
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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LSD 07-27-51-19 W5M

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SAP Equipment ID

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DETAILED INSPECTION VISUAL EXTERNAL

ID	Description	Condition	Location	NCR	Comments
V1	General Other (Please Explain)	Acceptable	Overall		Vessel is in serviceable condition.
V2	General Corrosion	Acceptable	Overall		No corrosion and or pitting noted.
V3	General Leaks	Acceptable	Overall		There was no evidence of leaks at the time of inspection.
V4	Vibration	Acceptable	Overall		Vessel was out of service at the time of inspection. No signs of vibration were noted.
V5	Dissimilar Flange Rating	Acceptable	Overall		
V6	Ladder/Stairway	Acceptable	Overall		Attached and secure.
V7	Heads	Acceptable	Overall		Serviceable condition.
V8	Guy Wires	N/A	N/A		
V9	Electrical Ground	Acceptable	Overall		Directly grounded.
V10	Painted Inactive Corrosion	N/A	N/A		
V11	Coating/Painting	Acceptable	Overall		Minor coating failures. No corrosion noted.
V12	Expansion Joint or Bellows	N/A	N/A		
V13	Gauge/Site Glass	Acceptable	Overall		Serviceable condition.
V14	Shell	Acceptable	Overall		No mechanical damage noted.
V15	Jacket	N/A	N/A		
V21	Support Other (Please explain)	Acceptable	Overall		U-Bolts for small bore piping not installed.
V22	Foundation	N/A	N/A		
V23	Anchor Bolts	N/A	N/A		
V24	Saddle/Skirt	Acceptable	Overall		Repad to shell stitch welded.
V25	Davit	Acceptable	Overall		Requires davit to clevis to be double nutted.
V26	Fireproofing	Acceptable	Overall		
V31	Connections Other (Please explain)	Acceptable	Overall		
V32	Small Branches	Acceptable	Overall		
V33	Nozzles	Acceptable	Overall		
V34	Manways	Acceptable	Overall		
V35	Reinforcing Pads	Acceptable	Overall		Weep holes present.
V36	Inadequate Thread Engagement	Acceptable	Overall		
V37	Bolting	Acceptable	Overall		Minor oxidation noted.
V38	Flanges	Acceptable	Overall		Minor oxidation noted.
V39	Leak Clamps	N/A	N/A		
V41	Insulation Other (Please explain)	N/A	N/A		
V42	Damage	N/A	N/A		
V43	Penetrations	N/A	N/A		
V44	Insulation Jacket	N/A	N/A		
V45	Banding	N/A	N/A		
V46	Seals/Joints	N/A	N/A		
V51	Relief Devices Other (Please explain)	Acceptable	Overall		Set pressures at or below MAWP.
V52	Corrosion	Acceptable	Overall		No corrosion noted at the time of inspection.
V53	Leaks	Acceptable	Overall		No leaks present at the time of inspection.
V54	Restricted Inlet/Outlet	N/A	N/A		PSV Discharge piping pointing up and vented to ATM.
V55	Manual Operation Lever	Replace	Overall		Chain for manually operating valve was missing.

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DETAILED INSPECTION VISUAL INTERNAL

ID	Description	Condition	Location	NCR	Comments
V1	General Other (Please Explain)				
V2	Corrosion (depth, length, width)				
V3	Erosion				
V4	Distortion				
V5	Blisters				
V6	Deposits				
V7	Heads				
V8	Welds				
V9	Nozzles				
V10	Shell				
V11	Gasket Surfaces				
V21	Internals Other (Please explain)				
V22	Demister				
V23	Baffle/Weir				
V24	Sparger				
V25	Thermowells				
V26	Metallic Linings				
V27	Nonmetallic Linings				
V28	Trays				
V29	Tray Rings				
V30	Other Welded Attachments				

Magnetic Particle Equipment records

Procedure #	Description			
Manufacturer	Model	Serial #	Current Type	Mag Part Type
Lighting	Material + Grade	Thickness	Cal Block SN	Cal Due Date

Liquid Penetrant Equipment records

Procedure #	Description			
Penetrant	Solvent	Developer	Cleaner	Lighting

DETAILED INSPECTION OTHER TECHNIQUES

ID	Location	Observation/Measurement	Acceptance Criteria	NCR	Comments
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Ultrasonic Equipment records

Procedure #	Description			
Test Unit	Instrument Mfr	Model #	Serial #	Cal Due Date
Probe	Frequency	Probe SN	Probe Diameter	Couplant
Cal Block	Cal Block Size	Cal Block SN	Cal Block Mtl	

DETAILED INSPECTION UT THICKNESS

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CML	Nom. Thk	Current Reading	Short Term Corr Rate	Long Term Corr Rate	Remaining Life	Comments

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PHOTOS



LSD Sign



Vessel Data Plate



PSV/PRD Overview



Overview of vessel – looking south west



Small bore piping – Hammer unions & U-Bolts missing.



Overview – Top Vessel looking north

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PHOTOS



Manway – North East side. Davit arm to clevis attachment needs to be double nutted.



Level Gauge Condition – Level readable at bolt 21.



Example of fasteners and attachment oxidation.



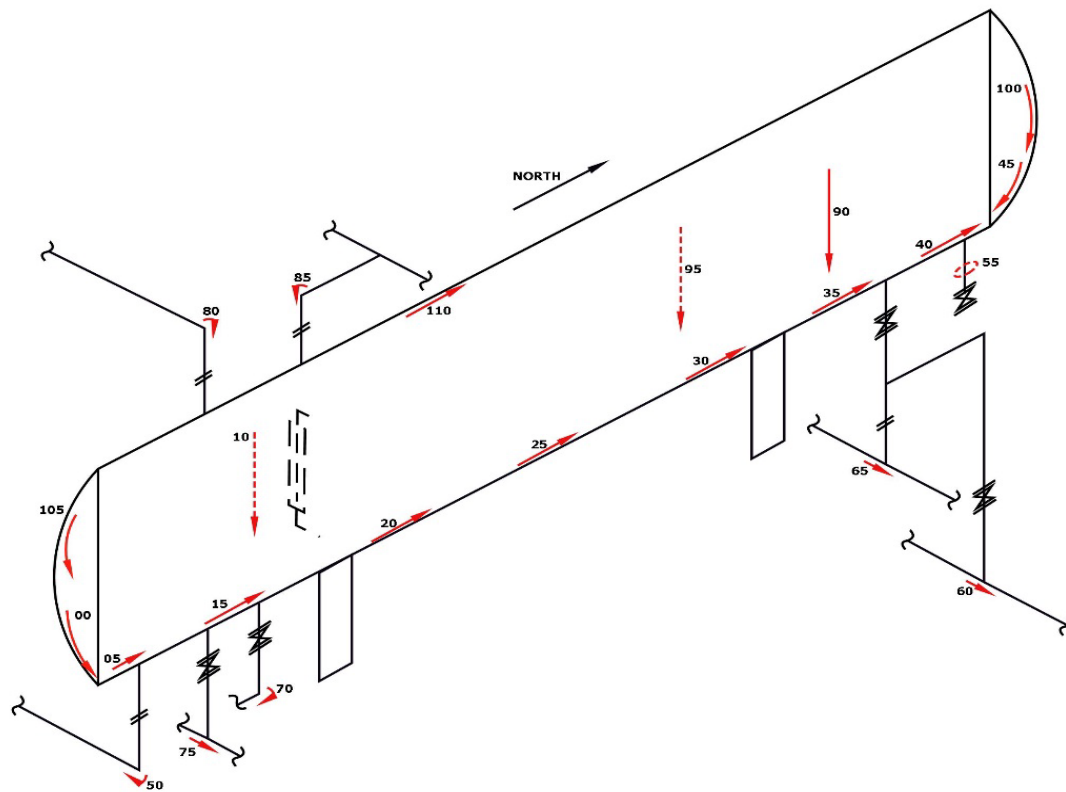
Small bore piping – Manual chain missing on one valve on south end and condition of fireproofing.



Location Name:	Ansell	LSD:	07-27-051-19W5
Jur #:	A0157920	Equipment/Tag No.	V-701B
Equipment Description:	Propane B		
Manufacturer:	Vada Industries		
Serial Number:	1668-201B	CRN:	F-1007.2
Shell MAWP:	280	PSI	Shell Design Temp: 154 °F
Tube MAWP:		PSI	Tube Design Temp: °F
Shell Material:	SA-516-70	Head Material:	SA-516-70
Shell Thickness:	31.75	mm	Head Thickness: 30.38 mm
Corrosion Allowance:	1.6002	mm	Date Built: 1984
Size:	144	in	Pipe / Rolled Plate: Plate
RT:	RT-2		

NOTES:







Ultrasonic Corrosion Survey

*All values are in millimeters unless otherwise stated.

Survey Name: Husky Energy

Date: June 14 2017

Inspector: J.Anderson

LSD: 07-27-051-19W5	Area: Ansell	Location: Gas Plant
Jur #: A0157920	Tag Number: V-701B	Vessel Name: Propane B
CRN: F-1007.2	Year Built: 1984	Serial Number: 1668-201B
RT: RT-2	Vessel CA: 1.600 mm	Manufacturer: Vada Industries
	Shell MAWP: 280 PSI	Tube MAWP: PSI
	MAWTF: 154 °F	MAWTF: °F
		Pipe/Plate Plate
<hr/>		
TML Description	Baseline	Flange ANSI:
00 HEAD	2017	Material: SA-516-70
Shape: Ellipsoidal	Min 36.12	Flag 28.778
OD: 3657.6	Avg 37.62	CA 1.600
Spec: ASME VIII Div.1	Comments:	Nominal 30.378
		T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.000
		Remaining Life:
		Retirement Date:
<hr/>		
TML Description	Baseline	Flange ANSI:
05 SHELL	2017	Material: SA-516-70
Shape: Cylindrical	Min 31.57	Flag 30.150
OD: 3657.6	Avg 31.78	CA 1.600
Spec: ASME VIII Div.1	Comments:	Nominal 31.750
		T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.005
		Remaining Life:
		Retirement Date:
<hr/>		
TML Description	Baseline	Flange ANSI:
10 SHELL	2017	Material: SA-516-70
Shape: Cylindrical	Min 31.55	Flag 30.150
OD: 3657.6	Avg 31.70	CA 1.600
Spec: ASME VIII Div.1	Comments:	Nominal 31.750
		T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.006
		Remaining Life:
		Retirement Date:
<hr/>		
TML Description	Baseline	Flange ANSI:
15 SHELL	2017	Material: SA-516-70
Shape: Cylindrical	Min 31.52	Flag 30.150
OD: 3657.6	Avg 31.65	CA 1.600
Spec: ASME VIII Div.1	Comments:	Nominal 31.750
		T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.007
		Remaining Life:
		Retirement Date:



Ultrasonic Corrosion Survey

*All values are in millimeters unless otherwise stated.

Survey Name: Husky Energy

Date: June 14 2017

Inspector: J.Anderson

LSD: 07-27-051-19W5	Area: Ansell	Location: Gas Plant
Jur #: A0157920	Tag Number: V-701B	Vessel Name: Propane B
CRN: F-1007.2	Year Built: 1984	Serial Number: 1668-201B
RT: RT-2	Vessel CA: 1.600 mm	Manufacturer: Vada Industries
	Shell MAWP: 280 PSI	Tube MAWP: PSI
	MAWTF: 154 °F	MAWTF: °F
		Pipe/Plate Plate
<hr/>		
TML Description	Baseline	Flange ANSI:
20 SHELL	2017	Material: SA-516-70
Shape: Cylindrical	Min 31.78	Flag 30.150
OD: 3657.6	Avg 31.88	CA 1.600
Spec: ASME VIII Div.1	Comments:	Nominal 31.750
		T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.000
		Remaining Life:
		Retirement Date:
<hr/>		
TML Description	Baseline	Flange ANSI:
25 SHELL	2017	Material: SA-516-70
Shape: Cylindrical	Min 31.55	Flag 30.150
OD: 3657.6	Avg 31.67	CA 1.600
Spec: ASME VIII Div.1	Comments:	Nominal 31.750
		T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.006
		Remaining Life:
		Retirement Date:
<hr/>		
TML Description	Baseline	Flange ANSI:
30 SHELL	2017	Material: SA-516-70
Shape: Cylindrical	Min 31.65	Flag 30.150
OD: 3657.6	Avg 31.95	CA 1.600
Spec: ASME VIII Div.1	Comments:	Nominal 31.750
		T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.003
		Remaining Life:
		Retirement Date:
<hr/>		
TML Description	Baseline	Flange ANSI:
35 SHELL	2017	Material: SA-516-70
Shape: Cylindrical	Min 31.60	Flag 30.150
OD: 3657.6	Avg 31.72	CA 1.600
Spec: ASME VIII Div.1	Comments:	Nominal 31.750
		T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.005
		Remaining Life:
		Retirement Date:



Ultrasonic Corrosion Survey

*All values are in millimeters unless otherwise stated.

Survey Name: Husky Energy

Date: June 14 2017

Inspector: J.Anderson

LSD: 07-27-051-19W5	Area: Ansell	Location: Gas Plant
Jur #: A0157920	Tag Number: V-701B	Vessel Name: Propane B
CRN: F-1007.2	Year Built: 1984	Serial Number: 1668-201B
RT: RT-2	Vessel CA: 1.600 mm	Manufacturer: Vada Industries
	Shell MAWP: 280 PSI	Tube MAWP: PSI
	MAWTF: 154 °F	MAWTF: °F
		Pipe/Plate Plate
<hr/>		
TML Description	Baseline	Flange ANSI:
40 SHELL	2017	Material: SA-516-70
Shape: Cylindrical	Min 31.85	CA 1.600
OD: 3657.6	Avg 32.13	Nominal 31.750
Spec: ASME VIII Div.1	Comments:	T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.000
		Remaining Life:
		Retirement Date:
<hr/>		
TML Description	Baseline	Flange ANSI:
45 HEAD	2017	Material: SA-516-70
Shape: Ellipsoidal	Min 36.78	CA 1.600
OD: 3657.6	Avg 37.62	Nominal 30.378
Spec: ASME VIII Div.1	Comments:	T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.000
		Remaining Life:
		Retirement Date:
<hr/>		
TML Description	Baseline	Flange ANSI:
50 PIPING	2017	Material: SA-234-WPB
Shape: 90° Elbow	Min 5.87	CA 0.692
OD: 60.325	Avg 6.30	Nominal 5.537
Spec: ASME B31.3	Comments:	T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.000
		Remaining Life:
		Retirement Date:
<hr/>		
TML Description	Baseline	Flange ANSI:
55 NOZZLE	2017	Material: SA-106-B
Shape: 360° Circ	Min 9.07	CA 1.089
OD: 60.325	Avg 9.60	Nominal 8.712
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

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Survey Name: Husky Energy

Date: June 14 2017

Inspector: J.Anderson

LSD: 07-27-051-19W5	Area: Ansell	Location: Gas Plant
Jur #: A0157920	Tag Number: V-701B	Vessel Name: Propane B
CRN: F-1007.2	Year Built: 1984	Serial Number: 1668-201B
RT: RT-2	Vessel CA: 1.600 mm	Manufacturer: Vada Industries
	Shell MAWP: 280 PSI	Tube MAWP: PSI
	MAWTF: 154 °F	MAWTF: °F
		Pipe/Plate Plate
<hr/>		
TML Description	Baseline	Flange ANSI:
60 PIPING	2017	Material: SA-234-WPB
Shape: Tee	Min 7.85	CA 0.686
OD: 88.9	Avg 8.79	Nominal 5.486
Spec: ASME B31.3	Comments:	T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.000
		Remaining Life:
		Retirement Date:
<hr/>		
TML Description	Baseline	Flange ANSI:
65 PIPING	2017	Material: SA-234-WPB
Shape: Tee	Min 10.59	CA 1.022
OD: 219.075	Avg 10.90	Nominal 8.179
Spec: ASME B31.3	Comments:	T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.000
		Remaining Life:
		Retirement Date:
<hr/>		
TML Description	Baseline	Flange ANSI:
70 PIPING	2017	Material: SA-234-WPB
Shape: 90° Elbow	Min 3.94	CA 0.489
OD: 60.325	Avg 3.94	Nominal 3.912
Spec: ASME B31.3	Comments:	T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.000
		Remaining Life:
		Retirement Date:
<hr/>		
TML Description	Baseline	Flange ANSI:
75 PIPING	2017	Material: SA-234-WPB
Shape: Tee	Min 7.34	CA 0.489
OD: 60.325	Avg 7.92	Nominal 3.912
Spec: ASME B31.3	Comments:	T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.000
		Remaining Life:
		Retirement Date:



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Date: June 14 2017

Inspector: J.Anderson

LSD: 07-27-051-19W5	Area: Ansell	Location: Gas Plant
Jur #: A0157920	Tag Number: V-701B	Vessel Name: Propane B
CRN: F-1007.2	Year Built: 1984	Serial Number: 1668-201B
RT: RT-2	Vessel CA: 1.600 mm	Manufacturer: Vada Industries
	Shell MAWP: 280 PSI	Tube MAWP: PSI
	MAWTF: 154 °F	MAWTF: °F
		Pipe/Plate Plate
<hr/>		
TML Description	Baseline	Flange ANSI:
80 PIPING	2017	Material: SA-234-WPB
Shape: 90° Elbow	Min 5.92	CA 0.692
OD: 60.325	Avg 6.25	Nominal 5.537
Spec: ASME B31.3	Comments:	T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.000
		Remaining Life:
		Retirement Date:
<hr/>		
TML Description	Baseline	Flange ANSI:
85 PIPING	2017	Material: SA-234-WPB
Shape: 90° Elbow	Min 6.05	CA 0.692
OD: 60.325	Avg 6.27	Nominal 5.537
Spec: ASME B31.3	Comments:	T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.000
		Remaining Life:
		Retirement Date:
<hr/>		
TML Description	Baseline	Flange ANSI:
90 SHELL	2017	Material: SA-516-70
Shape: Cylindrical	Min 31.45	CA 1.600
OD: 3657.6	Avg 31.60	Nominal 31.750
Spec: ASME VIII Div.1	Comments:	T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.009
		Remaining Life:
		Retirement Date:
<hr/>		
TML Description	Baseline	Flange ANSI:
95 SHELL	2017	Material: SA-516-70
Shape: Cylindrical	Min 31.29	CA 1.600
OD: 3657.6	Avg 31.45	Nominal 31.750
Spec: ASME VIII Div.1	Comments:	T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.014
		Remaining Life:
		Retirement Date:



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Survey Name: Husky Energy

Date: June 14 2017

Inspector: J.Anderson

LSD: 07-27-051-19W5	Area: Ansell	Location: Gas Plant
Jur #: A0157920	Tag Number: V-701B	Vessel Name: Propane B
CRN: F-1007.2	Year Built: 1984	Serial Number: 1668-201B
RT: RT-2	Vessel CA: 1.600 mm	Manufacturer: Vada Industries
	Shell MAWP: 280 PSI	Tube MAWP: PSI
	MAWTF: 154 °F	MAWTF: °F
		Pipe/Plate Plate
<hr/>		
TML Description	Baseline	Flange ANSI:
100 HEAD	2017	Material: SA-516-70
Shape: Ellipsoidal	Min 32.92	Flag 28.778
OD: 3657.6	Avg 33.05	CA 1.600
Spec: ASME VIII Div.1	Comments:	Nominal 30.378
		T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.000
		Remaining Life:
		Retirement Date:
<hr/>		
TML Description	Baseline	Flange ANSI:
105 HEAD	2017	Material: SA-516-70
Shape: Ellipsoidal	Min 32.82	Flag 28.778
OD: 3657.6	Avg 33.07	CA 1.600
Spec: ASME VIII Div.1	Comments:	Nominal 30.378
		T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.000
		Remaining Life:
		Retirement Date:
<hr/>		
TML Description	Baseline	Flange ANSI:
110 SHELL	2017	Material: SA-516-70
Shape: Cylindrical	Min 31.72	Flag 30.150
OD: 3657.6	Avg 32.18	CA 1.600
Spec: ASME VIII Div.1	Comments:	Nominal 31.750
		T Min
		STCR mm/yr 0.000
		LTCR mm/yr 0.001
		Remaining Life:
		Retirement Date: